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The Psychological Functioning of Elders Entering Old-Old Age: A Longitudinal Study

Mary Harsany

A Thesis

in the Department

of Psychology

Presented in Partial Fulfillment of the Requirements

for the Degree of Doctor of Philosophy at

Concordia University

Montreal, Quebec, Canada

November, 1993

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Abstract

The Psychosocial Functioning of Elders Entering Old-Old Age: A Longitudinal Study

Mary Harsany

This study involved a longitudinal investigation of continuity and change in personality and psychosocial functioning in old age, focusing on natural changes that occur in elders at the entrance into the phase of old-old age around 75 years. The personality and psychosocial dimensions that were assessed include well-being, locus of control, extroversion, neuroticism, defensiveness, activity level, and self-perception. A related issue was the investigation of the predictors of and changes in well-being in elderly subjects over a period of six and a half years. This study also attempted to relate several personality and psychosocial variables to the concept of ego integrity as proposed in Erikson's theory of psychosocial development. The issue of how ego integrity relates to well-being and self-perception was specifically addressed. Eighty-five subjects, who had been tested six and a half years earlier, were retested either in their homes or at the university. They completed seven questionnaires. As expected, correlation coefficients showed that the personality and psychosocial variables had moderate to high levels of stability but multivariate analyses of variance indicated that the group as a whole declined in most areas. Contrary to

expectations, activity emerged as the only psychosocial variable which improved over time, although this improvement was found only in individuals who had initially lived alone and only in the pursuit of rather passive activities. Well-being emerged as a stable variable emerging as the best predictor of later well-being. Regression analyses showed that at the first testing period, well-being was predicted by neuroticism but at the second testing period well-being was predicted by activity level. Ego integrity was related to younger age, higher levels of education and well-being, and positive self-perceptions. A factor analysis on the combined items of the well-being, self-perception and ego integrity measures showed that these constructs are structurally different although related. The findings of this study generally lend support to the continuity theory of personality. The finding that activity level contributes to well-being supports activity theory, and the results indicate that even successful aging probably involves declines in functioning.

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I would like to acknowledge the support of numerous friends and family members who have offered me encouragement throughout this journey. Finally, I would like to dedicate this thesis to the loving memory of my late grandmother, Renee Harsany, who through her humor and generous spirit taught me about the powerful wisdom of old age.

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Theoretical Overview

Stability of Personality and Psychosocial Functioning

A major question of the present study is the continuity of several personality and psychosocial factors. The variables chosen for longitudinal examination in the present study are those that are considered to be central aspects of personality and social functioning and have been frequently investigated in the field of aging. They include extroversion, neuroticism, defensiveness, locus of control, well-being, activity level, and self-perception.

Early theories of personality and psychosocial functioning (e.g. Freud, 1924/1968) concentrated almost exclusively on the early stages of life emphasizing biological changes and the effects of early parenting on the individual with little attention paid to changes in psychosocial functioning beyond early adulthood. In the last 25 years, developmental psychology has adopted more of a lifespan approach, investigating the possibility of lifelong patterns of change which may take place due to maturity or life experience. Lifespan theorists (e.g. Levinson, Darrow, Klein, Levinson, & McKee, 1978) have marked off several periods of life to be studied, such as early, middle, and late stages of adulthood, with late adulthood commencing about the age of 65 years.

Proposing an even greater refinement in this area,

Neugarten (1977) has suggested that late adulthood itself should be further divided into young-old and old-old categories, with the young-old individuals aged about 65 years, and the old-old, aged 75 and above. The young-old form a post-retirement group who have the opportunity for new social roles and more leisure time along with continuing physical vigor. The old-old form a more vulnerable group with declining health accompanied by increased dependency and a reduced level of activity. More recently, researchers (e.g. Field & Millsap, 1991) have further classified the period of old age into an oldest-old group, consisting of the elderly at age 85 years and older.

One of the goals of this study is to investigate changes or continuity of a group of elders just entering the stage of old-old age, compared to their psychosocial functioning six and a half years earlier. When investigating the effect of time or aging on any variable, any one of three possibilities may emerge: decline, development, or continuity. With regard to declines in personality and psychosocial functioning, earlier work (Pfeiffer, 1977) on psychopathology in the elderly suggested that the old were especially susceptible to several mental disorders such as depression, hypochondriasis, and anxiety which was hypothesized to be due to a tendency to rely on more primitive and less adaptive defense mechanisms. However, lifespan research on defense mechanisms (Vaillant, 1977) has indicated that defenses tend to develop throughout

life with mature defenses, such as altruism and sublimation occurring in greater frequency as individuals age. As well, earlier findings of hypothesized declines in mental functioning were largely thought to be due to the use of faulty assessment methods which did not take into account cohort differences (Schaie & Schaie, 1977).

One important theoretical position addressing decline in old age has been put forward regarding activity level. Disengagement theory (Cumming & Henry, 1961) posits that elders fare well if they withdraw from social engagement as society releases them from prior commitments of employment and family responsibilities. However, this theory generally has not been validated, and eventually was modified (Cumming, 1975).

In contrast to the decline theories, some theorists have hypothesized that a process of development occurs over the lifespan resulting in improvement in some areas. In relation to personality functioning, it is hypothesized that the experiences encountered throughout life may provide the opportunity for the individual to achieve maturity, a construct proposed by several personality theorists (e.g. Maslow, 1970).

Perhaps the most elegant theory regarding psychosocial maturity over the lifespan has been proposed by Erik Erikson (1959) who outlined eight stages of life, each with its own psychosocial task, crisis, and opportunity to develop a specific virtue. Erikson posited the stage of ego integrity versus despair during the period of old age. Few studies have

investigated which attributes or aspects of psychosocial functioning contribute to the development of integrity, therefore, not much is known about the attainment of this aspect of maturity in late life. One of the goals of this study is an exploration of this construct.

In addition to decline and development, continuity over the lifespan has been proposed by theories particularly in the area of personality. Continuity has been espoused by trait psychologists who view personality as a collection of enduring dispositions, characteristic ways of feeling, thinking, and acting (Costa & McCrae, 1989). Following from Allport's (1937) original thesis that an individual's personality consists of five to ten central traits, several researchers (see Goldberg, 1993 for a brief review of the area) have endeavored to discover the "Big Five" traits of personality. Although several variations of the Big-Five have emerged from the literature, extroversion and neuroticism have been considered in most versions of this research. These findings suggest that these two personality dimensions represent stable dispositions throughout the lifespan.

In this study, a position that espouses continuity is taken. Except for perhaps the case of biological theories of aging, theories that point to declines in old age have been confounded due to inadequate measurement strategies or to cohort effects. It would appear that as the individual enters the stage of old-old age, the core of the personality struc-

ture and characteristic styles of psychosocial functioning has been set. The individual will draw on his or her characteristic resources to deal with the challenges that may emerge at this particular stage of life, such as declining health, loss of loved ones, and nearness to death. Therefore, it is expected that the personality and psychosocial functioning of the aged entering the old-old stage of life is contiguous with the earlier period of young-old age.

Research on the stability of personality is complicated by the various methodological issues. Early studies of aging which have employed a cross-sectional methodology have found age differences in personality (Neugarten, 1977), while studies using a longitudinal approach have tended to find stability (Costa, McCrae & Arenberg, 1980). Stability in personality traits such as warmth, assertiveness, and dependability is found to be especially high after the tasks of young adulthood have been negotiated, which usually occurs by the age of 30 years (Haan, Millsap, & Hartka, 1986).

Both cross-sectional and longitudinal methods of study are limited in their conclusions because of confounds embedded in the methods themselves. Cross-sectional studies are confounded by cohort and historical variables while longitudinal studies, are confounded by practice effects and the influence of the historical period (Baltes & Nesselroade, 1979). Discussions of longitudinal studies have been published elsewhere (e.g. Costa & McCrae, 1989; Huyck & Hoyer, 1982;

Moss & Susman, 1980; Schaie, 1983), and an extensive review of the design and methodological issues is outside the scope of this paper, however, a few general remarks regarding methodological influences on the expected results in this study follow below.

Several methodological factors strongly affect whether stability or change is observed in longitudinal studies (Moss & Susman, 1980). The homogeneity of the sample, rate of attrition, the length of the time interval between testings, the instruments used, as well as the personality variables assessed all affect results. If the sample is homogeneous, the lack of variability among subjects may restrict the range of scores and reduce stability, while a large attrition rate may increase stability (Finn, 1986). A shorter time interval between testings will increase the probability of stability, while research using projective tests produces scores demonstrating less consistency than those using standardized objective tests (Costa, McCrae, & Arenberg, 1983). As well, comprehensive trait dimensions, such as extroversion, tend to show more consistency than situation specific behaviors, or the "narrower" dimensions of personality such as life satisfaction or locus of control.

Since some of the dimensions tested in this study involve general personality traits, (extroversion, neuroticism), and since most measures employed in the study are objective and the time interval between testings relatively short (six and a

half years), one may expect little change to occur in this follow-up study. However, some of the measures may show change since they may be tied to other factors, such as declining health (e.g. activities).

Predictors of Well-Being

There has been no other variable as extensively researched in the field of aging as the construct of well-being (see Larson, 1978, Lawton, 1982 and Diener, 1984 for reviews on this topic). Possibly because of the proliferation of studies in this area, there has been a lack of consensus over the precise definition of well-being. An adequate one has been supplied by Stock, Okun, and Benin (1986): "Well-being is an abstract, superordinate construct entailing the affective reactions of individuals along a positive-negative continuum to their life experiences." Therefore, well-being has become an omnibus term for several constructs, such as life satisfaction, morale, balanced affect, and happiness (Lawton, 1982).

In his review of well-being, Diener (1984) mentions three hallmarks of this area. First, although well-being may possibly be influenced by objective indicators, it is essentially subjective, that is, it resides within the experience of the individual. Second, well-being consists of positive states and not simply the absence of negative factors. Third, well-being

includes a global evaluation of a person's life. A brief discussion of these hallmarks will follow.

Originally, research concentrated on the relationship of objective or demographic indicators, such as marital status or education, and their relationship to well-being, however, it was found that these objective indicators accounted for very little of the observed variance in well-being (Diener, 1984). For example, Campbell (1977) examined 10 separate external domains in order to assess their impact on life satisfaction and found that the sum total of all ten external criteria accounted for only seventeen percent of the variance. From these findings researchers have concluded that the major determinants of well-being may be psychological rather than demographic and, consequently, they have turned their attention to subjective well-being.

With regard to his second hallmark of well-being, Diener (1984) refers to a complication in the literature regarding whether well-being is an affective experience, that is, feeling good, or whether it involves a cognitive assessment, that is, a judgment about how well one is satisfied with one's life. This issue is particularly salient in the case of elderly subjects, since it has been found that with age individuals tend to demonstrate increasing levels of life satisfaction (the cognitive component of well-being) while simultaneously lowering their levels of positive, as well as negative, affect (Gaitz & Scott, 1972; Lawton, 1982; Stacey &

Gatz, 1991). Consequently, age effects on well-being may vary depending on the measure used.

Diener's (1984) definition also mentions that well-being is not simply an absence of negative factors, such as psychological symptoms, but relates to positive indicators as well. This issue is important since results from recent studies (Diener & Emmons, 1984) point to the independence of positive and negative affect. Consequently, the structure of well-being includes both positive and negative factors in both cognitive and emotional domains (Stock, Okun, & Benin, 1986) and a proper measure of well-being should include all these components. Such a comprehensive measure has been constructed in the Memorial University of Newfoundland Scale of Happiness (MUNSH) (Kozma & Stones, 1980) and is the one used in this study.

Diener's (1984) third hallmark relates to a further complication regarding whether well-being is a sum total of satisfaction with several domains, such as family life and occupation (Cutler, 1979) or whether well-being relates to a global propensity to experience life in a positive way (Stones & Kozma, 1989). The former view represents a "bottom-up" view of well-being, that is, that an accumulation of many happy experiences influences an individual to indicate a general satisfaction with life, while the latter refers to a "top-down" view of well-being which suggests that a global propensity toward happiness leads a person to judge the separate

aspects of her or his life in a positive light (Diener, 1984). This controversy may have important implications in lifespan research, since both factor analyses (Cutler, 1979) and qualitative research (Bearon, 1989) show a different pattern of life satisfaction across several domains of life experiences which varies according to age. For example, Bearon found that satisfaction with health and material well-being are the most important elements in overall well-being for older women, while satisfaction with family and career are the greatest contributors to overall well-being for middle-aged women.

The above findings, however, do not refute the propensity model, since differences in domains of life satisfaction at different points of life may reflect what is salient in a person's life at that particular point in the life cycle. Consequently, it is possible that a general disposition toward happiness would then be applied to the life domains which are salient at a particular time. As well, the apparent changes in the domains of life satisfaction over several age groups may be contaminated by the fact that these studies have used a cross-sectional design. In a longitudinal study, Andrews (1991) assessed the factor structure of several measures of well-being for individuals in all age groups over a period of sixteen years and found that factor loadings and total variance accounted for in well-being were very similar over the two testing periods.

As mentioned earlier, there has been a proliferation of studies in the literature exploring the construct of subjective well-being or happiness as well as its predictors or correlates. One goal of this study was to examine the within-phase correlates (among variables at the same time of testing) and cross-phase correlates (associating variables across the two times of testing) of well-being. Extroversion, neuroticism, defensiveness, locus of control (belief in control and desire for it), self-perception in various domains, and activity level are the psychosocial variables that are explored in this study for their relationship to well-being. A further goal of the study is a test of the propensity model of well-being through an investigation of the changes in well-being over time as well as the relationships of the various personality and psychosocial variables of this study to these changes.

Predictors of Integrity

Although successful aging has been defined as the possession of subjective well-being or happiness, it has also been equated with maturity level, particularly the achievement of ego integrity, as proposed by Erik Erikson (1959). Erikson was the first theorist to describe psychological growth and identity beyond early adulthood, extending Freud's early ideas of psychosexual development throughout the entire lifespan.

Erikson perceived the life cycle as a series of eight stages, each with its own life crisis, with the passage through one phase-specific crisis as the necessary step to advance to the next stage. Each crisis is like a turning point, "a crucial period of increased vulnerability and heightened potential" and a "source of generational strength, and at the same time, a source for maladjustment" (Erikson, 1950, p.55). The successful resolution of each crisis involves the incorporation of both its positive and negative poles into one's identity with the ratio of positive to negative leaning towards the positive (Erikson, Erikson, & Kivnick, 1986).

The life crisis assigned to the eighth and final stage of life is ego integrity versus despair. Some of the attributes of integrity are "the acceptance of one's own and only life cycle and the people who have been significant to it as something that had to be and that, by necessity, permitted no substitutions", "an acceptance of the fact that one's life is one's own responsibility" and a readiness "to defend the dignity of one's own lifestyle against all physical and economic threats". (Erikson, 1959, p.98). A more concise definition of integrity has been offered by Carol Ryff as "adapting to the triumphs and disappointments of being and viewing one's past life as inevitable, appropriate and meaningful" (Ryff & Heincke, 1983).

Despite Erikson's theoretical contribution, little empirical work has been conducted on ego integrity. The bulk of

the research done so far has focused on the relationship of reminiscence to integrity, since Erikson has indicated that one of the tasks of late age is to remember and weave together the disparate elements and incongruities of one's life into a meaningful whole (Erikson, Erikson, & Kivnick, 1986). Robert Butler (1963) has applied Erikson's ideas on reminiscence to his proposal of life review as a form of therapy for the aged, and there have been a number of studies which have attempted to assess the effects of reminiscence and/or life review to the development of well-being or integrity (e.g. Boylin, Gordon, & Nehrke, 1976; Haight, 1988; Taft & Nehrke, 1990).

There have been very few studies published that have investigated the relationship of other aspects of psychological functioning to the attainment of integrity. Some of the reasons cited for the dearth of studies in this area are the rather late development of proper measures to assess integrity, as well as the criticisms of stage theory from which the concept of integrity has evolved (Ryff,1982). However, more recently, the interest in integrity has grown somewhat with several measures now developed to assess it. (Domino & Affonso, 1990; Ryff & Heincke, 1983; Walaskay, Whitbourne, & Nehrke, 1983-84).

The Theoretical Relationship Among Ego Integrity, Well-Being, and Self-Perception

The current study also seeks a better understanding of the construct of integrity. One question related to the controversy in the literature regarding the relationship of integrity or maturity to well-being that is, whether ego integrity is synonymous with well-being. For example, Ryff (1982) argues that subjective well-being can characterize optimal functioning at any age, and therefore does not represent the specific capacity to adapt to the period of old age. As well, Euler (1992) suggests that well-being is a shallow concept that does not represent the deeper and more meaningful levels of fulfillment that an individual may attain in old age.

The construct of ego integrity will also be assessed regarding its connection to self-perception. Most theories of maturity relate it to a strong sense of self. For example, Jung (1933) describes it as individuation, a process by which persons become themselves, indivisible and distinct from other people. Erikson's notion of ego integrity relates to the development of ego identity. This study will also explore the relationship of a positive self-perception to ego integrity.

A literature review regarding the various personality and psychosocial variables in this study (extroversion, neuroticism, defensiveness, locus of control, well-being,

activity, and self-perception) will follow describing each variable with respect to its stability over time, its relationship to well-being and its relationship to integrity. This review will be followed by a discussion of the relationship of several demographic variables (age, gender, education, health status, and marital status) to the personality and psychosocial variables.

Extroversion

Modern views on introversion-extroversion are usually regarded as having originated with the work of Jung (1921/1971), although this theory has historical roots that span several centuries. Jung's theory postulates opposing tendencies of introversion, consisting of a preference for the inner world of introspection, and extroversion, consisting of a preference for experiencing the outer world of objects. Jung initially proposed that the individual undergoes a shift in the second half of life and begins to integrate the other previously unconscious side of his or her personality. In this way the predominantly introverted individual becomes more extroverted and the extrovert become more introverted. Jung's ideas on this radical midlife change in personality have had little experimental validation (Costa, McCrae, Zonderman, Barbano, Lebowitz, & Larson, 1986), nevertheless, cross-sectional studies have tended to find a decrease in extroversion with age (Eysenck & Eysenck, 1968; Neugarten, 1977).

Jung's work was largely speculative. Eysenck (1981) extended the basic idea of extroversion/introversion to a hypothetico-deductive model relating these personality differences to biological correlates such as cortical arousal in the reticular activating system (Stelmack, 1981). A biological or genetic component for extroversion has been strongly suggested by research comparing twins who have been raised apart

with those who have been raised together. Twins, with a mean age of 58 years, showed a significant heritable component in extroversion with forty-one percent of variance attributable to genetic sources (Pederson, Plomin, McClearn, & Friberg, 1988).

Eysenck and Eysenck (1968) describe the typical extrovert as sociable, impulsive, optimistic, and active, and the introvert as quiet, introspective, enjoying planning, and disliking excitement. More recent researchers on the topic, such as Costa and McCrae (1986) describe extroverts as affectionate, talkative, active, fun-loving, passionate joiners, and introverts as reserved, quiet, passive, sober, unfeeling loners.

Stability

Longitudinal studies show stability of extroversion with high and significant correlations found on Cattell"s 16PF Inventory (Costa & McCrae, 1977-78), the Guilford Zimmerman Temperament Survey (Costa, McCrae, & Arenberg, 1980) and the NEO Personality Inventory (Costa & McCrae, 1988). Cross-sectional studies on extroversion show lower levels of stability. Costa et al (1986) have conducted a cross-sectional study of over 10,000 adults who were administered a 14 item scale measuring extroversion and openness to experience and found a significant decline on extroversion with age, although the magnitude of this effect was rather small, accounting for only 3

percent of the variance. Consensual validation of self report indices to measure extroversion have also been found both concurrently (McCrae, 1982) and longitudinally (Costa & McCrae, 1988) when using spouses as raters.

Conley (1985) employed a multitrait-multimethod-multioccasion analysis on several dimensions of personality in order to assess stability of several personality traits, including extroversion. Conley used different methods of measurement (spousal ratings and self-report) on different occasions and found nineteen year stability coefficients of .3 to .5 for extroversion, which were resilient across assessment methods and testing occasions.

In the most comprehensive study to date on the stability of extroversion, Costa and McCrae (1988) used traditional cross-sectional and longitudinal designs as well as cross- and time-sequential analyses and sequential designs with the NEO personality Inventory across a six year interval. They also analyzed data using both stability coefficients and changes in mean levels. Stability coefficients are correlation coefficients between scores from two testing periods and relate to how the rank ordering of a trait is maintained in a particular sample over time. Stability coefficients are not affected by change in mean levels. Changes in mean levels (analyzed by means of t-tests and analyses of variance) represent a purer measure of generational change (Costa & McCrae, 1989). Costa and McCrae recommend using both of these indices of change to

assess the stability of personality traits over time. Costa and McCrae (1988) found stability coefficients for extroversion to be approximately .80 for an older adult group aged 57 to 84 years in their comprehensive study on extroversion. Cross-sectional analyses showed declines in extroversion while longitudinal analyses did not demonstrate an age relationship.

Cross-sequential analyses test individuals of the same cohort across different times of measurement so that differences found can be attributed to historical period or age. The cross-sequential analyses in Costa and McCrae's (1988) study demonstrated a significant increase for extroversion. Time-sequential analyses, which involve testing individuals of the same age and comparing them at different times of measurement, show changes that may be due to historical period or cohort variables, but not due to age. These analyses also showed a significant increase in extroversion. These results suggest that changes usually found in extroversion in cross-sectional studies may relate more to historical changes than to maturational changes. That is, over time, cultural changes have fostered a more open expression of extroverted personality traits. Consequently, younger participants often achieve higher scores on extroversion than older subjects.

Costa and McCrae have conducted studies on adults over the entire adult lifespan and for the most part analyze age effects according to groups separated into age categories where the old age category ranges from about 60 to 85 years.

This age category includes elderly individuals from both young-old (65-75) and old-old (75-85) groups. Important differences have been attributed to these two age groups, since it is thought that the young-old are relatively active with more social resources available to them, while individuals over the age of 75 generally suffer from declining health which may restrict their social relationships and increase their level of dependence. To date there appears to be only one study (Field & Millsap, 1991) in the literature assessing longitudinal changes in extroversion comparing individuals in these two age groups. Field and Millsap investigated longitudinal age changes between young-old, old-old, and even an oldest-old group (85+) over a period of fourteen years on several dimensions of personality and found significant declines on extroversion. Since this one study appears to contradict the high stability levels of extroversion found in most longitudinal studies, it is expected that in the current study extroversion will demonstrate high stability with respect to correlations between the two testing periods and no change in terms of mean levels.

Relationship to Well-Being

Studies have indicated (Diener, 1984; Diener & Emmons, 1984) that the construct of subjective well-being or life satisfaction includes both positive and negative dimensions

which are independent of each other. Extroversion has been found to consistently correlate positively with the positive pole of well-being (Costa & McCrae, 1980a; Costa & McCrae & Norris, 1981; Diener & Emmons, 1984; McCrae & Costa, 1983a). Extroversion embraces several characteristics that relate to warmth and sociability, therefore, it is not surprising to find that extroverts are happy. As well, since the predominant mode of this culture is outward oriented where happiness appears to be derived from the attainment of goals and sociability, it follows that those individuals who are extroverted probably adapt better and are happier than persons who may be more inner directed, thoughtful and solitary. Consequently, it is expected that in this study extroversion will show a significant positive contribution to well-being.

Relationship to Integrity

Based on Erikson's (1959) suggestion that as the individual ages there is a natural turning inward which culminates in a reassessment of one's life, it has been suggested that individuals develop interiority with age (Neugarten et al, 1964). In one study (Ryff & Heincke, 1983) individuals who were high with respect to interiority were described as persons with an inward orientation, contemplative, reflective, with less investment of self in outside life, all characteristics which could be associated with an introverted

personality. Although Ryff and Heincke expected interiority to be significantly and positively correlated with integrity, they found the opposite with significant negative correlations emerging between these two variables. However, since extroversion has never been clearly tested for its relationship to integrity, no firm conclusions regarding the relationship between these two variables will be made here.

Neuroticism

Eysenck (1981) has hypothesized that neuroticism, an emotional stability/instability factor, is a central personality trait and is linked to levels of activity in the limbic system of the brain. Corroboration of a biological basis for this trait has been mixed (Fulker, 1981). Pederson et al (1988) in their comparison of twins raised apart and together found a strong heritable component to neuroticism, although it is not as robust as for the trait of extroversion. Eysenck and Eysenck (1968) describe the individual who is high on neuroticism as emotionally labile and overreactive and having a tendency to somaticize especially when under stressful conditions. Costa and McCrae (1989) describe the neurotic as worrying, temperamental, self-pitying, self-conscious, emotional, and vulnerable.

Stability

Several studies have tested the stability of neuroticism throughout the lifespan. Initially, it was thought that individuals become more neurotic as they age (Pfeiffer, 1977), however, this finding was shown to be related to a confound of physical health items that appeared on several depression inventories (Zemore & Eames, 1979). Costa, McCrae, and Arenberg (1983) reviewed the cross-sectional research on neuroticism and concluded that results are equivocal. However, several studies (Costa & McCrae, 1986; Costa & McCrae, 1988; Eysenck & Eysenck, 1968) have demonstrated a slight decline in neuroticism with age. More recently, in cross-sectional analyses, Costa and McCrae (1988) have found a curvilinear relationship between neuroticism and age with declines in neuroticism until 75 years of age and an increase thereafter.

In longitudinal studies (Costa, McCrae, & Arenberg, 1980; Douglas & Arenberg, 1978; Finn, 1986) neuroticism shows significant, but moderate stability coefficients that do not reach the high levels of correlation coefficients found in similar studies of extroversion. For example, over a three year retest interval, Costa, McCrae, and Arenberg (1980) found stability correlations of .74 for neuroticism and .92 for extroversion. They concluded that neuroticism may be more affected than extroversion by the ramifications of stressful events which may temporarily elevate an individual's

neuroticism score. However, in a more recent study of neuroticism, Costa & McCrae (1988) found stability coefficients for neuroticism to exceed levels for extroversion when corrected for the effects of reliability of the measures. As well, cross-sequential, time sequential, and multioccasion and multimethod analyses (Costa & McCrae, 1988) on neuroticism in both self and spouse ratings demonstrate stability in both correlations and mean levels.

Based on the findings of the studies described above, neuroticism may be expected to remain stable over time in this study. However, Costa and McCrae's (1988) finding of an increase in neuroticism in ages over 75, at least in cross-sectional analyses should be noted. This finding resembles results from studies (e.g. Himmelfarb, 1984; Kessler, Foster, Webster, & House, 1992) on the mental health symptoms in the elderly which show a curvilinear (J curve) path with frequency of symptoms increasing over the age of 75. For example, in a longitudinal study initially conducted by Terman, gifted men, now in their seventies, were found to show a significant increase on neurotic items on the Minnesota Multiphasic Personality Inventory (Shneidman, 1989). Since the present study involves individuals in their seventies, it is expected that neuroticism will show moderate stability in terms of correlation coefficients, but that a significant increase in neuroticism will be found in terms of mean levels.

Relationship to Well-Being

Neuroticism has consistently been shown to correlate significantly with the negative pole of the construct of subjective well-being (Costa & McCrae, 1980a; Costa, McCrae, & Norris, 1981; Diener & Emmons, 1984; McCrae & Costa, 1983a). Since neuroticism embraces several negative characteristics such as hostility, self-consciousness, and emotional lability, it is not surprising that neurotics are unhappy. Therefore, it is expected that neuroticism will show a significant negative contribution to well-being in this study.

Relationship to Integrity

There has been little research on the relationship between neuroticism and integrity. Costa and McCrae (1983a) included a measure of neuroticism in their study on psychological maturity and found no significant correlations between these two variables. However, one may hypothesize that ego integrity relates to mental health as it represents the positive pole of the developmental crisis of old age. According to Erikson (1959), the negative pole of this crisis is despair which he describes as involving a fear of death and a disgust and displeasure with self and others due to bitterness about missed opportunities in life. It is probable that the neurotic individual would more likely experience despair than

attain ego integrity. Therefore, it is expected that in this study neuroticism will demonstrate a significant negative contribution to integrity.

Defensiveness (Social Desirability)

Social desirability represents the tendency of an individual to distort self-reports in a positive direction (McCrae & Costa, 1983b). Self report indices have been considered suspect because these measures may not take into account the universal tendency to present the self in a flattering light, and consequently some personality inventories (e.g. the Eysenck Personality Inventory, the MMPI) include "lie" scales to check on the validity of a test-taker's responses.

Recent research (Kozma & Stones, 1987; Lane, Merikangas, Schwartz, Huang, & Prusoff, 1990; McCrae & Costa, 1982) however, has demonstrated that correlations between individuals' self reports and assessments by their spouses of personality traits, life satisfaction, or prevalence of psychiatric symptoms did not increase after these correlations were corrected for social desirability. This finding strongly suggests that social desirability does not affect the validity of self report measures and perhaps consists of a particular trait rather than a response style. Nevertheless, the exact nature of this trait is unclear. McCrae and Costa (1983b) suggest renaming lie scales as "need for approval" or "social

naivete" while Lane et al (1990) suggest a relationship with defensiveness, particularly denial. For the purposes of this study, the lie scale on the Eysenck personality Inventory will be considered as a measure of defensiveness. Defensiveness is defined as a tendency to view oneself in a positive light along with a degree of self-deception protecting one's vulnerable self-esteem with an accompanying unawareness of unpleasant emotional realities (Lane et al, 1990).

Stability

Based on the research done by McCrae & Costa, (1983b), a propensity model of defensiveness is adopted in this study. Therefore, it is expected that defensiveness will show high stability correlation coefficients between the two testing periods.

Cross-sectional studies (Lane et al, 1990; Leon, Gillum, Gillum, & Gouze, 1979) and, to a lesser degree, longitudinal studies (Costa, McCrae, & Arenberg, 1983) on lie scales show an increase in defensiveness with age. Lane et al (1990) showed an increase that occurred monotonically with increasing decades of years lived after age 30. It is not clear why these findings emerge, but perhaps increases in defensiveness with age may be due to the influence of cohort differences, such as lower levels of education or perhaps the tendency for older age cohorts to value social desirability as compared to

younger cohorts who value self-disclosure. Based on these findings, it is expected that mean level increases in defensiveness with age will emerge in this study.

Relationship to Well-Being

Kozma and Stones (1987) investigated the relationship between well-being and social desirability or defensiveness by correlating several scales of well-being (including the MUNSH used in this study) with several scales of social desirability. They found a significant positive relationship between these two kinds of measures and suggested that this finding may be due to content overlap. There has been a controversy in the literature regarding whether measures of well-being are merely measures of social desirability or defensiveness (Carstensen & Cone, 1983); however, not all studies have found a significant correlation between social desirability and life satisfaction (e.g. Reid & Ziegler, 1980; Kozma, Stones, & Kazarian, 1985).

In research related to this area (Alloy & Abramson, 1979; Lewinsohn, Mischel, Chaplin, & Barton, 1980), it has been found that individuals with low levels of depression tend to have distorted views of their control over events and their social skills, since they estimate their skills as being better than they actually are. It would appear that non-depressed individuals defend themselves from reality in an effort to

manage their self-esteem. One may hypothesize from this work that a certain amount of defensiveness may be helpful in attaining well-being, and therefore it is expected that in this study defensiveness will show a significant positive contribution to well-being.

Relationship to Integrity

In a review of several of his studies on the very old, Tobin (1988) writes that the task of the very old is to preserve the self (a task inherent in integrity) which differs from the task of the young which is to achieve a sense of self. Tobin describes several methods by which elders accomplish this task including reminiscence about the past with an idealized and unrealistic focus, a tendency not to dwell on one's feelings, and a certain degree of aggressiveness, blaming others rather than the self for one's adversities. It would appear from Tobin's description of the elders in his studies that some measure of defensiveness, especially as it involves describing one's past and present self in an idealized manner may be related to the achievement of integrity.

In a study that involves the relationship between defensiveness and integrity, Ryff and Heincke (1983) instructed individuals in three age groups (young, middle aged, and old) to assess how they perceive themselves on several dimensions of personality both concurrently, and at other points in their

lives. Therefore, younger groups assessed themselves on defensiveness and integrity concurrently and prospectively, while the oldest group assessed themselves on these dimensions concurrently and retrospectively. Ryff and Heincke (1983) found a decrease in defensiveness (defendance) and an increase in integrity over the lifespan. From these findings they speculate that these two constructs are related in that perhaps as the individual achieves integrity and becomes more accepting of his or her life, he or she becomes less defensive.

Ryff and Heincke's (1983) conclusion contradicts those of Tobin (1988) as well as findings from a study conducted by Tesch (1985) who found a significant and positive correlation between integrity and social desirability at least in her female subjects. As well, they contradict findings (Lane et al, 1990) which show that defensiveness increases with age. It is perhaps significant that this increase in defensiveness is found to begin at age thirty, the age at which studies (Haan, Millsap, & Hartka, 1986) have shown that the personality becomes "set". It is possible that a particular measure of defensiveness is needed to maintain a stable identity throughout the adult years. Since ego integrity involves a measure of ego identity, it is hypothesizied that defensiveness will show a significant positive contribution to integrity in this study.

Locus of Control

Locus of control refers to individuals' perceptions that the events they experience and the reinforcements they receive are contingent on their own efforts or abilities (an internal locus of control) or are determined by chance or the influence of powerful others (an external locus of control) (Reid, Haas, & Hawkings, 1977). Control over the events of one's life is especially salient in the life of elders who, because of declining abilities and role losses, normatively experience decreasing control over their lives.

An early investigation into the elements constituting locus of control employed a measure assessing desire, which assesses how much the individual values a particular outcome, and a measure of expectancy or belief of how much control the individual has over this outcome (Reid & Ziegler, 1980). This test (The Desire and Expectancy Locus of Control Scale) was designed specifically to be used with the elderly and is therefore the one chosen for this study.

Stability

Findings regarding age effects in locus of control have been mixed. For example, some cross-sectional studies (Nehrke, Hulicka, & Morganti, 1980; Ziegler & Reid, 1983) have found no age differences; some have found an increase in in-

ternality with age (Siegler & Gatz, 1985; Staats, 1974); some have found an increase in externality with age (Hale & Cochran, 1986; Nurmi, Pullianen, & Salmelo-Aro, 1992) and some have found a curvilinear relationship between age and internality with increases in internality until age 80 and a drop thereafter (Morganti, Nehrke, Hulicka, & Cataldo, 1988). In 1986, Lachman reviewed all the cross-sectional and longitudinal studies on the construct to date and found that the only conclusion she could make is that longitudinal studies on locus of control tend not to show an increase in internality.

The two major reasons cited for the diverse findings in the field are the varieties of assessment devices used to measure locus of control and also the very real possibility that locus of control is a multi-dimensional construct. Several studies have attempted to separate the construct into its various elements, for example, testing domain specific measures of controllability (Blanchard-Fields & Robinson, 1987), testing measures relating to beliefs about powerfulness of others and chance (Blanchard-Fields & Irion, 1988), and assessing beliefs about control over one's life direction and responsibility for one's misfortunes (Pedersen, Gatz, Plomin, Nesselroade, & McClearn, 1989). When measures such as these are employed, complex results emerge, with increases in internality due to age found in some dimensions and increases in externality found in others. For example, in the domain of relationships, older individuals tend to blame themselves for

the cause but not the outcome of problems (Blanchard-Fields & Robinson, 1987) and they tend to be more external regarding beliefs about life direction but more internal in beliefs about responsibility (Pederson et al, 1989). Nurmi et al (1992) also noted that as people age, their interests change, and they become more involved in domains of life which are not very controllable, such as health and the lives of their children, whereas in youth interests center on more controllable domains, such as future education.

A further issue in changes over time in locus of control may be related to the effects of historical period on the construct. Recently, Gatz and Karel (1993) have assessed the historical effects on locus of control by using time sequential analyses. These analyses test generational changes by comparing several age groups at several times of measurement. Gatz et al found increases in internality over the twenty year time period of their study, which they suggest reflects the societal trends that stressed self-improvement and increased autonomy in the 1970s and 1980s.

Longitudinal studies (Reid & Ziegler, 1980; Ziegler & Reid, 1983) using The Desire and Expectancy Locus of Control Scale (the measure used in this study) show moderate stability coefficients for both the desire and expectancy components. Most longitudinal studies tend to show that locus of control is a fairly stable measure (e.g. Gatz & Karel, 1993; Pitcher, Spykerman, & Gazi-Tabatabaie, 1987) and in one study (Siegler

& Gatz, 1985) stability coefficients as high as .89 have been reported. As well, research in adoption twin studies (Pederson et al, 1989) have proposed a strong genetic component accounting for at least 30 percent of the variance in locus of control. Based on these findings, it is expected that both desire and expectancy in locus of control will demonstrate moderate stability levels in this study. Because of the contradictory findings regarding mean level changes in locus of control with age, no hypothesis is put forward here regarding possible changes in desire and expectancy in locus of control over the two testing periods in this study.

Relationship to Well-Being

The relationship between control over the events in one's life and learned helplessness and depression has been researched extensively (Abramson, Seligman, & Teasdale, 1978; Hyland, 1987). Consequently, it is not surprising that investigations of control in the elderly have shown that increasing an individual's level of control is associated with an increase in well-being. Schulz (1976) found that nursing home residents who were given the opportunity to predict and control the frequency, duration, and timing of friendly visits by student volunteers fared better than those who were not offered these choices. Similarly, Langer and Rodin (1976) found that when institutionalized residents were allowed to in-

crease their choice and responsibility regarding certain activities, they became happier.

Most studies of the relationship of locus of control and well-being in the elderly indicate a significant and positive relationship between an internal locus of control and life satisfaction (Brown & Granick, 1983; Fawcett, Stonner, & Zepelin, 1980; Hickson, Housley, & Boyle, 1988; Morganti et al, 1988; Nehrke et al, 1980). However, this relationship is not always supported (Baur & Okun, 1983; Felton & Kahana, 1974). One question concerning these contradictory findings is whether, when faced with decreases in power and capabilities, is it beneficial for the elderly to maintain an internal locus of control? For example, Krause (1986) has shown that retired community residents who were extreme with respect to internality regarding locus of control were especially vulnerable to depression when faced with negative stressful events, since they tended to blame themselves for them. With the exception of this issue, the positive relationship between internality in locus of control and well-being generally does hold as stated above.

Reid and Ziegler (Reid & Ziegler, 1980; Ziegler & Reid, 1983) have found that both the desire and expectancy components of their measure have significant and positive relationships to life satisfaction. Therefore, it is expected that both the desire and expectancy components of locus of control will significantly contribute to well-being in this

study.

Relationship to Integrity

There has been little work done on the relationship between an internal locus of control and integrity, however a recent study (Ryff & Dunn, 1989) has found that perceived control over life events is a rather weak predictor of integrity. Nehrke et al, (1980) included an internal locus of control as one of the elements of ego integrity in their study. One may expect that an internal locus of control is related to ego integrity, since the life review process inherent in the attainment of ego integrity may contribute to a sense of meaningfulness when the individual adopts a stance of having control over the events of one's life and viewing them as contributing to a continuous sense of self. However, since so little is known about the relationship between these two variables, no hypotheses are put forth about them in this study.

Subjective Well-Being

Stability

Considering the size of the literature on well-being, it is surprising to find so few longitudinal studies, although

several cross-sectional studies have been conducted. In his review of cross-sectional studies in well-being, Diener (1984) points to contradictory results, with some studies finding stability in well-being scores across age (Carp & Carp, 1983), some noting declines (Britton & Britton, 1972), and some showing increases in life satisfaction with age (Nehrke et al, 1980). Liang, Lawrence, and Bollen (1986) investigated cross-sectional age differences in life satisfaction by comparing samples of young-old and old-old participants and found morale to be a stable structure in these two age groups.

These mixed results may be due to the different measures of well-being used and the tendency for elders to cognitively judge their lives more favorably than their juniors. Another proposed explanation of these findings is the emotional blunting hypothesis (Schultz, 1985) which suggests that stable well-being scores in old age may be due to a decline in the experience of both positive and negative emotions. However, recent tests of this hypothesis (Costa, Zonderman, McCrae, Cornoni-Huntley, Locke, & Barbano, 1987; Lawton, Kleban, Dean, Rajagopal, & Parmelee, 1992; Lawton, Kleban, Rajagopal, & Dean, 1992) have shown that cohort differences may be responsible for apparent differences in scores on emotion indices. These studies show that individuals in both cohort groups produce equivalent factor structures in positive and negative affect, but individuals in older cohorts are more inclined to regulate expression of their feelings than individuals in

younger cohorts. Such findings lend support to the the propensity model of well-being which is the stance taken in this paper.

Longitudinal studies on well-being over long term intervals generally show moderate stability coefficients (.4 over a period of forty years) (Mussen, Honzik, & Eichorn, 1982) while shorter retest intervals (of approximately 10 years) produce correlations that are a little higher (.5) (Costa, McCrae, & Norris, 1981; Costa, Zonderman, McCrae, Cornoni-Huntley, Locke, & Barbano, 1987). Studies that have tested for differences in mean levels in life satisfaction showed no significant differences over a period of four years in a sample of subjects in a young-old category (Palmore & Kivett, 1977) and over a period of three years in a sample of subjects in an old-old category with an average age of seventy-nine years (Baur & Okun, 1983). With regard to longer retest intervals, mean level differences in total well-being also showed no change in a nine year follow-up study by Costa et al (1987) or in a fourteen year follow-up on elders in the old-old age group (Field & Millsap, 1991). In a recent study of both Anglo and Mexican Americans, however, significant declines in well-being over an eight year period were found (Markides & Lee, 1990). Based on these findings, it is expected that moderate stability levels for well-being will be found in this study with no significant differences in mean levels expected over the two testing periods.

Changes in Well-Being

The current study assesses the predictors of changes in well-being across the two waves of the study. Relatively few longitudinal investigations of life satisfaction have been conducted assessing the contribution of earlier demographic and psychosocial variables to life satisfaction tested at a later period. To date, the preferred analysis in such investigations has been residual change analysis, with Time 2 life satisfaction as the dependent variable and Time 1 life satisfaction entered into the regression equation as the first independent variable, thus controlling for the initial level of satisfaction and leaving the residual change to be explained by the remaining Time 1 or Time 2 variables. Palmore and Kivett (1977) used this method of analysis to predict changes in life satisfaction with three rounds of testing separated over a four year period on subjects ranging from forty to seventy years of age. Independent variables were health, sexual enjoyment, and three measures of activity. They found that only health contributed to residual change in life satisfaction, increasing the variance explained in life satisfaction by only one percent.

In 1983, Baur and Okun analyzed longitudinal data for two occasions over a three year period with respondents ranging in age from 66 to 94 years. They included several demographic and psychosocial variables and found age and widowhood to sig-

nificantly predict changes in life satisfaction using residual change analysis. Since neither of these variables significantly predicted concurrent life satisfaction scores at the two testing periods, the authors considered their effects to be spurious.

Kozma and Stones (1983a) undertook a similar analysis in an effort to test the stability of happiness. The subjects were 64 years of age and over and were tested eighteen months apart. Kozma and Stones assessed the effects of marital status, age, housing, health, activity level, financial satisfaction, and locus of control. Housing, activity level, and health emerged as significant predictors of residualized MUNSH scores. In their residual change analysis of life satisfaction, Ziegler and Reid (1983) tested residents of a senior citizen apartment with an average age of 78 years on three occasions over an eighteen month period. Independent variables included several locus of control measures, activity levels, vitality ratings, and a psychomotor speed task. They found that only the psychomotor speed task approached significance in its contribution to residualized life satisfaction scores. Ziegler and Reid point to other studies where psychomotor speed has predicted later outcomes and suggest that it relates to neural structure dysfunction.

The most recent study of this type was conducted by Markides and Lee (1990) on a large sample of predominantly Mexican Americans with an average age of 69 years over an

eight year period. They assessed several demographic variables such as age, gender, marital status, and education as well as several psychosocial variables including health, psychological distress, and activity level to predict later life satisfaction. They found only psychological distress to predict residualized life satisfaction scores. Psychological distress was assessed by means of a symptom checklist, which may resemble the construct of neuroticism used in the present study.

Although few in number, these studies present rather diverse findings. Perhaps the only consistent finding is that the greatest predictor of future well-being is earlier well-being with Time 1 life satisfaction scores contributing anywhere from 16% (Palmore & Kivett, 1977) to 50% (Kozma & Stones, 1983a) of the variance in Time 2 life satisfaction scores. This relationship is expected to emerge in this study as well, indicating that the greatest predictor of later well-being is earlier well-being. All of these studies also found that very few variables have a significant relationship to later well-being once earlier well-being is controlled, and the variables that do predict change differ in every study. Reasons for these differences may be the wide variety of samples used of differing age and ethnic groups, the various time periods between testings, the choice of predictor variables, and the possibility that the results may be spurious. Since a propensity model of well-being is taken in

this study, it is expected that no particular variable will significantly contribute to residual changes in well-being. It is assumed that well-being is a stable trait and that any minor changes in well-being with time will not be significantly affected by any one particular variable.

Relationship to Integrity

From their reading of Erikson's work, Nehrke, Hulicka and Morganti (1980) proposed that the successful attainment of integrity may be operationalized by the combination of a positive self-concept, high life satisfaction, and an internal locus of control. In their study, Nehrke et al assessed the relationship among these variables, however, they did not include a criterion measure of integrity to test their basic assumption. Since this study, there has been a debate in the literature regarding whether there is a relationship between developmental level or psychological maturity and subjective well-being or life satisfaction. For example, Ryff (1982) argues that subjective well-being can characterize optimal functioning at any age, and therefore does not represent the specific capacity to adapt to the period of old age. As well, Euler (1992) suggests that well-being is a shallow concept that does not represent the deeper and more meaningful levels of fulfillment that an individual may attain in old age.

In a study on another measure of psychological maturity,

McCrae and Costa (1983a) found Loevinger's ego development scale to be unrelated to subjective well-being and they concluded that the quality of and criteria for happiness may differ for individuals with varying levels of maturity. In a qualitative study, Fisher (1990) asked seniors to describe how they viewed successful aging and life satisfaction and found differences in their responses to these two concepts. Life satisfaction was described by the seniors more in terms of past expectations and present circumstances, especially those involving health, finances, and family contacts. Successful aging related more to a future focus and strategies for coping with the demands of old age as well as maintaining a positive outlook. Despite these findings, several studies (Euler, 1992; Tesch, 1985; Walaskay et al, 1983-84) have found significant and positive correlations between integrity and subjective well-being. These findings suggest that although ego integrity and happiness are different constructs there is some content overlap between them, that the individual with high levels of ego integrity is likely to be well-adjusted. Therefore, it is expected that well-being will emerge as a significant predictor of integrity in this study as well.

Activity

Activity level has been included quite frequently in studies on the elderly because of its hypothesized and empiri-

cal relationship to subjective well-being. A controversy between activity theory and disengagement theory has generated a great deal of research in this area. Proponents of activity theory (Lemon, Bengston, & Peterson, 1972) suggest a positive relationship between activity level and well-being, asserting that successful aging occurs when activities that are relinquished due to the inevitable role losses of old age are at least partially replaced by satisfactory substitute activities. Disengagement theory suggests that there is a mutual and beneficial process of withdrawal by both society and the individual, so that the older person is relieved of former responsibilities and is free to become self-absorbed (Cumming, 1963). Support for both these theories has been mixed, however, various modified versions of activity theory have received greater validation than disengagement theory (Burrus-Bammel & Bammel, 1985).

A third theory explaining the effect of activity on the process of successful aging is continuity theory, which in effect is a modified activity theory in that it proposes that the most favorable way to age is to maintain the same level of activity as earlier in the lifespan, but without necessarily replacing activities lost due to role changes with new activities (Riddick & Daniel, 1984). This latter theory has implications for the current study which investigates the stability of activity level over two time periods.

Stability

Cross-sectional studies conducted over the entire lifespan tend to find age differences in both social and physical levels of activity (Costa & McCrae, 1988; Harvey & Singleton, 1989). Activity levels typically decrease during midlife and then progressively decline after that with a further substantial drop after the age of seventy years (Douglas & Arenberg, 1978).

With declining health and the role changes that accompany aging, the above findings are to be expected. These results, however, do not address the subject of continuity of activity level. Individuals may appear to have decreased their activity level with increasing age, however, these individuals may redistribute the pattern of certain activities, increasing activities in certain areas while decreasing in others. As well, individuals who may have been highly active as young adults may continue lifestyles which are active in comparison to their age peers in later years. The pattern of results which would then emerge is for activity to show moderate levels of stability correlations, but show overall declines in mean levels.

Long term longitudinal studies over the entire life span have not been conducted to date, however, several shorter term studies have been done. Two studies (Costa & McCrae, 1988; Douglas & Arenberg, 1978) have investigated activity levels

over a period of six and seven years for individuals over the entire adult life span and both have found declines in activity after midlife has been reached. Several other studies have been conducted on samples of elderly subjects with mixed results. In two studies where testing intervals consisted of approximately ten years, the pattern of activities were found to have changed, with declines in some activities and increases in others (Britton & Britton, 1972; Schmitz-Scherzer & Thomae, 1983).

In their 8 year follow up of elderly individuals Markides and Lee (1990) found that among five dependent variables tested (activity, functional health, self-rated health, psychological distress, and life satisfaction) activity emerged as the variable with the greatest stability, nevertheless, they did find slight declines on overall activity level. Stones and Kozma (1986, 1989) propose a propensity model for activity and have reported high retest correlations for their particular activity measure (the Memorial University of Newfoundland Activities Inventory) over eighteen months (.78) and four years (.70 for institutionalized subjects and .50 for community residents). Stones and Kozma (1986) also found structural stability in activity domains tested over these time periods, demonstrating that individuals who are active in one domain are more likely to also be active in others. Such findings corroborate similar results in the literature on temperament which proposes activity level to be

largely hereditary in origin (Buss & Plomin, 1984).

Costa and McCrae (1988) have provided support for the propensity model for activity as well. In their longitudinal study on activity, as measured by both self-report and spouse ratings, they found that the declines in activity levels found in both cross-sectional and longitudinal analyses disappeared when time-sequential and cross-sequential analyses were conducted. However, since the present study uses conventional longitudinal analyses, it is expected that a small decline in activity level will emerge in the analyses and that moderate stability coefficients will be found.

Relationship to Well-Being

Several studies have shown significant positive relationships between activity level and life satisfaction (e.g. Kozma & Stones, 1983a; Stones & Kozma, 1986; Ziegler & Reid, 1983). By means of path analysis Markides and Martin (1979) found activity level to be the strongest predictor of life satisfaction in their study and that income level, which usually shows strong relationships to well-being, affected life satisfaction only indirectly through its effect on activity. However, other research has shown the opposite finding, that is, that the relationship between well-being and activity disappears once other variables such as health and economic status have been controlled (Baur & Okun, 1983;

Diener, 1984).

As Diener (1984) mentions in his review, activity is a complex variable encompassing physical, intellectual, and social pursuits. Several studies have shown that only activities that are of a social nature predict well-being in the elderly (Lemon, Bengston, & Peterson, 1972; Palmore & Kivett, 1977; Steinkamp & Kelly, 1987) especially social activities of an informal nature, such as socializing with friends and family, rather than of a formal variety, such as, belonging to organized groups. For example, Hoyt, Kaiser, Peters, and Babchuk (1980) found that the only activity that predicted life satisfaction in their study was an item that asked about the number of persons living in the household.

The variety of findings regarding the relationship of activity and life satisfaction are no doubt related to the variety of measures that have been used to assess activity level. Most activity scales, however, consist of frequency checklists of activities which are then summed to arrive at a total activity score. Some researchers have suggested that such measures do not take into account the value of activities measured. For example, Russell (1987) found that the frequency of participation in leisure activities in retirement had no relationship to life satisfaction, but the satisfaction with the involvement in activities did.

Perhaps a more satisfactory explanation for the diverse findings in this area has been proposed by Steinkamp and Kelly

(1985) who suggest that satisfaction derived from leisure activity may be related to the motivational orientation of the individual. For example, they found that for retired men who were low on challenge seeking, leisure activity and life satisfaction were strongly correlated. This relationship did not, however, extend to retired women where a significant relationship between leisure activity and high family focus was found. A similar study (Holahan, 1988) has shown that life goals, such as autonomy, involvement, or achievement motivation, have strong relationships to life satisfaction and that a powerful component of this association is activity level. These studies suggest that the contradictory findings in the literature on activity and well-being may be related to motivational differences of individuals and what is needed is the correct match of activities to overriding life goals.

The current study adopts a continuity theory towards the relationship between well-being and activity level in that it is expected that those individuals who remain active into old age will show high levels of well-being. Therefore, it is expected that activity level will demonstrate a significant and positive contribution to well-being in this study.

Relationship to Integrity

The relationship between activity level and integrity has not been tested as yet. Wells and Stryker (1988), in their

review on the stability of the self over the life course, point to the relevance of activity, particularly self produced activity, to the maintenance of the self. Similarly, Neisser (1988) has emphasized the importance of one's physical activities in the environment and activities in managing one's interpersonal relationships as important elements of the self. Therefore, it may be hypothesized that activity level may be related to the achievement of ego integrity, since it involves the maintenance of the self in old age. Therefore it is hypothesized that activity will demonstrate a significant and positive contribution to integrity in this study.

Self-Perception

Perceptions about ourselves and our functioning are important aspects of becoming older, which have been linked with the cognitive theory of aging (Thomae, 1976). This theory is based on several studies that have confirmed that perceived stress, perceived health, and perceived income often are more correlated to consistency or change in behavior than objective measures of change. The measure of self-perception used in this study is based on the Tri-Scales originally used by Schonfield (1973), which involves the individual's evaluation of several dimensions including one's happiness, financial situation, health, the level of challenge in one's activities, satisfaction with family relationships, the pleasure derived

from one's companions, and one's own sense of usefulness.

There has been a lively discussion in the literature on the self as to whether self-perceptions are illusory. For example, Greenwald (1980) has suggested that individuals tend to fabricate a self that is biased in a positive direction and has proposed several mechanisms used by individuals to achieve that end. Britton and Britton (1972) found in a longitudinal study of elders that although their subjects had declined on several objective measures, such as health and income, their perceptions regarding their functioning on these dimensions remained the same. Despite these findings, research (McCrae, 1982) has shown that individuals' perceptions of wide dimensions of personality, such as extroversion, neuroticism and openness to experience, are fairly accurate throughout the lifespan as assessed by consensual validations from their spouses.

Self-perception may be considered to be related to the self-concept. The self-concept is a theoretical personality construct expressed in different terms by several theorists (e.g. Epstein, 1973; Markus & Sentis, 1982; Neisser, 1988). Perhaps the most comprehensive definition of the self-concept has been proposed by Rosenberg (1979) who describes it as the totality of the individual's thoughts and feelings having reference to self as an object. According to this definition self perceptions about one's level of functioning in various domains may be considered as part of the self-concept.

Stability

There have been several studies conducted on the question of whether the self-concept is stable with age. In 1985, Bengston, Reedy and Gordon reviewed the literature on the stability of the self-concept. They found that cross-sectional studies on various components of the self-concept showed age changes when open-ended methods of assessment were used and when the domain tested related to sex-role changes. Bengston et al found that longitudinal studies on the self-concept show high stability coefficients (ranging from .67 to .93 for elders over a six year period). Positive aspects of the self-concept, such as self-esteem appear to be either positively related with age (Morganti et al, 1988; Nehrke, Hulicka, & Morganti, 1980) or unrelated to age (McCrae & Costa, 1988).

Using self reference processing as their method of assessing the content of one's self-concept, Mueller, Wonderlich, and Dugan (1986) found that the self-concepts of elder individuals were richer than those of younger persons, since they incorporated elements that include both young and elder traits. This finding suggests that the self-concept does not change qualitatively with age but does become more comprehensive. The present study takes the position of continuity in the self into old age, therefore it is expected that no significant changes in self-perception mean levels

over time will emerge in the present study and that moderate stability levels will be found.

Relationship to Well-Being

The relationship between well-being and self-perception has been discussed in the literature on social cognition, particularly as it relates to the analysis of the self, or self-schemas. Self-schemas are cognitive-affective conceptual structures that represent one's experience in a given domain (Fiske & Taylor, 1991). The self-schema is considered to be part of self-perception and may be positive or negative. Individuals with negative self-schemas, that is those who identify themselves quickly with having negative traits, appear to be vulnerable to depression (Segal, 1988). Therefore, it may be expected that a positive self-perception should be related to well-being.

The self-perception measure used in this study (Schonfield's Tri-Scales) assesses successful aging on various dimensions including happiness and, consequently, can be considered as strongly related to well-being or happiness in general. Diener (1984) has reported that subjective satisfaction with various dimensions of the self, including standard of living and family life, has correlated significantly with more global measures of life satisfaction in the studies that he had reviewed. Other studies that have employed self-

concept measures have found strong relationships between these measures and scales of well-being (Morganti et al, 1988; Nehrke, Hulicka, & Morganti, 1980). From these findings, it is expected that self-perception will emerge as a significant predictor of well-being in this study.

Relationship to Integrity

Since the definition of integrity is related to the maintenance of the self or ego identity, a relationship should exist between a positive self perception or self-concept and the achievement of integrity (Nehrke, Hulicka, & Morganti, 1980). Such a relationship is hypothesized to emerge in this study, although to date, there has been no empirical investigation to test the relationship between these two variables.

Relationship Between Ego Integrity, Well-Being, and Self-Perception

This study proposes to arrive at a better understanding of the construct of ego integrity. This question relates to the controversy in the literature regarding the relationship between maturity level and well-being (e.g. Euler, 1992; Ryff, 1982). It is the assumption of this paper that ego integrity and well-being share some overlap in content areas, but that they represent different constructs. It is posited that well-

being represents a general life satisfaction while ego integrity represents a construct suggesting a deeper level of fulfillment, relating to the maintenance of the self and a sense of meaningfulness, which may not be tapped by well-being.

Since ego integrity is related to the maintenance of a continuous identity into old age, this study also proposes to undertake an analysis of how self-perception fits into the constructs of ego integrity and well-being. It is expected that self-perception will share content overlap with both constructs of well-being and integrity. Therefore, although all these constructs are expected to be related, it is expected that well-being will fit more into a life satisfaction factor and ego integrity will fit more into a fullfillment factor, while self-perception will tap into both of these dimensions.

The Influence of Demographic Variables

This study explores the influence of demographic variables on the psychosocial variables discussed previously. The demographic variables of interest are age, gender, marital status, education, and health status. For the purposes of this study, marital status has been divided into two categories: alone, which encompasses those individuals who are widowed, divorced or have been single all their lives, and not alone, those individuals who were married at the time of the testing period. Education was assessed based on the number of years of education reported by the individual. Health status was assessed by a symptom checklist, the Seriousness of Illness Rating Scale (Wyler, Masuda, & Holmes, 1971).

Age

The effect of age will be examined for its relationship to both well-being and integrity. A review of the literature shows little relationship between age and well-being, especially when age ranges are limited to sixty years and over (Baur & Okun, 1983; Dillard, Campbell & Chisolm, 1984; Hickson et al, 1988; Kozma & Stones, 1983a; Larson, 1978). Therefore, age is not expected to be a significant predictor of well-being in this study.

Since integrity is thought to be a task of old age, one

may expect that the older one is, the more likely one is to have achieved a state of integrity (Nehrke, Hulicka, & Morganti, 1980; Taft & Nehrke, 1990). Ryff and Heincke (1983) found that old subjects rated themselves higher on integrity than they recalled being in the past, and young and middle aged individuals anticipated higher ratings on this dimension in old age than they had at the present. Despite these self-perceptions, some studies (Boylin, Gordon, & Nehrke, 1976; Ryff & Dunn, 1989) have shown a negative relationship of integrity with age, while other research has found no relationship between these two variables (Tesch, 1985). Consequently, age is not expected to show significant effects on well-being or integrity in this study.

Gender

It is difficult to make predictions regarding the influence of gender on the psychosocial variables in this study, since research has offered little in the way of firm conclusions. Sex differences have been researched mostly in the areas of well-being and locus of control and to a much lesser degree in the other domains.

The conclusion drawn in most studies and reviews of studies (Collette, 1984; Diener, 1984; Hoyt, Kaiser, Peters, & Babchuk, 1980; Huyck, 1991; Larson, 1978; Usui, Keil, & Durig, 1985), is that there are minimal sex differences in life

satisfaction. However, some studies (e.g. Costa et al, 1989; Field & Millsap, 1991; Hickson, Housley, & Boyle, 1988; Markides & Martin, 1979; Morganti et al, 1988; Ryff, 1989a) have revealed gender differences with males showing greater levels of well-being than women. Several explanations have been offered for these contrary findings including a possible interaction between sex and age in well-being.

In his review on psychological well-being, Diener (1984) concludes that in youth, women are happier than men, while in old age men are happier than women and that the crossover takes place at around forty-five years of age. In a more refined analysis of age effects in life satisfaction, Morganti et al (1988) found this crossover to occur later, in the sixty year range. Morganti et al also found a curvilinear effect in old age with male subjects producing higher life satisfaction scores than women while in their seventies, but lower life satisfaction scores than women while in their eighties.

Other explanations for contradictory findings in life satisfaction and gender point to the possible interaction of gender and other aspects of well-being, such as income and education (Markides & Martin, 1979), as well as the possibility that incomplete statistical analyses have been employed in research on this topic (Liang, 1982). Although the mean age of the participants in this study is in the seventy year range where differences have emerged at least in one study, the majority of findings on life satisfaction

points to no sex differences in life satisfaction. Consequently, it is expected that gender will not emerge as a significant predictor of well-being in the present study.

The research on locus of control measures have provided equivocal findings regarding the influence of gender. Woodward and Wallston (1987) and Ziegler and Reid (1979) have shown no sex differences in desired reinforcers using their measure of locus of control. Expectancy measures have been studied more widely than desire and some studies have shown sex differences with men demonstrating more of an internal locus of control than women (Brown & Granick, 1983; Gatz & Karel, 1993; Ryff, 1989a; Staats, 1974), while others have shown no influence of gender (Blanchard-Fields & Robinson, 1987; Brothen & Detzner, 1983; Huyck, 1991; Nurmi, Pulliainen, & Salmela-Aro, 1992; Ziegler & Reid, 1979). Although the influence of gender on both well-being and locus of control measures are mixed, where differences do emerge, it appears that for the most part men fare better than women, which Kobasa (1987) argues may be tied to the influence of the socialization process through which males acquire greater social worth than females.

Sex differences have not been explored to a great degree for the other variables in this study. McCrae and Costa (1988) found that women tend to describe themselves as slightly more extroverted than men while neuroticism shows no relationship to gender. Lane et al (1990) found that women showed higher

scores than men on defensiveness. Studies on the effect of gender on activity have shown mixed findings with Stones, Dornan, & Kozma (1989) indicating that women were more active than men in old age, while Harvey and Singleton (1989) and Markides and Lee (1990) found no influence of sex on activity levels. Regarding the influence of gender on integrity, Ryff and her colleagues (Ryff & Dunn, 1989; Ryff & Heincke, 1983) have found no sex differences.

With regard to self perception, Kobasa (1987) reviewed several studies and concluded that women generally show lower self-esteem than men on most measures of self-perception. Sex differences regarding perception of one's life space were found with positive and stable perceptions emerging for males and declining and less stable perceptions for females in the Bonn Longitudinal Study (Schmitz-Scherzer & Thomae, 1983). Similarly, in the Duke Longitudinal study, self-image changes appear to be related more to sex differences than to age (Siegler, 1983). Freund, Staudinger, and Smith (1991) also found sex differences in responses to the question "Who am I?" in their older subjects with females reporting self-perceptions related to the interpersonal domain, while males reported domains describing finances and occupation.

With regard to gender differences in this study, it is expected that no sex differences will manifest in desire in control and neuroticism. Because of the contradictory findings reported in the literature, no specific hypotheses are

put forward regarding the effect of gender on well-being, expectancy of control, extroversion, defensiveness, self-perception, activity, or integrity.

Marital Status

A few studies have explored the relationship of marital status with the personality and psychosocial variables used in this study. In most cases (e.g. Hoyt et al, 1980; Kozma & Stones, 1983a; Ryff, 1989a; but not Baur & Okun, 1983), marital status has been found to have a significant, positive relationship to well-being. In his review, Diener (1984) concluded that marriage is a strong predictor of life satisfaction even when other factors such as education and income levels are held constant. Chappell and Badger (1989) assessed several indicators of social isolation in the aged and their relationship to well-being. They found that living alone or not being married has a significant effect on well being, although this effect is not as great as that of having a confidant.

In Larson's (1978) review, being married predicted high life satisfaction scores, but Larson noted that the relationship is stronger when studies compare married individuals with divorced or widowed individuals, rather than with people who have remained single. This relationship would suggest that the effect of marital status may be confounded with the effect

of role loss. Unfortunately, due to the small sample used in this study, role loss and marital status could not be separated. Since the effect of marital status usually holds without this refinement (Larson, 1978), however, it is expected that marital status should be a significant predictor of well-being with the category, not living alone, predicting higher levels of well-being.

Marital status has shown no effect on activity levels (Harvey & Singleton, 1989; Markides & Lee, 1990; Stones, Dornan, & Kozma, 1989) or locus of control (Brown & Granick, 1983). As well, there appears to be no information available regarding the relationship of marital status to integrity.

Education

Education has been shown to have effects on well being, self-perception, locus of control, and integrity. In his 1978 review, Larson stated that after health, the strongest predictor of life satisfaction is socioeconomic status (SES) with lower life satisfaction found to relate to lower SES. Larson noted, however, that life satisfaction is not clearly related to any one component of SES, such as income, occupation, or level of education. Education, the SES indicator used in this study, has been found to correlate significantly and positively with life satisfaction in several studies (Dillard, Campbell, & Chisolm, 1984; Markides & Martin, 1979; Usui,

Keil, & Durig, 1985). However, reviews of the literature indicate that the effect of education is not strong (Diener, 1984), especially when other factors are controlled. Nevertheless, based on these findings, it is expected that education will emerge as a significant predictor of well-being in this study.

Education has also shown a strong relationship to locus of control with higher levels of education relating positively to an internal locus of control (Brown & Granick, 1983; Fawcett, Stonner, & Zepelin, 1980; Gatz & Karel, 1993; Nehrke, Hulicka, & Morganti, 1980). Nehrke et al (1980) have noted a positive relationship between education and their measure of self-concept. As well, Boylin et al (1976) have found that integrity increases with level of education.

The relationship between activity level and education is not clear. Stones et al (1989) found a positive relationship between activity level and education, however, Markides and colleagues (Markides & Lee, 1990; Markides & Martin, 1979) have not found a similar relationship. No significant relationships have been found between education and personality measures of extroversion and neuroticism. (McCrae & Costa, 1988).

Due to the benefits of education on the attainment of financial reward and increased control over life situations, education can confound findings regarding gender differences regarding some psychosocial variables. This effect may be

especially relevant for participants in older cohort groups, such as the one in this study, who form a cohort in which women generally did not pursue higher education or careers. In their study of self-concept, locus of control and life satisfaction, Morganti et al (1988) covaried out the effect of education to arrive at a clearer determination of the gender effect on these variables. They found that when education was covaried out, sex differences did not emerge on locus of control or self-concept, but were maintained with respect to life satisfaction. It is possible that the mixed findings regarding the effect of gender on locus of control in other studies may have been contaminated by education. Therefore, this study will examine the effects of gender, marital status, and time of testing on all the psychosocial variables while covarying out the effect of education and it is expected that education will emerge as a significant covariate.

Health Status

Although advancing age and poor health are not synonymous, experience and research have shown that illness is an intrinsic part of the aging process. Siegler (1989) has pointed out that the average older person has 3.5 diseases and fills thirteen prescriptions annually. Consequently, it is not surprising that health is an important preoccupation of the elder's everyday experience (Shneidman, 1989). Despite

the importance of health in old age, a survey of the literature shows that until recently relatively few studies have included it as a variable (Siegler & Costa, 1985). In fact, the first wave of this study had not included a health measure in its list of variables, and therefore only a Time 2 health status measure is available for analysis.

Self-report measures of health status have been used widely in the literature and can take the form of global self-ratings of health or symptom checklists. Although even simple global self-ratings have been found to correlate significantly with physicians' ratings (LaRue, Bank, Jarvik, & Hetland, 1979), symptom checklists, like the one used in this study, offer advantages over global ratings since they provide more accurate information about specific disease processes and consist of a total score based on a sum of endorsements which offers higher reliability than single item ratings (Costa & McCrae, 1980b).

Several longitudinal studies (Aldwin, Spiro III, Levenson, & Bosse, 1989; Harris, Pederson, McClearn, Plomin, & Nesselroade, 1992; Palmore, Nowlin, & Wang, 1985) have shown that health deteriorates with age, and therefore may be expected to mediate changes in well-being and other psychosocial variables with time. Therefore, this study will examine the effects of gender, marital status, and time of testing on all psychosocial variables while covarying out the effect of health status, and it is expected that health status will

emerge as a significant covariate. The significance of health status as a covariate in this study is expected to be small since previous studies have indicated that in old age, most health ratings appear to be unaffected by gender (Blazer & Houpt, 1979; Levkoff, Cleary, & Wetle, 1987; Stones, Dornan, & Kozma, 1989), while studies of gender on marital status and health (Chappell & Badger, 1989; Fiske, 1980; Palmore et al, 1985) appear to show mixed results.

The relationship between health and well-being has been tested thoroughly with consistent findings showing a significant correlation between the two variables (e.g. Baur & Okun, 1983; Blazer & Houpt, 1979; Stones & Kozma, 1989; Ziegler & Reid, 1983). In 1984, Okun, Stock, Haring and Witter conducted a meta-analysis of all studies on the subject prior to 1980 and concluded that there was a consistent, strong, and significant relationship between health and life satisfaction or psychological well-being. This finding makes intuitive sense since people are generally happier when they are healthy, and also since many illnesses, such as neurological disorders, pancreatic cancer, and cardiovascular disease, may produce depressive symptoms. (McNeil & Harsany, 1989; Salzman & Shader, 1978). Therefore, in this study it is expected that higher scores on the symptom checklist will predict lower levels of well-being.

The relationship of neuroticism to the reporting of

symptoms on checklists has been widely documented since Costa and McCrae (1980b) first reported a significant relationship between this personality trait and the endorsements of symptoms on the Cornell Medical Index in men of various age groups. Costa and McCrae (1985; 1987) went on to replicate these findings with a sample of women and also noted that the relationship does not relate to a psychopathological condition of hypochondriasis but rather to a stable personality trait. The relationship between neuroticism, sometimes termed emotionality or negativity, to poor health has since been replicated by others (Aldwin et al 1989; Spiro, Aldwin, Levenson, & Bosse, 1990; Watson & Pennebaker, 1989). The relationship between poor self-perceived health and neuroticism is most likely due to the tendency of the neurotic to interpret somatic sensations in a negative light, as well as the tendency to remember prior symptoms as being much worse than they actually were (Larsen, 1992).

The relationship of health to the personality trait of extroversion has not been studied as widely as neuroticism. When included in data analyses, the relationship between health status and extroversion has produced differing results. For example, in their forty-five year longitudinal study of men selected for their initial high levels of physical health and psychosocial adjustment, Vaillant and Vaillant (1990) found sociability (a significant component of extroversion) to be positively related to adjustment, both physical and

psychological, in youth and midlife, but not in late life. The authors propose that the explanation for this relationship is that extroversion may be related to higher levels of alcohol consumption, which in turn, emerges as a significant predictor of poor health in old age. In other studies, Siegler (1983) noted a positive relationship of survivorship and extroversion, but Costa and McCrae (1977-78) found that extroversion was unrelated to the reporting of medical complaints. Spiro et al (1990) clarified these discrepant findings in showing that symptom reporting is negatively related to extroversion, but that this relationship disappears when age and neuroticism is controlled. This finding may be related to Vaillant and Vaillant's study, since it may be hypothesized that extroverts who are neurotic may "act out" emotionality by engaging in alcohol or drug abuse, which in turn have a cumulative negative impact on health in old age, however, extrcversion as a personality trait on its own may be unrelated to health.

The relationship of health status to defensiveness or social desirability is absent in the literature on aging, therefore, no hypotheses will be put forth here regarding the relationship between physical illness and defensiveness in this study.

The relationship between good health and an internal locus of control is well documented in the literature on aging (e.g. Baltes, Wahl, & Schnid-Furstoss, 1990; Brothen &

Detzner, 1983; Brown & Granick, 1983; Gatz & Karel, 1993; Lumpkin, 1985; Ziegler & Reid, 1983). In a recent review of locus of control, Strickland (1989) surveyed the voluminous literature on the topic and pointed to the strong relationship of a perceived internal locus of control with physical health. People with internal locus of control tend to participate more fully in their health, in that they know more about their physical condition and are more involved in their rehabilitation from an illness. In separating the two aspects of control assessed in this study, desire and expectancy, Ziegler and Reid (1983) found both to be related to health, although expectancy showed stronger and more consistent relationships to health than desire. From this overwhelming evidence, it can be hypothesized that health status will have a strong relationship to an internal locus of control in this study.

Despite the strong recommendation of the media in this culture to be active in order to maintain physical fitness and good health, it is surprising to note that that there have been more studies conducted on the relationship between activity and psychological health than physical health in the literature on aging. Several studies have shown a positive relationship between health status and activity level (e.g. Holahan, 1988; Lumpkin, 1985). Baltes et al (1990) investigated the relationship of health to various modes of activity in German elders and found that health was related to physical activity as well as obligatory activities of daily

living, such as self-care and errands, but that health was not related to mental activity or socializing. It makes intuitive sense that as one's health declines, activity level may diminish since there may be less energy available in the organism, therefore it is expected that high scores on the symptom checklist will be related to low levels of activity in this study.

Very little work has been done on the relationship between health status and self-perception. Milligan, Powell, Harley and Furchtgott (1985) noted a significant relationship between poor self-perception and poor health, however, their study was confounded by the effects of institutionalization. Since the health status measure employed in this study is a perceived measure of health, one may hypothesize a significant relationship to emerge between the self-perception measure and the symptom checklist, especially since one of the items in the self-perception measure assesses health.

To date, there has been no investigation of the relationship of health status to integrity. Since integrity is hypothesized to be a psychosocial development attained despite nearness to death, and supposedly declines in health which often accompany old age, one may expect that health status should bear no relationship to integrity.

In summary, it is expected that health status will emerge as a significant covariate in analyses measuring changes over time, due to its relationship to well-being, neuroticism,

locus of control and self-perception. Health status is also expected to predict levels of well-being and to demonstrate no significant relationship to integrity.

Summary of Hypotheses

The following is a summary of hypotheses based on the theoretical literature and on empirical research.

Stability of Psychosocial Variables Over Time:

The present study contributes significantly to the literature on the continuity of personality in old age in assessing both stability coefficients and mean levels of several important psychosocial variables. These variables have been selected for inclusion in this study both for their centrality to personality and social functioning in general and for their particular salience to the elderly as a group. In assessing both stability coefficients and mean levels, this study measures both an individual's personal stability as compared to others in a dimension over time as well as changes incurred in the group as a whole. As well, this study measures change that may have occurred over a specific time period in an elder's life, that is from the period of young-old age to the beginning of the period of old-old age. In accomplishing this task, the current study offers insights into possible changes in the welfare of the elderly over the first stage of old age.

With respect to stability in the psychosocial variables of this study, it is expected that all variables (extroverison, neuroticism, defensiveness, well-being, expec-

tancy and desired reinforcers in locus of control, self-perception, and activity) will show moderate to high levels of stability as demonstrated by correlation coefficients between the two testing periods. With respect to comparisons of mean levels, significant increases are expected in neuroticism and defensiveness, a significant a cline is expected in activity level, and no significant change is hypothesized for extroversion, well-being, and self-perception. No hypotheses are put forward regarding changes in mean levels for desired reinforcers and expectancy in locus of control.

Effects of Demographic Indicators on Stability:

With respect to the effects of the demographic indicators on the psychosocial variables in this study as assessed by an analysis of covariance with education and health status as the covariates, it is expected that education and health status will emerge as significant covariates. Significance of the covariates is hypothesized to be due to the expected relationship of education to well-being, expectancy and desired reinforcers in locus of control, and self-perception, and the expected relationship between health status and well-being, neuroticism, expectancy and desired reinforcers in locus of control, activity, and self-perception. No gender differences are expected with regard to desired reinforcers in control, neuroticism and well-being, however, males are expected to

perceive themselves more positively than females. No other hypotheses are put forward regarding gender differences on the other variables. With respect to marital status, it is expected that subjects who are not alone will show greater levels of well-being than those who are alone. Marital status is not expected to show a relationship to the locus of control variables or to activity. No other hypotheses are made regarding the relationship of marital status to the other variables.

Predictors of Well-Being

Although a great number of studies have assessed the predictors of well-being in the elderly, most have achieved this task by correlating a single variable with a measure of well-being. The present study contributes to the findings of more recent studies which correlate several variables with well-being at once while controlling for intercorrelation among the predictor variables by means of regression analyses. Regarding predictors of well-being, it is expected that marital status, education, health status, extroversion, neuroticism, defensiveness, both desired reinforcers and expectancy in locus of control, activity level, and self-perception will significantly contribute to well-being at both testing periods. Gender and age are not expected to emerge as significant predictors.

Regarding the assessment of well-being across the two testing periods it is expected that the greatest contributor of later well-being will be earlier well-being, and that no other variables will contribute significantly to the residual change in well-being at either testing period.

Predictors of Integrity

The present study contributes significantly to the literature on integrity in exploring the contribution of several variables including some (extroversion, neuroticism, activity, and self-perception) which have not been assessed previously. It is expected that education, well-being, activity, self-perception, neuroticism, and defensiveness will emerge as significant predictors of integrity and that gender and health status will not emerge as significant predictors of integrity. No hypotheses are put forward regarding the contribution to integrity of marital status, extroverison, expectancy and desired reinforcers in locus of control.

Relationship Among Ego Integrity, Well-Being, and Self-Perception:

The present study contributes to a greater theoretical understanding of the nature of integrity by means of an exploratory factor analysis on the items on the ego integrity,

well-being and self-perception measures. It is expected that although there may be content overlap among these three constructs, they nevertheless are not synonymous with one another. No predictions are offered regarding the total number of meaningful factors that will emerge in a factor analysis conducted on all the items from the three measures assessing ego integrity, well-being, and self-perception. Nevertheless, it is expected, that at least two factors will present themselves, one related to life satisfaction, represented mostly by items from the well-being measure, and one related to fulfillment, represented by items mostly from the ego integrity measure. It is expected that items from the self-perception measure will load equally on both these factors.

Method

Subjects

Subjects consisted of 85 volunteers, 65 years of age and older with a mean age of 76.5 years. All subjects resided independently in their own homes in the community. Participants consisted of both Anglophone and Francophone individuals of middle and working class. Six and a half years prior to this study, the participants had taken part in an earlier investigation (Arbuckle, Gold, & Andres, 1986) consisting of a comprehensive survey of the psychological functioning of elderly people. The earlier study included a larger sample of 361 subjects who were recruited through several agencies, such as senior citizen clubs, university alumni associations, and community centers. Attempts were made to locate all of the original 361 subjects who were first contacted by letter and then by telephone. The subjects in this follow-up study consisted of 23.5% of the original sample. Many of the original participants could not be located, many had died, and several who were contacted refused to participate for either health reasons or lack of interest.

In order to assess the effect of attrition of the subjects over the 6.5 year interval, a comparison of the 85 subjects in the present study with the remaining 276 original participants was accomplished by means of Multivariate Analysis of Variance (MANOVA) on the following Time 1 depen-

dent variables: Age, Education, MUNSH (Well-Being), Extroversion, Lie (Defensiveness), Neuroticism, Expectancy, Desire, Self-Perception, and Activity. (See Table 1 for means and standard deviations of these variables for both samples and Summary table of MANOVA results in Appendix A Table 1). Hotelling's T^2 analysis indicated overall significant differences between the two samples, $F(10, 350) = 6.92$, $p. < .001$. The univariate analyses on each of the variables showed that the participants who remained in the study were significantly younger, better educated, with higher levels of well-being, less defensive, less neurotic, and more internal in locus of control in expectancy than the subjects who had dropped out of the study. No significant differences were found on Extroversion and Desired reinforcers in locus of control.

As well two Chi Square analyses were calculated to compare differences in gender and marital status between these two samples (See Table 2 for frequencies). No significant differences were found on these analyses.

The 85 subjects who were tested at Time 2 formed part of a larger sample of 243 subjects in a study investigating verbosity in the elderly. Some of the data in this larger sample of subjects was also analyzed in this study regarding the relationship among the integrity, well-being, and self-perception measures. This larger sample was used for this analysis in order to attain an adequate variable to sample size ratio recommended for factor analysis. See Table 3 for

Table 1

Means and Standard Deviations of Time 1 Variables for Attrition Sample of 276 Subjects and Follow-up Sample of 85 Subjects

	Attrition N=276		Follow-Up N=85	
Variable	Mean	(S.D.)	Mean	(S.D.)
Age	74.03	(6.26)	69.87	(4.23)
Education	11.11	(4.67)	12.85	(4.83)
Well-Being (MUNSH)	26.48	(5.54)	29.17	(3.14)
Extroversion	10.64	(3.28)	10.37	(3.36)
Defensiveness (Lie)	5.17	(2.01)	4.52	(1.81)
Neuroticism	8.36	(4.86)	6.42	(4.02)
Expectancy (Locus of Control)	59.26	(5.10)	60.89	(4.45)
Desire (Locus of Control)	25.97	(2.55)	25.48	(2.54)
Self-Perception	43.38	(7.23)	47.72	(5.78)
Activity	62.74	(12.18)	69.48	(7.75)

Table 2

Frequencies on Time 1 Gender and Marital Status for Attrition Sample of 276 Subjects and Follow-up Sample of 85 Subjects

	Attrition N=276	Follow-up N=85
Gender		
Male	132	40
Female	144	45
Marital Status*		
Alone	158	42
Not Alone	115	43

* Information on marital status was available for only 273 of the 276 attrition subjects.

the means and standard deviations of these 243 subjects and the 85 subjects in the follow-up sample at Time 2 testing period with regard to age and education, and Table 4 for frequencies of these two samples regarding gender and marital status.

Measures

The measures consisted of seven self-report questionnaires that required written responses. As well, subjects were asked for an oral report of the earliest event which they could remember. Analyses of the earliest memory were retained for a separate study. (See Appendix B for samples of all measures.).

Memorial University of Newfoundland Scale of Happiness (MUNSH) is a measure of well-being. It consists of 24 items which require "yes" of "no" answers and is divided into two parts. The first ten questions deal with happiness during the past year and the remaining 14 questions deal with happiness during the past ten years or more general life experiences. The scale measures both positive and negative emotional states and positive and negative life experiences. The final score consists of summing up the positive emotional items and subtracting the negative ones. Test-retest reliability is reported at .70 and an internal consistency of .80. Validity

Table 3

Means and Standard Deviations of Time 2 Age and Education of Sample of 85 Subjects and Large Verbosity Study Sample of 243 Subjects

Variable	Mean (S.D.) Follow-up (N=85)	Mean (S.D) Verbosity (N=243)
Age	76.53 (4.36)	73.66 (6.06)
Education	13.20 (4.92)	13.11 (3.93)

Table 4

Frequencies of Gender and Marital Status of Follow-Up Sample of 85 Subjects and Large Verbosity Study Sample of 243 Subjects

Variable	Frequency Follow-up (N=85)	Frequency Verbosity (N=243)
Gender		
Male	40	86
Female	45	157
Marital Status		
Alone	48	140
Not Alone	37	103

coefficients range from .63 to.84. (Kozma & Stones, 1980, 1983a, 1983b). The MUNSH recently has been very well evaluated in comparison to other measures of well-being (Robinson, Shaver, & Wrightsman, 1991).

Eysenck Personality Inventory (EPI) is a standardized, objective personality questionnaire consisting of 57 items which requires "yes" or "no" answers. It is designed to measure Extroversion and Neuroticism and includes a Lie scale (Defensiveness) which assesses the tendency to answer items in a socially desirable manner. Extroversion can be defined as a composite of sociability and assertiveness while Neuroticism refers to an individual's emotional adjustment or maladjustment. Test-retest reliabilities range between .84 and .94 for the complete form and split-half reliabilities run from .74 to .91. Construct and concurrent validity have been demonstrated ranging from .79 to .92. (Eysenck & Eysenck, 1968).

Ryff Developmental Personality Scale of Integrity is a recently developed scale of personality based on the psychosocial model of development according to Erik Erikson (1950). Integrity may be defined as adapting to the triumphs and disappointments of being and viewing one's past life as inevitable, appropriate and meaningful. The scale is one section of a four part instrument which also measures complexity,

generativity, and interiority. Participants in this study answered items on both Interiority and Integrity scales, however, the Interiority scale was not used in this study in order to achieve an appropriate case to variable ratio in the analyses. The Integrity scale consists of 16 items of positively or negatively scored items with reference to the achievement of integrity. Responses to negatively scored items are reversed in the scoring procedure so that high scores indicate high integrity levels. The original scale was constructed along a six point Likert format, but in this study participants were asked to answer to only "Agree" and "Disagree"in order to simplify the measure. Internal consistency has been reported at .82 for the Integrity scale. (Ryff & Heincke, 1983).

Desire and Expectancy Locus of Control Scale is a locus of control scale designed especially for the elderly. The measure has two parts: six items related to Desire, which asseses to what extent a person desires reinforcers which are normally relevant to the elderly, and 16 items related to Expectancy or Belief, which assesses the extent to which an individual perceives these reinforcers as being under his or her control. Items are answered according to a five point Likert scale, with high scores corresponding to an internal locus of control. The scale has test-retest reliability of .54 to .64, interitem reliability ranging from .84 to .89 and validity

coefficients ranging from .54 to .63 (Reid & Ziegler, 1980).

Self-Perception on the Tri-Scales is a shortened version of the measure created by Schonfield (1973). This scale requires participants to rate their current functioning and attributes on a series of nine point scales related to seven dimensions: happiness, financial situation, health, interest in activities, satisfactoriness of family relationships, pleasure from companions, and feelings of usefulness. Validity coefficients for the various scales range from .31 to .50 and the Tri-Scales have a reliability coefficient of .77. The Self-Perception score used in this study consisted of a sum of the self ratings on the 7 dimensions.

Activity Scale. The Activity scale (Gold, Andres, & Schwartzman, 1987) employed in this study is a recently developed questionnaire consisting of a checklist of 23 activities. The subject is required to endorse one of five options relating to the frequency to which the participant engages in each activity. Each frequency option is assigned a numerical value which are all summed to arrive at a total activity score. The scale has an internal consistency coefficient of .82 and construct validity coefficents ranging from .26 to .37.

Seriousness of Illness Rating Scale (Wyler, Masuda, & Holmes, 1971) was used to assess health status. Participants were asked to check off the symptoms and diseases they had experienced in the last five years. The scale was shortened for this study to a list of 64 items with each illness having a predetermined magnitude. The weighted scores were then summed to arrive at a total score. Criterion validity of this scale has been assessed at .95 between medical and non-medical health valuations. The scale has shown to have a three year test-retest reliability of .71.

Procedure

The 85 follow-up subjects in this study were tested individually either at their homes or at the university on two separate occasions with approximately a week between sessions. Each testing session lasted approximately two hours with a scheduled ten to fifteen minute break after an hour of testing.

These 85 subjects also formed part of a larger study investigating verbosity in the elderly and its relationship to cognitive and psychological functioning and therefore were interviewed and assessed on a battery of neuropsychological tests which were not used for this study (See Appendix B for a list of the various tests in the order in which they were administered). Participants were given an interview which was

recorded on audiotape and which focused on demographic and personal background information and the elicitation of an earliest memory. The participants were then administered the various paper and pencil tests interspersed with several neuropsychological tasks.

Results

The data analyses of this study utilize multivariate methods including Mutivariate Analysis of Variance (MANOVA), Mutivariate Analysis of Covariance (MANCOVA), multiple regression, and factor analysis.

Requirements for Data Analysis

Preliminary Analyses

Inspection of the raw data began with a check for univariate outliers on all four samples, the complete Time 1 sample of 276 subjects, Time 1 and Time 2 data on the 85 subjects who were retested, and on the 243 subjects who were tested on the Integrity, Self-Perception, and MUNSH at the Time 2 testing period. Raw scores were converted to z scores and outliers were defined as those variables where z scores were greater than ± 3.0. The outlying cases were assigned values one unit more than the most extreme score in the variables distribution. Further transformation of the data was accomplished by mean substitution for any missing cases. After these transformations, the MUNSH for all samples and the Integrity measure for the Time 2 large sample remained positively skewed, while the Health Status measure remained negatively skewed. Because positive skewness is frequently found

in the literature for the MUNSH and Integrity measures (e.g. Stones & Kozma, 1991), it was decided not to further transform these variables, since in so doing interpretation may be hindered. However, the scores on the Health Status measure were transformed by using the square root of the weighted scores. Correlation tables among the variables were also inspected and were found to be of moderate ranges so as not to suggest singularity or multicollinearity. Scatterplots between all pairwise combinations of variables indicated linear relationships throughout.

Assumptions for MANOVA and MANCOVA

Inspection of the Mahalanobis distance measure for the MANOVA and MANCOVA failed to reveal multivariate outliers. The Box's M test for for all dependent variables was found to be nonsignificant, indicating homogeneity of the variance-covariance matrices. Homogeneity of regression was also tested for the MANCOVA and showed nonsignificance except for the MUNSH variable.

Assumptions for Hierarchical Multiple Regression

Multiple regression analyses requires a case to variable ratio of at least 4 to 1 (Tabachnick & Fidell, 1983). In the multiple regressions presented in this study, the ratio is at

least 6. Mahalanobis distance measure also revealed no multivariate outliers. Scatterplots of the residuals were inspected for normality, linearity, and homoscedasticity with no failures in these areas detected on all regression analyses.

Assumptions for Factor Analysis

Factor analysis was conducted on 43 test items with the larger verbosity sample of 243 subjects, which is an adequate variable to sample size ratio to perform this procedure (Tabachnick & Fidell, 1983). Mahalanobis distance measure revealed no multivariate outliers. Both Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy were applied to the data to test for the appropriateness of the correlation matrix for factor analysis. The Bartlett test showed significance, (1629.24, $p<.001$) however, the Kaiser-Meyer-Olkin test failed to achieve the recommended level of appropriateness of .50 (KMO=.20). Since the factor analysis in this study is considered to be preliminary and exploratory in nature, it was decided that the analysis be conducted based on the significance of the Bartlett statistic. However, since the Bartlett statistic is considered to be a generous test (Dziuban & Sharkey, 1974) and the Kaiser-Meyer-Olkin did not achieve the recommended level, results are interpreted cautiously.

Changes in Psychosocial Variables Over Time

Analysis of change over time was accomplished by examining stability coefficients between scores of the two testing periods for each of the psychosocial variables, as well as assessing changes in mean levels through both MANOVA and MANCOVA. These last two analyses included investigations of the effect of the demographic variables on the psychosocial indices.

Correlations. In order to assess the stability over time on the psychosocial measures, a series of Pearson product-moment correlations were computed to assess the degree of relationship between Time 1 and Time 2 on MUNSH, Extroversion, Lie, Neuroticism, Expectancy, Desire, Self-Perception and Activity for the sample of 85 subjects (See Table 5 for means and standard deviations of demographic and psychosocial variables and Table 6 for correlations between Time 1 and Time 2 psychosocial variables). High levels of stability were expected for the global personality dimensions of Extroversion and Neuroticism and moderate stability coefficients were expected for the other variables. The expected pattern was confirmed with all correlations emerging as significant at the $p<.05$ level after the Bonferroni correction procedure for multiple correlations was calculated. Correlation coefficients were of moderate levels, ranging from a low of $r = 0.30$ on Expectancy and a high of $r = 0.75$ on Extroversion.

Table 5

Means and Standard Deviations of Time 1 and Time 2 Demographic and Psychosocial Variables for Follow-up Sample of 85 Subjects

	Time 1	Time 2
Variable	Mean (S.D.)	Mean (S.D.)
Age	69.87 (4.23)	76.53 (4.40)
Education	12.85 (4.83)	13.11 (3.93)
Health Status	*	48.92 (14.83)
Well-Being (MUNSH)	29.17 (3.14)	27.91 (3.97)
Extroversion	10.37 (3.36)	9.82 (3.23)
Defensiveness (Lie)	4.52 (1.81)	5.07 (1.79)
Neuroticism	6.42 (4.02)	7.22 (4.09)
Expectancy (Locus of Control)	60.89 (4.45)	51.35 (8.47)
Desire (Locus of Control)	25.48 (2.54)	26.79 (2.59)
Self-Perception	47.72 (5.78)	45.16 (5.40)
Activity	69.48 (7.75)	71.40 (8.68)
Integrity	*	12.58 (2.28)

* Time 1 scores unavailable for Health Status and Integrity Measures

Table 6

Pearson Product Moment Correlations Between Time 1 and Time 2 Psychosocial Variables (N=85)

Variable	*r*
Happiness (MUNSH)	.41**
Extroversion	.75**
Defensiveness (Lie)	.61**
Neuroticism	.67**
Expectancy	.30*
Desire	.41**
Self-Perception	.47**
Activity	.45**

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

MANCOVA. In order to assess the degree of change in mean levels over time on the 8 psychosocial variables and the relation of these changes to the demographic variables, a 2(Sex) x 2(Marital Status) Repeated Measures Multivariate Analysis of Covariance (MANCOVA) with Education and Health Status as the covariates was computed. The independent variables consisted of two levels of Sex (Male, Female), two levels of Marital Status (Alone, Not Alone) and the dependent variables consisted of Time 1 and Time 2 psychosocial variables (MUNSH, Extroversion, Lie, Neuroticism, Expectancy, Desire, Self-Perception, Activity). See Summary table of MANCOVA results in Appendix A.2.

It was expected that Education would emerge as a significant covariate because of its relationship to MUNSH, Expectancy, Desire, and Self-Perception and that Health would emerge as a significant covariate because of its relationship to MUNSH, Neuroticism, Expectancy, Desire, and Self-Perception, however, these expectations were not confirmed. The dependent variables did not reach traditional levels of significance in their relationship to the covariates $F(16,142) = 1.59$, $p<.08$. To investigate more specifically the power of covariates to adjust the dependent variables, multiple regressions were run for each dependent variable in turn, with covariates acting as multiple predictors (See Appendix A.3). Education was found to significantly predict Extroversion, $t(79) = -2.81$, $p < .01$, while Health significantly predicted

Neuroticism, $t(79) = 2.14$, $p < .05$, and Self-Perception, $t(79) = -2.08$, $p < .05$.

The effects of Sex and Marital Status on the dependent variables after adjustment for Education and Health were investigated in multivariate analyses. Males were expected to have higher scores on Self-Perception than females. No sex differences were expected with regard to Desire and Neuroticism. No other hypotheses regarding the effect of Sex were made. Wilks Lambda criterion showed significant multivariate effects for Sex, $F(8,72) = 2.34$, $p<.05$, with univariate F tests showing that Sex had a significant effect on MUNSH, $F(1,79) = 4.81$, $p < .05$ and on Self-Perception, $F(1,79) = 9.94$, $p < .01$. Inspections of the variable means on Sex collapsed across Marital Status indicated that Males on both testing occasions had higher scores (M=29.14) than Females (M=27.68) on MUNSH, and that Males also displayed higher scores (M=47.92) than Females (M=44.58) on Self-Perception. As well, both Extroversion, $F(1,79) = 3.00$, $p < .09$ and Lie, $F(1,79) = 2.92$, $p < .10$ also approached significance suggesting that males may be more extroverted (M=10.60) than Females (M=9.43) and that Males have higher Lie scores (M=5.21) than Females (M=4.61).

It was expected that Marital Status would show significant differences with respect to well-being with Not Alone subjects scoring higher on the MUNSH than Alone subjects. Marital Status was not expected to show a relationship to

Desire, Expectancy, or Activity. Only the second set of these hypotheses were confirmed as Marital Status did not emerge as significant in the multivariate analyses, $F(8,72) = 1.72$, $p > .05$, however, univariate tests showed significance on Lie, $F(1,79) = 9.90$, $p < .01$ Means collapsed across Sex and Marital Status for Lie scores indicated that people living alone have higher Lie scores (M=5.50) than people who do not live alone (M=4.25).

The multivariate Sex x Marital Status interaction also was not significant $F(8,72) = 1.60$, $p > .05$, but univariate tests showed significance on both Lie, $F(1,79) = 4.64$, $p < .05$, and Activity, $F(1,79) = 4.47$, $p < .05$. The significant Sex x Marital Status interaction on Lie qualified the main effect of Marital Status on Lie, with Tukey tests indicating Males Living Alone having significantly higher Lie scores (M=6.27) than Males Not Living Alone (M=4.15) and Females Not Living Alone (M=4.35), but not having significantly higher Lie scores than Females Living Alone (M=4.87). Tukey tests on the means for the significant Sex x Marital Status interaction on Activity showed that Males Not Living Alone are significantly more active (M=73.31) than Males Living Alone (M=67.35), with no other significant differences found in the other two groups, Females Not Living Alone (M=68.85) and Females Living Alone (M=69.83).

With respect to changes in mean levels over time, significant increases were expected in Neuroticism and Lie, a

significant decrease was expected in Activity, and no significant differences were expected over time for the remaining variables. The analyses showed a different pattern of results. Wilks' Lambda criterion showed a significant multivariate effect of Time, $F(8,74) = 19.13$, $p<.001$, with significance emerging on the univariate tests on MUNSH, $F(1,81) = 7.07$, $p<.01$, Expectancy $F(1,81) = 88.37$, $p<.001$, Desire, $F(1,81) = 14.69$, $p<.001$, and Self-Perception, $F(1,81) = 12.85$, $p<.001$. Univariate analyses also indicated a trend on Lie, $F(1,81) = 3.90$, $p < .06$, Neuroticism, $F(1,81) = 3.77$, $p < .06$, and Activity, $F(1,81) = 3.75$, $p < .06$. Significant declines in scores over time were found for MUNSH from Time 1 (M=29.17) to Time 2 (M=27.91), for Expectancy from Time 1 (M=60.89) to Time 2 (M=51.35), and for Self-Perception from Time 1 (M=47.72) to Time 2 (M=45.16), while Desire scores significantly increased from Time 1 (M=25.48) to Time 2 (M=26.79). The analyses also showed trends ($p < .06$) that Lie scores increased from Time 1 (M=4.52) to Time 2 (M=5.07), that Neuroticism scores increased from Time 1 (M=6.42) to Time 2 (M=7.22) and that Activity scores increased from Time 1 (M=69.48) to Time 2 (M=71.40), while Extroversion did not show significant change over time.

Multivariate Analyses showed a trend for the Marital Status x Time interaction $F(8,74) = 2.03$, $p<.06$, with univariate analyses indicating significance on Activity, $F(1,81) = 5.13$ $p<.03$. Tukey tests on the means collapsed

across Sex indicated that people living alone at Time 2 had lower Time 1 Activity scores (M=66.40) than people not living alone at Time 1 (M=71.26) and lower scores than people living alone at Time 2 (M=70.78) or not living alone at Time 2 (M=70.91). Multivariate and univariate tests on the Sex x Time as well as on the Sex x Marital Status x Time interactions showed no significant differences.

To summarize the findings on the MANCOVA, the covariates, Education and Health Status, only approached significance in their effect on the dependent variables, however, regression analyses showed that Education had a significant effect on Extroversion, while Health Status had a significant effect on Neuroticism and Self-Perception. Analyses also indicated that males had significantly higher scores than females on both MUNSH and Self-Perception. Trends also emerged suggesting that males tended to have higher scores on Extroversion and Lie.

Neither Marital Status nor the Sex x Marital Status interaction were significant variables in the multivariate analyses, however, Lie and Marital Status were significant variables in the univariate analyses with Alone subjects having higher Lie scores than Not Alone subjects. This effect was further qualified by the Sex x Marital Status effect on Lie, in which males who live alone had the highest Lie scores. A significant Sex x Marital Status interaction also emerged on Activity with Males Not Living Alone having higher Activity

scores than Males Living Alone.

Over time, significant declines were found on MUNSH, Expectancy, and Self-Perception, while Desire scores increased. Trends also emerged showing increases in Lie, Neuroticism, and Activity scores over time. The Marital Status x Time interaction aproached significance qualifying the main effect on Activity, pointing to a tendency for an increase in Activity over time only for males who were living alone on Time 1.

Multiple Regressions on MUNSH

To address the question of which demographic and psychosocial variables predict well-being, two direct entry staged multiple regressions were performed entering independent variables in the following order: four demographic variables (Sex, Age, Education, Marital Status) first for the Time 1 variables and five demographic variables (Sex, Age, Education, Marital Status, Health Status) for the Time 2 variables, followed by the remaining seven psychosocial variables (Extroversion, Lie, Neuroticism, Expectancy, Desire, Self-Perception, Activity) with MUNSH as the dependent variable. It was expected that Marital Status, Education, Health Status, Extroversion, Neuroticism, Lie, Desire, Expectancy, Activity, and Self-Perception would emerge as significant predictors of MUNSH.

The first multiple regression utilized Time 1 independent variables to predict Time 1 MUNSH (See Table 7). R^2 did not emerge as significantly different from 0 after entry of the four Time 1 demographic variables on step 1, R = .33, R^2 =.11, $F(4,80)$ =2.39, p=.06. After step 2, with entry of the seven Time 1 psychosocial variables, R was found to be significantly different from 0, R =.61, and R^2 =.37, $F(11,73)$=3.83, p<.01, and F change (7,73) =4.06, p<.001, which showed that the addition of the Time 1 psychosocial variables resulted in a significant increase in R^2 (26%). Only one Time 1 psychosocial variable (Neuroticism) made a significant contribution to the regression equation (Neuroticism, sr^2 = .014, p<.05). These analyses indicate that the only significant independent contribution to Time 1 MUNSH scores was Neuroticism, which correlated negatively with MUNSH (r =-.35).

A second staged multiple regression was computed with Time 2 independent variables to predict Time 2 MUNSH (See Table 8). R^2 did not emerge as significantly different from 0 after entry of the five Time 2 demographic variables on step 1, R=.33, R^2 =.11, $F(5,79)$ = 1.91, p.=.10. After step 2, with the entry of seven Time 2 psychosocial variables, R was found to be significantly different from 0, R =.59, R^2 =.35, $F(12,72)$ =3.24, p<.01,and F change (7,72) = 3.85, p< .001, which showed that the addition of Time 2 psychosocial variables resulted in a significant increase in R^2 (24%). Only one Time 2 psychosocial variable (Activity) made a significant in-

Table 7

Correlations Between Variables and MUNSH and Regression Summary Table After the Last Step with Time 1 Variables Predicting Time 1 MUNSH

Step	R	R^2	R^2 change	F change	Variable	r	sr^2
					Sex	-.26	.001
					Age	-.14	.002
					Education	.21	.003
					Marital Status	-.23	.001
1	.33	.11	.11	2.39			
					Extro-version	.12	.005
					Lie	.20	.006
					Neuroticism	-.35*	.014*
					Expectancy	.34*	.002
					Desire	.27	.004
					Self-Perception	.46*	.006
					Activity	.29	.004
2	.61	.37	.26	4.27***			

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

Table 8

Correlations Between Variables and MUNSH and Regression Summary Table After the Last Step with Time 2 Variables Predicting Time 2 MUNSH

Step	R	R^2	R^2 change	F change	Variable	r	sr^2
					Sex	-.23	.010
					Age	-.10	.001
					Education	.10	.001
					Marital Status	-.24	.020
					Health Status	-.17	.012
1	.33	.11	.11	1.91			
					Extro-version	-.02	.005
					Lie	.02	.001
					Neuroticism	-.13	.003
					Expectancy	.16	.028
					Desire	.01	.001
					Self-Perception	.31*	.011
					Activity	.46*	.143**
2	.59	.35	.26	3.85**			

*p <.05
**p <.01

dependent contribution to the regression equation (Activity, sr^2 = .143, p<.001). Expectancy also approached significance (sr^2 = .028, p=.08) in its contribution to the equation. These analyses indicate that on Time 2 the only significant contribution to the equation was added by the Activity variable while Expectancy approached significance in its contribution. Both Activity (r = .46) and Expectancy (r = .16) correlated positively with MUNSH. To summarize, demographic variables did not significantly predict MUNSH scores on either testing occasion while psychosocial variables did. On Time 1, Neuroticism emerged as the only significant independent predictor of MUNSH while on Time 2, MUNSH was predicted by Activity, and to a lesser degree by Expectancy.

The emergence of so few significant predictors of MUNSH when so many were hypothesized may not be surprising since many of the predictions made were based on the literature reporting only bivariate correlations between the predictors and well-being measures. The bivariate correlations and squared semi-partial correlations between the Time 1 variables and Time 1 MUNSH are shown in Table 7. From Table 7 it can be seen that all the hypothesized Time 1 predictor variables except for Time 1 Age, Education, and Extroversion showed significant correlations (r>.21) with Time 1 MUNSH, which show a similar pattern as demonstrated in much of the literature. However, the number of significant variables reduced to three, Neuroticism, Expectancy, and Self-Perception, when the Bonfer-

roni correction procedure is applied, while the only variable contributing significantly to the regression equation was Neuroticism. A different pattern of results emerged for Time 2 MUNSH (See Table 8), which indicates that the pattern of predictors of MUNSH has changed over the two testing periods. At Time 2, only Sex, Marital Status, Self-Perception, and Activity show significant bivariate correlations with Time 2 MUNSH. This number is reduced to two variables, Self-Perception and Activity, when the Bonferroni correction procedure is applied, with Activity being the only variable which significantly contributed to the regression equation.

Multiple Regressions on Residualized MUNSH scores

In order to assess which demographic and psychosocial variables might predict changes in MUNSH over time, the technique of residual change analysis was used. Time 2 MUNSH scores were used as the dependent variable and Time 1 MUNSH scores were entered as the first independent variable. This has the effect of controlling for the initial level of well-being and leaving only the residual change to be explained by the other variables. This technique is preferable to raw change score analysis because it helps control for the problem of regression to the mean and compounding measurement error, and because residual change is uncorrelated with initial scores (Cronbach & Furby, 1970).

It was expected that Time 1 MUNSH would be the greatest predictor of Time 2 MUNSH, contributing anywhere from 16% to 50% of the variance in Time 2 MUNSH. Time 1 MUNSH scores were entered first in the multiple regression equation and were found to contribute 16.8 percent of the variance in Time 2 MUNSH scores. A direct entry staged multiple regression analysis was then performed using Time 2 Residualized MUNSH scores as the dependent variable. Four Time 1 demographic variables (Sex, Age, Education, Marital Status) were entered first, followed by seven Time 1 psychosocial variables (Extroversion, Lie, Neuroticism, Expectancy, Desire, Self-Perception, Activity) (See Table 9). It was expected that none of these predictor variables would emerge as significant predictors of the residualized MUNSH scores. The multiple correlation (R) did not emerge significantly different from 0 after step 1 entry of the Time 1 demographic variables, R= .16, R^2 = .03, $F(4,80)$ =.54, p=.74. After the entry of Time 1 psychosocial variables in step 2, R once again did not significantly differ from 0, R= .37, R^2 =.14, $F(11,73)$ =1.35 p=.40.

A second direct entry staged multiple regression using residualized MUNSH scores as the dependent variable was performed using Time 2 demographic and psychosocial variables. On step 1, Time 2 demographic variables were entered (Sex, Age, Education, Marital Status, Health Status) followed by Time 2 psychosocial variables (Extroversion, Lie, Neuroticism,

Table 9

Correlations Between Variables and Residualized MUNSH and Regression Summary Table After the Last Step with Time 1 Variables Predicting Residualized MUNSH

Step	R	R^2	R^2 change	F change	Variable	r	sr^2
					Sex	-.13	.014
					Age	-.07	.001
					Education	-.06	.005
					Marital Status	-.14	.004
1	.16	.03	.03	.54			
					Extro-version	-.09	.032
					Lie	-.19	.047
					Neuroticism	.05	.005
					Expectancy	.03	.002
					Desire	.08	.032
					Self-Perception	.19	.033
					Activity	.14	.010
2	.37	.14	.11	1.35			

Expectancy, Desire, Self-Perception, Activity) (See Table 10). After entry of the Time 2 demographic variables on step 1, R did not emerge as significantly different from 0, $R = .26$, $R^2 = .07$, $F(5,79)=1.14$, $p.=.34$. After step 2, with the entry of the Time 2 psychosocial variables, R did emerge significantly different from 0, $R = .55$, $R^2 = .30$, $F(12,72) = 2.54$, $p.<.01$ and F change $(7,72) = 3.37$, $p.<.01$, which showed that the addition of the Time 2 psychosocial variables resulted in a significant increase in R^2 (23%). Both Activity ($r = .39$, $sr^2 = .114$, $p< .001$) and Expectancy ($r = .19$, $sr^2 = .042$, $p<.05$) contributed significantly to the dependent variable.

The findings on the residualized Time 2 MUNSH scores indicate that the greatest predictor of Time 2 MUNSH is Time 1 MUNSH. As well, neither demographic nor psychosocial Time 1 variables nor Time 2 demographic variables significantly contributed to MUNSH 2 scores after the contribution of Time 1 MUNSH scores have been partialled out, while Time 2 psychosocial variables did. Time 2 Activity and Time 2 Expectancy emerged as the only independent variables to significantly predict residualized MUNSH scores.

Preliminary Analyses on Integrity Measure

Two preliminary analyses were performed on the Integrity measure: Cronbach alpha was computed in order to assess the

Table 10

Correlations Between Variables and Residualized MUNSH and Regression Summary Table After the Last Step with Time 2 Variables Predicting Residualized MUNSH

Step	R	R^2	R^2 change	F change	Variable	r	sr^2
					Sex	-.13	.004
					Age	-.04	.007
					Education	.02	.015
					Marital Status	-.19	.022
					Health Status	-.15	.017
1	.26	.07	.07	1.14			
					Extro-version	-.07	.022
					Lie	.03	.006
					Neuroticism	-.02	.002
					Expectancy	.19	.042*
					Desire	-.01	.010
					Self-Perception	.28*	.017
					Activity	.39**	.114**
2	.55	.30	.23	3.37**			

*p <.05
**p <.01

reliability of the Integrity measure, and Factor Analysis was done in order to determine the nature of the construct of Integrity. Both of these analyses were computed on the entire Time 2 sample of 243 subjects. The Cronbach coefficient was 0.72, which shows the Integrity measure to have an acceptable level of inter-item reliability.

In order to determine to what extent the Integrity measure structurally resembles MUNSH and Self-Perception, a factor analysis was conducted using 43 test items consisting of 24 items on Time 2 MUNSH, seven items on Time 2 Self-Perception and 16 items on the Time 2 Integrity Scale on the entire Time 2 subject sample. It was expected that at least two factors would emerge from this analysis, one related to life-satisfaction and the other related to fulfillment. An initial principal components analysis extracted 10 factors with eigen values greater than 1.5, which accounted for a total of 58.1 percent of the variance. In order to facilitate interpretation of the factors, a two factor solution was forced, and together these two factors accounted for 19.6 percent of the variance.

The items loading on the two factors at greater than 0.30 after Varimax rotation are indicated in Table 11. Oblique rotation was also attempted, but since the resulting factor correlation matrix yielded a correlation which was less than 0.30 (r=.11), Varimax rotation was chosen as the preferred analysis (Tabachnick & Fidell, 1983). Factor 1, which ac-

Table 11

Factor Loadings in Factor Analysis of all items on Integrity, MUNSH, & Self-Perception Scales

Factor 1 - Life Satisfaction

1. I am just as happy as when I was younger. (MUNSH) (.68)
2. Most of the things I do are boring or monotonous. (MUNSH) (-.64)
3. I am as happy now as when I was younger. (MUNSH) (.62)
4. Generally satisfied with the way your life has turned out? (.61) (MUNSH)
5. This is the dreariest time of my life. (MUNSH) (-.61)
6. Are you satisfied with your life today? (MUNSH) (.58)
7. Particularly content with your life? (MUNSH) (.52)
8. Depressed or very unhappy? (MUNSH) (-.50)
9. The things I do are as interesting to me as they ever were. (MUNSH) (.50)
10. I sometimes I feel like life is not worth living. (MUNSH) (-.49)
11. Do you feel lonely? (MUNSH) (-.46)
12. Very lonely or remote from other people? (MUNSH) (-.40)
13. As I look back on my life, I am fairly well satisfied. (MUNSH) (.38)
14. In high spirits? (MUNSH) (.37)
15. I live where I want to live. (MUNSH) (.36)
16. Things are getting worse as I get older. (MUNSH) (-.35)
17. Bored? (MUNSH) (-.34)
18. Bitter about the way your life has turned out? (MUNSH) (-.34)
19. On top of the world? (MUNSH) (.32)

Factor 2 - Bitterness/Absence of Fulfillment

1. Things are getting worse as I get older. (MUNSH) (-.65)
2. If I had had just a couple more lucky breaks, my life would have turned out much differently. (Integrity) (.60)
3. Bitter about the way your life has turned out? (MUNSH) (-.53)
4. Flustered because you didn't know what was expected of you? (MUNSH) (-.48)
5. I still feel angry about certain of my childhood experiences. (Integrity) (.46)
6. Life is hard for me most of the time. (MUNSH) (-.44)
7. I often wish I had been born during a different period of history. (Integrity) (.42)
8. There are many people whose life I would prefer to my own. (Integrity) (.39)

9. Perceive self as wealthy in financial situation. (Self-Perception) (.35)
10. There are some disappointments in life I will never be able to accept. (Integrity) (.34)
11. I wish my life were just beginning so I can avoid many of the mistakes I made earlier in my life. (Integrity) (.32)
12. This is the dreariest time in my life. (MUNSH) (-.32)
13. Perceives self as healthy. (Self-Perception) (.30)

counts for 13.8 percent of the variance, contains 19 items all of which are from the MUNSH. High factor loadings on items such as "I am just as happy as when I was younger" and "Generally satisfied with the way your life has turned out?", as well as the fact that all items on this factor originate from the MUNSH indicate that this factor can be termed a general Life Satisfaction factor. Factor 2, which accounts for 5.8 per cent of the variance, contains 13 items including 5 MUNSH items, 6 Integrity items, and 2 items from from the Self-Perception scale. High factor loadings with items such as "Things are getting worse as I get older" and "If I had had just a couple more lucky breaks, my life would have turned out much differently" indicates that this factor can be termed Bitterness or Absence of Fulfillment. The Factor Analysis indicates that the Integrity, MUNSH, and Self-Perception measures have heterogeneous structures, and that they appear to be related but structurally different from one another.

Regressions on Integrity

In order to determine which demographic and psychosocial variables are related to the measure of Integrity, two direct entry staged multiple regressions were performed, one using Time 1 variables, assessing long term earlier predictors of Integrity, and the second using Time 2 variables, assessing concurrent contributions to Integrity. In the first regres-

sion analysis four Time 1 demographic variables (Sex, Age, Education, Marital Status) were entered first into the regression equation followed by the eight Time 1 psychosocial variables MUNSH, Extroversion, Lie, Neuroticism, Expectancy, Desire, Self-Perception, Activity) (See Table 12). No hypotheses were offered regarding the long term predictors of Integrity. After entry of the four Time 1 demographic variables on step 1, R emerged as significantly different from 0, R=.35, R_2 = .12, $F(4,80)$= 2.80, p<.05. Time 1 Education was found to be the only independent variable that significantly contributed to the equation, r = .31, sr_2 = .062, p<.05. After step 2, with entry of the eight Time 1 psychosocial variables, R once again emerged as significantly different from 0, R=.56,

R_2 = .43, $F(12,72)$=2,72, p<.01 and F change (8,72) =2.50, p<.05, which showed that the addition of the time 1 psychosocial variables resulted in a significant increase in R_2 (31%). Only one psychosocial variable (MUNSH) contributed significantly to the equation, r = .42, sr_2 =.06, p<05, while Education approached significance after the last step in the analysis, sr_2 = ,031, p = .08. This analysis indicated that both Education and MUNSH significantly predicted later Integrity scores.

A second regression analysis was computed on Integrity using five Time 2 demographic variables (Sex, Age, Education, Marital Status, Health Status) on step 1, followed by eight

Table 12

Correlations Between Variables and Integrity and Regression Summary Table After the Last Step with Time 1 Variables Predicting Integrity

Step	R	R^2	R^2 change	F change	Variable	r	sr^2
					Sex	-.05	.012
					Age	-.16	.002
					Education	-.31**	.031
					Marital Status	-.21	.001
1	.35	.12	.12	2.80*			
					MUNSH	.42***	.065*
					Extro-version	.02	.001
					Lie	-.03	.001
					Neuroticism	-.25*	.003
					Expectancy	.25*	.004
					Desire	-.01	.010
					Self-Perception	.36***	.025
					Activity	.14	.010
2	.56	.31	.19	2.72**			

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

Time 2 psychosocial variables (MUNSH, Extroversion, Lie, Neuroticism, Expectancy, Desire, Self-Perception, Activity) on step 2 (See Table 13). It was expected that high Education, high MUNSH, high Self-Perception, high Lie, and low Neuroticism scores would predict high levels of Integrity. After step 1, R did not differ significantly from 0, $\underline{R}$ = .32, R_2 = .10, $\underline{F}(5,79)$ = 1.77, $\underline{p}$ =.13. After step 2, with the inclusion of Time 2 psychosocial variables, R was found to differ significantly from 0, $\underline{R}$ = .5, R_2 = .32, $\underline{F}(13,71)$ = 2.52, $\underline{p}<.01$ and $\underline{F}$ change (9,71) = 2.79, $\underline{p}<.01$, which showed that the addition of Time 2 psychosocial variables resulted in a significant increase in R_2 (22%). Four Time 2 variables significantly contributed to the regression equation, Age ($\underline{r}$ = -.19, sr_2 = .043, $\underline{p}$. <.05), Education ($\underline{r}$ = .26, sr_2 =.068, $\underline{p}$ < .01), MUNSH ($\underline{r}$ = .30, sr_2 = .038, $\underline{p}$.<.05), and Self-Perception, ($\underline{r}$ = .32, sr_2 =.066, $\underline{p}<.01$).

In summary, the results of the regressions for Integrity indicate that Education is a significant predictor of Integrity, with higher levels of Education predicting higher levels of Integrity at both testing periods. As well, high MUNSH scores also significantly predicted high levels of Integrity. On Time 2, high Self-Perception scores emerged as a stronger predictor of Integrity than MUNSH scores, and Age also showed significance with older subjects showing lower levels of Integrity than younger subjects.

Table 13

Correlations Between Variables and Integrity and Regression Summary Table After the Last Step with Time 2 Variables Predicting Integrity

Step	R	R^2	R^2 change	F change	Variable	r	sr^2
					Sex	-.05	.021
					Age	-.19	.043*
					Education	.26*	.068**
					Marital Status	-.11	.001
					Health Status	-.07	.013
1	.32	.10	.10	1.77			
					MUNSH	.30**	.038*
					Extro-version	.07	.034
					Lie	-.07	.003
					Neuroticism	-.22*	.051
					Expectancy	.05	.002
					Desire	-.05	.001
					Self-Perception	.32**	.066**
					Activity	.15	.003
2	.56	.32	.22	2.79**			

*p <.05
**p <.01

Discussion

There were several objectives of this study. First, the study consisted of a follow-up of elderly participants now entering their second subphase of old age (old-old age) with an average age of 76 years. The major interest of this study was to determine what changes, if any, had transpired regarding various personality dimensions and psychosocial aspects of their functioning over a six and a half year test-retest interval. Second, the study investigated subjective well-being with an exploration of which personality and psychosocial variables predict changes in happiness in old age. A third interest of this study was the concurrent and earlier long term predictors of ego integrity. A further question was posed regarding a better understanding of the nature of ego integrity, that is, whether the achievement of integrity is structurally different from the attainment of well-being or the positive perception of the self.

Changes in Psychosocial Functioning

The major findings of this study show that there are significant declines in several areas of psychosocial functioning for this group of elders as they enter the phase of old-old age. Nevertheless, the personality and psychosocial variables all achieved moderate to high levels of stability over time,

indicating that the rank order of individuals remained relatively the same over the two testing periods.

The psychosocial variables that were tested on both occasions were extroversion, neuroticism, defensiveness, well-being, desired reinforcers and expectancy in locus of control, activity, and self-perception. No significant change over the two testing periods was expected for extroversion, well-being, and self-perception, while no hypotheses were put forward regarding desired reinforcers and expectancy in locus of control. The hypothesis for extroversion was confirmed which showed no change. This finding, along with its high stability correlations, demonstrates that it is a very stable personality trait as has been indicated in the literature. With respect to locus of control, over time the participants in this study appeared to experience an increased desire for reinforcers in their environment, although they perceived themselves as having less internal control over them. These findings would suggest a rather frustrating state of affairs, which is reflected in decreased levels of well-being and lower evaluation of themselves in various domains of functioning over time. As expected, there appears to be a tendency toward an increase in neuroticism and defensiveness over time. The increase in neuroticism confirms findings (e.g Himmelfarb, 1984; Kessler, Foster, Webster, & House, 1992; Schneidman, 1989) which show that neuroticism increases after the age of seventy-five years. Schneidman hypothesizes that an increase

in neuroticism is tied to a decline in health at this point of the life cycle. Health status was found to have a significant relationship to neuroticism in this study as well. It is not clear why defensiveness increases with age, except that perhaps adaptive survivorship into late age requires increasing levels of construing oneself in a positive light.

In contrast to the expected decline in activity levels over the two testing periods, overall activity was actually found to increase over time. A closer inspection of the frequencies on the various items on the activity list, however, shows that increases in activity occurred in more passive pursuits. For example, the greatest increases in activity over time occurred in items, "sit and think", "meditation/worship", and "napping". Most physical activities, such as walking, gardening, and sports appear to have decreased over time, as had several social activities, such as visiting family and friends. It would appear that the particular activity checklist used here may falsely attribute increases in energy output where in fact it would appear a general decline in energy may exist. A more sensitive measure of energy output may be needed in the future as part of this measure. Such work is underway with the calculation of subscales indicating weighted energy in terms of both social and intellectual activity. Defined in this way, further calculations have shown no increases in both social and intellectual activity for these subjects over the two time periods.

Unfortunately, to date, no such subscale has been created for physical activity.

It is important to point out that although these results indicate declines in functioning, this does not mean that the participants in this study are aging unsuccessfully. In fact, the subject sample consists of an ambulatory, healthy and active group of individuals, well enough to agree to be retested at follow up and to undergo several hours of assessment. Furthermore, analyses of attrition of the subjects between the two testing periods showed that these 85 follow-up subjects were more robust with respect to psychosocial functioning than those who did not continue, which also suggests that they are a healthy, well adjusted group of individuals.

The findings of this study are in line with other longitudinal studies (Cooney, Schaie, & Willis, 1988; Markides & Lee, 1990; Shanan, 1991) which have analyzed subject attrition and have found dropouts to be older, less intelligent, and less physically and psychologically healthy. Personality and psychological differences emerge particularly with dropouts who fail to continue due to biological reasons rather than for personal reasons (Cooney et al, 1988; Norris, 1985). The attrition rate in this study is quite high, about seventy-five percent, which deserves mention since it is somewhat higher than in other longitudinal studies in the literature which generally show attrition rates of fifty or sixty percent (e.g. Shanan, 1991). The high attrition rate observed here may be

due to the older age of the sample, but could also be caused by the fact that participants were not originally informed that there would be a follow-up study, since at the time of the first study no such study was proposed. As well, the proportion of male subjects in the original sample, which is high as compared to many studies on the elderly, may have contributed to higher rates of mortality and consequently to attrition since males die younger than females. The findings of this study must be interpreted in the light of the fact that high attrition rates tend to produce high rates of stability (Finn, 1986).

Rowe and Kahn (1987) in their paper on successful aging asked researchers to distinguish between what is the usual or expected pattern of aging and what is successful aging. They define successful aging as a pattern of both relatively good physical and psychological health. If we assume that the subjects of this sample, for the most part, are aging successfully, it would appear from the results of this study that a decline in various areas of functioning is to be expected when one reaches the age of about 75 years, even when aging occurs in a successful or healthy manner. Significant departures from this pattern would possibly be indicative of unsuccessful aging.

Regarding the three possible outcomes of change in personality and psychosocial functioning based on three theoretical positions, that is, decline, development, or continuity,

the high stability levels in the pattern of these results indicate that the continuity position taken in this paper has been upheld. These findings therefore lend further support to trait theory (e.g. Costa & McCrae, 1989) which views the personality as a collection of enduring dispositions and characteristic ways of feeling, thinking, and acting which extend even into late age. On average, this group exhibited slight declines in psychosocial functioning which probably reflect the expected decline in health and increased role losses at this period of life. However, as indicated by the attrition analysis, the participants in this study represent a highly adapted and well functioning sector of the elderly. For this reason these findings may be generalized only to a successfully aging population.

The Role of Demographic Variables

This study also explored the objective demographic variables of gender, education, marital status and health status for their effect on the above personality and social variables and the change in these variables over time. Because of the many contradictory findings in the literature, the only expectations regarding gender were that no sex differences would emerge for desired reinforcers in control and well-being and that males would demonstrate more positive self-perceptions than females. The hypotheses were partially confirmed. No sex

diferences were found in desired reinforcers, however, significant gender differences were found with respect to well-being and self-perception. When scores were adjusted for education and health status, male subjects showed higher levels of well-being and perceived themselves in a more positive light than the female subjects. These findings follow the general trend in the literature which shows that when sex differences are found in these two areas, men fare better than women, which is probably due to the lower value attributed to the female sex in the process of socialization.

With respect to marital status, it was expected that subjects who were not alone would be happier than participants who are alone. Marital status was expected to show no relationships to the locus of control variables or to activity level. These hypotheses were partially confirmed. Marital status showed no significant effect on desired reinforcers in locus of control but also showed no significant relationship to happiness. Marital status also interacted with gender to show a relationship to activity level, and also showed an unexpected relationship to defensiveness. These fndings should be interpreted cautiously, however, since they are based on the exploration of significant univariate results when multivariate significance was not found.

It is not known why the expected relationship of marital status with well-being was not found in this study, however, it may be due to the particular measure used for marital

status. As mentioned earlier, the marital status measure in this study is not a pure measure of marital state, but involves more of a combination of various marital arrangements (e.g. living alone might mean that an individual could be single, widowed, or divorced). Therefore, expectations based on prior research may not apply here.

Participants who live alone were found to be more defensive than those who do not live alone. The effect of marital status on defensiveness was further clarified by the univariate analyses which showed that it is the males who live alone who have the highest defensiveness ratings. Some speculations regarding this finding may include possibilities that individuals, particularly males, who are defensive may be more likely to remain single throughout their lives, or perhaps that those individuals who underwent a significant loss of spouse and have not remarried have now been forced to become somewhat emotionally defended against that pain. To date there appear to be no studies exploring these relationships in the literature.

The gender x marital status interaction did not show significance on the multivariate analyses. However, univariate analyses indicated an effect on activity showing males who do not live alone to be more active than males living alone. This finding suggests that the activity level of older males may be affected by their spouses, while the activity level of older women may not. The marital status x time interaction

also approached significance which suggested that those individuals who were living alone at the second testing period tended to increase their levels of activity, albeit more passive ones in nature, over time to reach the same levels of activity as those who were not living alone.

Contrary to expectations, both education and health status only showed a trend toward significant relationships to the psychosocial variables. Multiple regression analyses, however, showed that higher education was related to lower levels of extroversion. This finding makes intuitive sense since it may be expected that individuals who are drawn to internal activities, such as reading and studying, may be likely to continue their educational pursuits. The failure of the expected relationship between education and well-being, locus of control and self-perception may reflect the possibility that the effect of education found in other studies on these variables may be confounded by gender. Other analyses which were not reported here showed that although education did not show a direct effect on well-being and self-perception, it appeared to have an indirect effect on these variables through gender, since the gender differences on these variables emerged to a lesser degree when education was not taken into consideration. A breakdown of education level for males and females in this study indicates that males have had an average of fourteen years of education and females, an average of twelve years. Both of these values are quite high for members of this par-

ticular cohort where educational opportunities were not widely available, especially for women. These findings may suggest that education has had a beneficial effect for women in this sample with regard to narrowing the gender difference in self-concept and well-being between the sexes.

Multiple regression analyses on health status showed that, as expected, higher neuroticism and poorer self-perception were related to poorer health status. The relationship of neuroticism to the reporting of physical symptoms is well documented in the literature. It is interesting to note that health status was found to predict self-perception but not well-being. This finding suggests that for individuals who are relatively healthy, their symptoms can affect their perception of themselves and their surroundings to a greater degree than the assessment of their general well-being. In this sense, the self-perception measure may be more sensitive to changes in physical health
than the well-being measure. This sensitivity, however, is partially due to the content of one of the items which assessed self-perception of physical health.

The lack of a relationship between health and locus of control suggests that the usual relationship found between these two variables may be unidirectional, that is, that an internal locus of control predicts good physical health, but that good health does not predict an internal locus of control. A future test of this notion would require the

assessment of health over time which could show whether changes in health produce changes in locus of control. Finally, the lack of relationship between health and activity may be due to the relatively good health of the sample.

Predictors of Well-Being

This study also explored the demographic and psychosocial contributions to two important aspects of aging: well-being and ego integrity. Since well-being was included at both testing phases, it was possible to assess the contributions to well-being at each testing period. It was expected that education, extroversion, neuroticism, an internal locus of control in desire and expectancy, activity level, and self-perception would contribute to well-being. At the first testing period, the only significant predictor of well-being was neuroticism and at the second testing period, the only significant predictor of well-being was activity level. At Time 2, there was a tendency towards a relationship between an internal expectancy on locus of control and well-being as well.

The fact that only a relatively few number of the hypotheses of this study were confirmed is probably due to the fact that most of these predictions were based on studies which used bivariate correlations between one predictor and well-being. Regression analyses tend to produce a reduced number of significant relationships, since regression coeffi-

cients represent the independent effect of each predictor with all other predictors held constant. For this reason and since many of the predictor variables were intercorrelated, only a selection of the above variables emerged as signficant predictors of well-being in this study. A survey of the bivariate correlations that emerged in this study showed several significant relationships to well-being which reflected more closely the findings of previous studies.

The findings regarding predictors of Time 1 well-being corroborate those that have appeared previously in the literature (Costa & McCrae, 1980a; Costa, McCrae, & Norris, 1981; McCrae & Costa, 1983a) which show that neuroticism is related to the negative pole of life satisfaction. The importance of activity to well-being at the second testing period gives support for the activity theory of aging which suggests remaining active, even passively active, contributes to one's psychological well-being in old age. The tendency toward a relationship between well-being and an internal expectancy in locus of control supports the conclusions in the literature pointing to the importance of maintaining a sense of mastery over one's life in old age.

These findings are interesting in that they show that although well-being is a moderately stable psychosocial dimension, there appear to be differences in the variables that contribute to the achievement of well-being at the two testing periods. The correlation and regression analyses sug-

gest that in the earlier phase of aging, well-being is best predicted by the predisposition to not dwell on the negative side of life. Perhaps in their sixties, it is those individuals who are easily distressed who are more likely to not be happy. The pattern appears to change in the second subphase of aging where happiness is better predicted by the maintenance of an active stance towards the environment both in actual engagement in activities and to a lesser degree in the belief that one still has control over one's life. From these results, one may speculate that activity theory may be especially salient in the latter years of life and that although the activity measure indicated a predominance of largely passive pursuits, a certain degree of engagement in life may be necessary for well-being in the period of old-old age.

The pattern of passive activities found here reflects those in other studies. For example, one study (Baltes, Wahl, & Scmid-Furstoss, 1990) based on detailed diary entries describing the activities of seniors found that, despite the fact that the elderly are no longer employed nor care for their young, they spend sixty percent of their time in obligatory activities, such as self-care and shopping. This finding suggests that the elderly engage in basic activities at a slow pace and may not be as productive as the young while continuing to remain active.

The engagement in passive pursuits in the elderly may

possibly reflect a process of accommodation, a Piagetian style of adaptation suggested by Brandtstadter, Wentura, and Greve (1993) where seniors deal with the constraints of old age by downgrading performance expectations in overtaxing demands and involving themselves in activities in areas of competence that are not subject to age related decline. This style of coping contrasts with the complementary process of assimilation, where the individual attempts to change the situation or environment to suit one's needs and aspirations, a process which can frustrate the older person who may experience situations involving loss or constraint which are not amenable to change. Although Brandtstadter et al's hypothesis may be highly reminiscent of activity theory, the emphasis is on cognitive processes over behaviors, including cognitive strategies such as looking for the positive elements in aversive events and devaluation of blocked goals. The results of the present study indicate that seniors entering the phase of old-old age are actively engaged in passive pursuits which contributes to a sense of well-being. Future research may elucidate these findings through a more careful analysis of the cognitive processes involving goal adjustment which allows the older individual to continue to feel competent and engaged in life by means of passive pusuits.

A further test of the continuity position of this paper was conducted on the changes in well-being through the use of residual change analysis. It was expected that the greatest

contribution to subjects' changes in well-being over the two testing periods would be their well-being at the first testing period. This hypothesis was confirmed with Time 1 well-being levels contributing to 16.8% of the variance on Time 2 well-being levels. The remaining Time 1 demographic and psychosocial variables did not show a significant contribution to changes in well-being over time, but Time 2 activity expectancy levels did. The relationship of activity to well-being which also was apparent in the regression analysis using Time 2 well-being further confirms the impact of activity level on the well-being of elders in this study and lends further support to activity theory. As well, the relationship of expectancy to residualized well-being also confirms theories which point to the salience of an internal locus of control to the maintenance of well-being in late life.

These findings also add support to the propensity model of happiness as proposed by Stones and Kozma (1989) which posits that happiness or well-being represents a global predisposition to experience life in a positive way. The amount of variance in late life well-being accounted for by earlier well-being in this study is at the lower end of the percentage values reported in the literature, but is in line with studies that span longer periods of time between testings. These findings indicate that with time, changes do occur in well-being as demonstrated in the earlier analyses, yet well-being also remains relatively stable and largely de-

pendent on earlier subjective well-being. However, it should also be noted that since the range of well-being scores in this study is rather limited, these findings should be generalized only to that portion of the elderly population who enjoy a fairly positive sense of well-being.

Predictors of Integrity

The ego integrity measure was administered only during the second wave of the study, consequently analyses were restricted to the analysis of concurrent and earlier contributions of this variable at the second testing period. It was expected that education, well-being, self-perception defensiveness, and neuroticism would contribute significantly to the achievement of integrity. It was also expected that gender would not emerge as a significant predictor of integrity. These hypotheses were restricted to the relationship of Time 2 variables to integrity, since no previous study has assessed long term predictors of integrity from a period several years earlier.

Education showed a significant contribution to integrity at both testing periods indicating that individuals who have achieved higher levels of education are more likely to achieve a meaningful integration of their lives. In addition, earlier levels of well-being predicted the achievement of integrity six and a half years later. Concurrently, both well-being and

self-perception emerged as significant contributors to integrity. At Time 2, those individuals who were older tended to show lower levels of integrity, and, as expected, there were no sex differences.

The relationship demonstrated in this study between education and ego integrity has been demonstrated previously in the literature (Boylin et al 1976). The fact that education predicted integrity at each testing period suggests that this relationship is a fairly stable one. It is not clear why this relationship appeared, but perhaps individuals who have had the benefit of higher levels of education may have more cognitive resources to take a philosophical outlook toward the meaning of life. Since Erikson related the achievement of integrity to the acquisition of the quality of wisdom, one might also expect that greater knowledge may be a component of that particular attribute.

Since education is also a socioeconomic indicator, it is possible that its contribution to integrity may signify that a greater access to material resources and a better quality of life may free up an individual to pursue higher levels of needs. For example, Maslow's (1970) theory of self-actualization states that prior to the achievement of a higher level of maturity, an individual must first satisfy needs at a lower level. Lower level needs relate to biological and safety needs, the fulfillment of which can be provided by adequate financial resources. This explanation is somewhat

problematic, however, since it may suggest that high levels of poverty often found in the elderly, especially women, who may subsist on pension income (Rosenmayr, 1985), may preclude the possibility of the achievement of integrity, a task which may be available only to the middle and upper classes.

The findings regarding the contribution of well-being to integrity indicate that these two constructs are probably related and confirm the relationship found between these two variables in other studies (Euler, 1992; Tesch, 1985; Walaskay et al, 1983-4). Further discussion regarding this relationship will follow in a later section of this paper.

Self-perception emerged as a significant contributor to ego integrity at Time 2, which was expected since the definition of ego integrity embraces the idea of the maintenance of the self concept. It would follow that the maintenance of a positive perception of the self in various domains would be tied to the achievement of integrity. From these findings, it would appear that both in the sixties and the seventies, a general propensity toward happiness or well-being may help one achieve integrity, but in the seventies, a positive perception of the self also becomes salient.

The negative relationship found between age and the achievement of integrity confirms this finding in other studies (Boylin et al, 1976; Ryff & Dunn, 1989), but does not follow the expected pattern based on the theory of psychosocial functioning, which posits that ego integrity should be-

come more salient as one ages and becomes closer to death. However, it is possible that integrity is a complex construct which includes both maturity level and psychological adjustment, as indicated in this study by the relationship of life satisfaction and a positive sense of self to integrity. Since both self-perception and well-being were found to decline for the subjects in this study over the two testing periods, perhaps one may speculate that this downward process may continue onward throughout the rest of one's life, and therefore would especially affect the older individuals in the study. Consequently, older subjects would show lower levels of ego integrity. Or, perhaps as Clayton (1975) has argued, the achievement of integrity is a rare phenomenon, as indicated by the dearth of those individuals whom we would call wise in old age. The reality is that, in the face of death, most of us respond with more despair than integrity.

Findings Regarding the Relationship Among Ego Integrity, Well-Being and Self-Perception

This study set out to further analyze the relationship between integrity, well-being, and self-perception by means of a factor analysis. The factor analysis was computed on all the test items in the three measures using a larger sample of 243 elderly subjects including the sample of eighty-five subjects in the follow-up study. Although no specific predict-

ions were made regarding the number of meaningful factors expected to emerge, it was expected that at least two factors, life satisfaction and fulfilment, would present themselves.

The factor analysis revealed a complex and heterogeneous factor structure of these three measures revealing ten factors accounting for 58.1 percent of the variance. For greater ease of interpretation, a two factor solution was forced and these factors were found to cluster into dimensions entitled Life Satisfaction and Bitterness or Absence of Fulfillment. The Life Satisfaction factor consisted of items from the well-being measure which relate to general satisfaction and happiness with life. The Bitterness or Absence of Fulfillment factor included items from all three of the well-being, integrity, and self-perception measures. These items suggest bitterness, anger, and disappointment about how life has turned out, indicating a lack of fulfillment of one's self and one's desires. These findings indicate that although well-being, self-perception, and integrity are related to one another, all three constructs appear to be structurally different from each other. However, since these two factors account for only 19.6 percent of the variance and the correlation matrix for the factor analysis barely achieved significance, a definitive understanding of integrity does not seem possible through this analysis.

The reason for the barely significant findings of the factor analysis may be due to problems in the factor structure

of the measures themselves. For example, the authors (Kozma & Stones, 1980) of the well-being measure (MUNSH) expected it to represent four separate theoretical components which assessed both shorter term positive and negative affect and longer term positive and negative experiences. However, factor analysis on the measure indicated one general bi-polar factor accounting for only fifty per cent of the variance (Kozma, Stones, & McNeil, 1991). As well, factor analysis of the integrity and self-perception scales have not yet been done.

An explanation of the relationship between integrity and indicators of well-being has been discussed by McCrae and Costa (1983a) who suggested that the quality and quantity of well-being may not vary with maturity level, but rather what gives rise to the experience of well-being may vary with differing levels of maturity or ego integrity. For example, those low in ego integrity may gauge happiness based on the satisfaction of the basic needs of life, such as food and shelter which can be obtained by means of financial resources, while individuals with higher levels of ego integrity may feel happy when they engage in a philosophical outlook toward life and feel that they have unraveled some of its meaning.

Recently, in a related study, Ryff (1989b) created several new scales of well-being in an effort to understand the more mature and complex aspects of positive functioning other than those offered by life satisfaction theorists. By means of factor analysis, she found that the conventional in-

dices of well-being that measure life satisfaction, affect balance, morale, self-esteem, depression, and internal control loaded on one factor along with two of her new proposed measures, self-acceptance and mastery. A second factor emerged which included several of her other new scales measuring personal growth, purpose in life, and positive relations with others. Each of these last three scales correlated significantly and positively with the older life satisfaction indices. If one accepts the position that these three scales measure psychological maturity, these findings suggest that although happiness and maturity level are related, (that is, mature people can be happy), they represent different aspects of the individual.

The findings of Ryff's (1989b) study may have some relevance here. As in her study, this study revealed that well-being relates to a general satisfaction or contentment with life, while integrity, or at least the opposite pole of integrity, relates more to bitterness or an absence of fulfillment of the self and one's accomplishments. Viewing these findings in terms of Maslow's hierarchy of needs, one may speculate that well-being may relate more to the satisfaction of the lower needs, such as physiological and safety and security needs, while integrity relates to mature levels of self-esteem, and realizing one's full potential.

Summary and Suggestions for Future Research

In summary, the findings of this study indicate that elderly individuals entering the second phase of old age show declines in most areas of psychosocial functioning, although correlational stability was apparent for all variables tested. These findings confirm the continuity position taken in this paper, that is, that personality is continuous into the old-old stage of life. However, based on the findings of this study, and despite this continuity, declines in several areas of functioning are to be expected as a normal part of successful aging.

This study also lends support to the continuity of personality position in confirming the propensity view of happiness or well-being. Well-being in the mid-seventies is best predicted by well-being several years earlier. Despite the stability of well-being, contributions to well-being at the two testing periods were not identical, with neuroticism predicting well-being in the first testing phase and activity level and an internal locus of control predicting well-being at the later testing phase.

These findings suggest that there may be important differences in maintaining a sense of well-being as the individual ages, with well-being in the late sixties largely predicted by the absence of neurotic traits, while well-being several years later is enhanced by maintaining a particular

level of activity and an internal locus of control. These findings lend support to activity theory and locus of control theory.

Activity level was also the only psychosocial variable that improved over the two testing periods, but this increase was limited to individuals who were living alone to increase their level of activity to that of individuals who were not living. Activities, which appeared to have increased, were related to rather passive pursuits. However, since activity did significantly contribute to well-being at the second testing date and to changes in well-being over time, it would appear that even passive activities do have an important effect. These findings indicate that the individual who is occupied, even if occupied by rather simple activities, fares better in old age.

The study also suggests that although ego integrity is related to well-being and a positive perception of self, it nevertheless appears to be structurally different from these constructs. Earlier and concurrent levels of well-being predict integrity, and current self-perceptions are also salient to current levels of ego-integrity. The results of this study also suggest that ego integrity may be related more to a sense of fulfillment with one's self, one's accomplishments, while well-being relates more to a satisfaction with life in general.

The findings of this study suggest some areas for future

research. First, in order to further test the the continuity of psychosocial and personality dimensions in the elderly as they live on into later years, similar longitudinal studies should be carried out with participants in the later stages of old age, perhaps at the entrance point into the stage of oldest age, around the age of eighty-five. Future studies should include a health measure at both times of testing in order to assess the changes that declining health may have on all aspects of this study, especially well-being, self-perception, locus of control, and level of activity. As well, an integrity measure should be included at all testing periods to further explore its relationship to well-being and self-perception at different time periods in the lifespan.

Since activity level emerged as a significant predictor of well-being at the second time period in this study, a more detailed analysis of activity measure should be undertaken. The activity measure should be more clearly separated into its various components measuring social, physical, and intellectual pursuits in order to understand which aspects of activity particularly contribute to well-being in the various phases of old age. A measure assessing the cognitive aspect of activity management, or accommodation as mentioned earlier, should be included in further studies so as to explore the importance of a cognitive sense of engagement in life, which may explain why even passive or rather simple pursuits may have important implications for the well-being of older adults.

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Appendix A

MANOVA and MANCOVA Summary Tables

Appendix A Table 1

MANOVA Summary Table for Analysis of Attrition

	Hotellings T	SS	MS	df	F
	.1977			10	6.92***
Age		1123.76	1123.75	1	32.82***
Education		195.10	195.10	1	8.80**
MUNSH		469.08	469.08	1	18.18***
Extroversion		4.97	4.97	1	.46
Lie		27.43	27.43	1	7.12**
Neuroticism		244.28	244.28	1	11.16***
Expectancy		174.30	174.30	1	7.11**
Desire		15.29	15.29	1	2.36
Self-Perception		1225.03	1225.03	1	25.63***
Activity		2953.46	2953.46	1	23.13***
Error				350	
Age		12291.34	34.24		
Education		7962.47	22.18		
MUNSH		9262.31	25.80		
Extroversion		3907.18	10.88		
Lie		1383.53	3.85		
Neuroticism		7858.52	21.89		
Expectancy		8802.10	24.52		
Desire		2325.93	6.48		
Self-perception		17161.50	47.80		
Activity		45849.83	127.72		

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

Appendix A Table 2

MANCOVA Summary Table Comparing Time 1 and Time 2 Variables With Education and Health Status as the Covariates

	Wilks	SS	MS	df	F
Covariates	.7221			16	1.58
MUNSH				2	1.59
Extroversion				2	3.99*
Lie				2	.49
Neuroticism				2	2.52
Expectancy				2	.09
Desire				2	2.33
Self-Perception				2	2.18
Activity				2	.66
Sex	.7942			8	2.33*
MUNSH		77.72	77.72	1	4.81*
Extroversion		53.48	53.48	1	3.00
Lie		12.97	12.97	1	2.92
Neuroticism		19.61	19.61	1	.72
Expectancy		.09	.09	1	.01
Desire		21.15	21.15	1	2.42
Self-Perception		409.38	409.38	1	9.94**
Activity		30.78	30.78	1	.33
Error				72	
MUNSH		1276.31	16.16		
Extroversion		1407.69	17.82		
Lie		351.41	4.45		
Neuroticism		2154.66	27.27		
Expectancy		4652.97	58.89		
Desire		690.57	8.74		
Self-Perception		3252.00	41.16		
Activity		7360.54	93.17		
Marital Status	.8396			8	1.72
MUNSH		9.04	9.04	1	.56
Extroversion		2.08	2.08	1	.12
Lie		44.02	44.02	1	9.90**
Neuroticism		3.62	3.62	1	.13
Expectancy		72.04	72.04	1	1.22
Desire		17.80	17.80	1	2.04
Self-Perception		7.15	7.15	1	.17
Activity		104.13	104.13	1	1.12

	Wilks	SS	MS	df	F
Error				72	
MUNSH		1276.31	16.16		
Extroversion		1407.69	17.82		
Lie		351.41	4.45		
Neuroticism		2154.66	27.27		
Expectancy		4652.68	58.89		
Desire		690.57	8.74		
Self-Perception		3252.00	41.16		
Activity		7360.54	93.17		
Sex x MS	.8491			8	1.60
MUNSH		38.76	38.76	1	2.40
Extroversion		3.59	3.59	1	.20
Lie		20.65	20.65	1	4.64*
Neuroticism		.54	.54	1	.02
Expectancy		19.29	19.29	1	.33
Desire		2.20	2.20	1	.25
Self-Perception		55.25	55.25	1	1.34
Activity		416.55	416.55	1	4.47*
Error				72	
MUNSH		1276.31	16.16		
Extroversion		1407.69	17.82		
Lie		351.41	4.45		
Neuroticism		2154.66	27.27		
Expectancy		4652.68	58.89		
Desire		690.57	8.74		
Self-Perception		3252.00	41.16		
Activity		7360.54	93.17		
Time	.3260			8	19.12***
MUNSH		55.38	55.38	1	7.70**
Extroversion		7.67	7.67	1	2.78
Lie		4.80	4.80	1	3.90
Neuroticism		21.06	21.06	1	3.77
Expectancy		2967.06	2967.06	1	88.37***
Desire		57.29	57.29	1	14.69***
Self-Perception		209.04	209.04	1	12.85**
Activity		134.51	134.51	1	3.75

	Wilks	SS	MS	df	F
Error				74	
MUNSH		634.81	7.84		
Extroversion		223.72	2.77		
Lie		99.73	1.23		
Neuroticism		452.41	5.59		
Expectancy		2719.54	33.57		
Desire		315.93	3.90		
Self-Perception		1318.10	16.27		
Activity		2906.52	35.88		
Sex x Time	.9557			8	.43
MUNSH		.35	.35	1	.05
Extroversion		1.47	1.47	1	.53
Lie		.06	.06	1	.05
Neuroticism		.31	.31	1	.06
Expectancy		14.95	14.95	1	.45
Desire		4.46	4.46	1	1.14
Self-Perception		2.79	2.79	1	.17
Activity		28.32	28.32	1	.79
Error				74	
MUNSH		634.80	7.84		
Extroversion		223.72	2.76		
Lie		99.73	1.23		
Neuroticism		452.41	5.59		
Expectancy		2719.53	33.57		
Desire		315.93	3.90		
Self-Perception		1318.10	16.27		
Activity		2906.52	35.88		
MS x Time	.8201			8	2.03
MUNSH		7.70	7.70	1	.98
Extroversion		.99	.99	1	.36
Lie		1.44	1.44	1	1.17
Neuroticism		1.43	1.43	1	.26
Expectancy		87.92	87.92	1	2.62
Desire		1.62	1.62	1	.42
Self-Perception		40.33	40.33	1	2.48
Activity		184.02	184.02	1	5.13*

	Wilks	SS	MS	df	F
Error				74	
MUNSH		634.81	7.84		
Extroversion		223.72	2.76		
Lie		99.73	1.23		
Neuroticism		452.41	5.58		
Expectancy		2719.53	33.57		
Desire		315.93	3.90		
Self-perception		1318.10	16.28		
Activity		2906.52	35.99		
Sex x MS x Time	.9387			8	.60
MUNSH		1.44	1.44	1	.18
Extroversion		.73	.73	1	.26
Lie		3.24	3.24	1	2.63
Neuroticism		.09	.09	1	.01
Expectancy		15.19	15.19	1	.45
Desire		.61	.61	1	.16
Self-perception		6.16	6.16	1	.38
Activity		19.51	19.51	1	.54
Error				74	
MUNSH		634.81	7.84		
Extroversion		223.72	2.76		
Lie		99.73	1.23		
Neuroticism		452.41	5.59		
Expectancy		2719.53	33.57		
Desire		315.93	3.90		
Self-Perception		1318.10	16.27		
Activity		2906.52	35.88		

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

Appendix A Table 3

Multiple Regression With Covariates Education and Health Status For Eight Dependent Variables

	Education		Health Status	
Variable	Beta	t	Beta	t
MUNSH	.08	.77	-.18	-1.61
Extroversion	-.30	-2.81**	-.03	- .31
Lie	-.09	- .83	-.06	- .53
Neuroticism	-.07	- .70	.23	2.14*
Expectancy	.02	.17	-.05	- .40
Desire	-.19	-1.73	.14	1.30
Self-Perception	-.01	- .12	-.23	-2.08*
Activity	.12	1.05	-.05	- .48

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

Appendix B

Questionnaires:

Consent Form

I consent to participate in the research project on adult development which is being conducted under the direction of Drs. Gold, Arbuckle-Maag, and Andres of the Psychology Department and Centre for Research in Human Development of Concordia University. I understand that my participation will include providing information about my life history, responding to a series of questionnaires, and doing other tasks relevant to adult development. I understand that this study is being conducted with about 300 volunteers from the Montreal area and that it is supported by a grant from the Government of Canada. With respect to my participation, I understand that:

1. All information provided by me will be kept confidential. I understand that although the results of this study will be reported, the information provided in the report will be based on the entire group of volunteers. That is, no individual's data will be reported.

2. I will receive a full description of the findings of the study as soon as it becomes available.

3. My participation is completely voluntary and I may withdraw from the study at any time.

Date: _____ Signature: _____

Name: _____ Date of Birth: ___/___/___ Age: ____
Please Print day/mth/year

Address: _____
Number and Street Apt. No.

_____
City Province

_____ _____
Postal Code Telephone No.

Subject No.: _____

Code No. _____

MUNSH

We would like to ask you some questions about how things have been going. Please answer "Yes" if a statement is true for you and "No" if it does not apply to you.

In the past 12 months have you been feeling:

		Yes	No
1.	On top of the world?	___	___
2.	In high spirits?	___	___
3.	Particularly content with your life?	___	___
4.	Lucky?	___	___
5.	Bored?	___	___
6.	Very lonely or remote from other people?	___	___
7.	Depressed or very unhappy?	___	___
8.	Flustered because you didn't know what was expected of you?	___	___
9.	Bitter about the way your life has turned out?	___	___
10.	Generally satisfied with the way your life has turned out?	___	___

The next 14 questions have to do with more general life experience. (Last ten years).

11.	This is the dreariest time of my life.	___	___
12.	I am just as happy as when I was younger.	___	___
13.	Most of the things I do are boring or monotonous.	___	___
14.	The things I do are as interesting to me as they ever were.	___	___
15.	As I look back on my life, I am fairly well satisfied.	___	___
16.	Things are getting worse as I get older.	___	___
17.	Do you feel lonely?	___	___
18.	Little things bother me more this year.	___	___

		Yes	No
19.	I live where I want to live.	____	____
20.	I sometimes feel that life isn't worth living.	____	____
21.	I am as happy now as I was when I was younger.	____	____
22.	Life is hard for me most of the time.	____	____
23.	Are you satisfied with your life today?	____	____
24.	My health is the same or better than most people my age.	____	____

EYSENCK

Code No._____

Here are some questions regarding the way you behave, feel and act. After each question, there is a space for answering "Yes" or "No".

Try and decide whether "Yes" or "No" represents your usual way of acting or feeling. Then check off the box under the column headed "Yes" or "No".

Work quickly and don't spend too much time over any question; we want your first reaction, not a long drawn-out thought process. The whole questionnaire shouldn't take more than a few minutes. Be sure not to omit any questions. Now turn the page over and go ahead. Work quickly and remember to answer every question. There are no right or wrong answers, and this is not a test of intelligence or ability, but simply a measure of how you behave.

E ( ) N ( ) L ( )

FORM A

		YES	NO
1.	Do you often long for excitement?	( )	( )
2.	Do you often need understanding friends to cheer you up?	( )	( )
3.	Are you usually carefree?	( )	( )
4.	Do you find it very hard to take no for an answer?	( )	( )
5.	Do you stop and think things over before doing any thing?	( )	( )
6.	If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so?	( )	( )
7.	Does your mood often go up and down?	( )	( )
8.	Do you generally do and say things quickly without stopping to think?	( )	( )
9.	Do you ever feel "just miserable" for no good reason?	( )	( )
10.	Would you do almost anything for a dare?	( )	( )
11.	Do you suddenly feel shy when you want to talk to an attractive stranger?	( )	( )
12.	Once in a while do you lose your temper and get angry?	( )	( )
13.	Do you often do things on the spur of the moment?	( )	( )
14.	Do you often worry about things you should not have done or said?	( )	( )
15.	Generally do you prefer reading to meeting people?	( )	( )
16.	Are your feelings rather easily hurt?	( )	( )
17.	Do you like going out a lot?	( )	( )
18.	Do you occasionally have thoughts and ideas that you would not like other people to know about?	( )	( )

		YES	NO
19.	Are you sometimes bubbling over with energy and sometimes very sluggish?	( )	( )
20.	Do you prefer to have few but special friends?	( )	( )
21.	Do you daydream a lot?	( )	( )
22.	When people shout at you, do you shout back?	( )	( )
23.	Are you often troubled about feelings of guilt?	( )	( )
24.	Are all your habits good and desirable ones?	( )	( )
25.	Can you usually let yourself go and enjoy yourself a lot at a lively party?	( )	( )
26.	Would you call yourself tense or "highly-strung"?	( )	( )
27.	Do other people think of you as being very lively?	( )	( )
28.	After you have done something important, do you often come away feeling you could have done better?	( )	( )
29.	Are you mostly quiet when you are with other people?	( )	( )
30.	Do you sometimes gossip?	( )	( )
31.	Do ideas run through your head so that you cannot sleep?	( )	( )
32.	If there is something you want to know about, would you rather look it up in a book than talk to someone about it?	( )	( )
33.	Do you get palpitations or thumping in your heart?	( )	( )
34.	Do you like the kind of work that you need to pay close attention to?	( )	( )
35.	Do you get attacks of shaking or trembling?	( )	( )
36.	Would you always declare everything at the customs, even if you knew that you could never be found out?	( )	( )
37.	Do you hate being with a crowd who play jokes on one another?	( )	( )
38.	Are you an irritable person?	( )	( )
39.	Do you like doing things in which you have to act quickly?	( )	( )
40.	Do you worry about awful things that might happen?	( )	( )
41.	Are you slow and unhurried in the way you move?	( )	( )
42.	Have you ever been late for an appointment or work?	( )	( )
43.	Do you have many nightmares?	( )	( )
44.	Do you like talking to people so much that you would never miss a chance of talking to a stranger?	( )	( )
45.	Are you troubled by aches and pains?	( )	( )
46.	Would you be very unhappy if you could not see lots of people most of the time?	( )	( )
47.	Would you call yourself a nervous person?	( )	( )

		YES	NO
48.	Of all the people you know are there some whom you definitely do not like?	( )	( )
49.	Would you say you were fairly self-confident?	( )	( )
50.	Are you easily hurt when people find fault with you or your work?	( )	( )
51.	Do you find it hard to really enjoy yourself at a lively party?	( )	( )
52.	Are you troubled with feelings of inferiority?	( )	( )
53.	Can you easily get some life into a rather dull party?	( )	( )
54.	Do you sometimes talk about things you know nothing about?	( )	( )
55.	Do you worry about your health?	( )	( )
56.	Do you like playing pranks on others?	( )	( )
57.	Do you suffer from sleeplessness?	( )	( )

Ryff Scale

Indicate whether you agree or disagree with the following statements:

1. If I had to do it all over again, there are very few things about my life that I would change. Agree Disagree

2. If I could turn back the clock, there are many things I would do differently. Agree Disagree

3. The "little things" that other people do seem to get on my nerves more now than they used to. Agree Disagree

4. All in all, I am comfortable with the choices I made regarding my life's work. Agree Disagree

5. I still feel angry about certain of my childhood experiences. Agree Disagree

6. I often wish I had been born during a different period of history. Agree Disagree

7. In general, I would say I have few regrets about my past life. Agree Disagree

8. Reading old diaries and letters usually brings more pain than pleasure. Agree Disagree

9. I often prefer musing over my own thoughts to having a conversation with someone else. Agree Disagree

10. I do not enjoy having long periods of time to myself. Agree Disagree

11. It doesn't bother me to think about goals I haven't reached and probably never will. Agree Disagree

12. I hope I never have to live alone. Agree Disagree
(if you do live alone, then answer to:
I never wanted to live alone)

13. Taking a vacation by myself doesn't appeal to me. Agree Disagree

14. I would gladly give up status and responsibility in order to have more free time. Agree Disagree

15. When I consider the ups and downs of my past life, they somehow fit together in a meaningful way. Agree Disagree

16. When it comes to group activities, I am happy to sit on the sidelines and let someone else be the star. Agree Disagree

17. I spend more time reflecting on things than I used to. Agree Disagree

18. I feel generally contented with what I have accomplished in my life. Agree Disagree

19. I often engage in quiet contemplation. Agree Disagree

20. I wish my life were just beginning so I can avoid many of the mistakes I made earlier in my life. Agree Disagree

21. One of my greatest disappointments is that I have not been able to do more traveling. Agree Disagree

22. I invest less energy in things outside my home life than I used to. Agree Disagree

23. My life has been fulfilling, and I am not frightened by the thought of death. Agree Disagree

24. There are some disappointments in life I will never be able to accept. Agree Disagree

25. When I have a free afternoon I prefer to spend it alone than socializing with friends. Agree Disagree

26. I often spend time just sitting and thinking. Agree Disagree

27. With time I have become less concerned about other people's opinions of me. Agree Disagree

28. There are many people whose life I would prefer to my own. Agree Disagree

29. I have no difficulty giving up social obligations so as to increase time that can be spent pursuing my own interests. Agree Disagree

30. If I had had just a couple more lucky breaks, my life would have turned out much differently. Agree Disagree

31. I am at my happiest when I am socializing with others. Agree Disagree

Code No._____

GENERAL BRIEF SURVEY 1:

The purpose of this questionnaire is to determine your attitudes and beliefs on a variety of matters pertaining to everyday living. There are two parts to this questionnaire. The first part asks you to rate how desirable different events are to you. The second part asks you to rate the degree to which you agree or disagree with various statements.

Part I: Desire of Outcomes

There are many activities or events which happen to ourselves in everyday living. Some of these events are more important or desirable to you than others. Listed below are statements mentioning some of these activities or events. Would you please rate the extent to which each event described is important or not to you. We emphasize that we are concerned here with the importance to you, not to others.

Use the following code to answer:

1 Very desirable	2 desirable	3 undecided	4 undesirable	5 very undesirable

1.	How important is it to you that you maintain your health?	1	2	3	4	5
2.	How important is being able to spend your time doing whatever you wish?	1	2	3	4	5
3.	How important is it that you do the chores yourself without any help?	1	2	3	4	5
4.	How desirable is it to you that you can be active whenever you wish?	1	2	3	4	5
5.	How desirable to you is it to be able to help others?	1	2	3	4	5
6.	How important is it to you that you can have your friends over whenever you want?	1	2	3	4	5

PART II: Beliefs and Attitudes

The following are statements which may describe either yourself or the beliefs you have. Would you please respond to each statement using the scale indicating the degree to which you agree or disagree in your own opinion, not your judgement of what others think. From time to time you may find that some items seem to be repeated. Don't worry about this, for each item is purposefully different in terms of its specific wording. Would you please go ahead and rate your degree of agreement or disagreement to each statement.

1 Strongly agree	2 Agree	3 Undecided	4 Disagree	5 Strongly disagree

1.	People tend to ignore my advice and suggestions.	1	2	3	4	5
2.	Maintaining my level of health strongly depends on my own efforts.	1	2	3	4	5
3.	It is difficult for me to get to know people.	1	2	3	4	5
4.	I can usually arrange to go on outings that I am interested in.	1	2	3	4	5
5.	The situation I live in prevents me from contacting my family as much as I wish.	1	2	3	4	5
6.	I spend my time usually doing what I want.	1	2	3	4	5
7.	Although it is sometimes strenuous, I try to do the chores by myself.	1	2	3	4	5
8.	I find that if I ask my friends or family to visit me, they come.	1	2	3	4	5
9.	I have quite a bit of influence on the degree to which I can be involved in activities.	1	2	3	4	5
10.	I can rarely find people who will listen closely to me.	1	2	3	4	5
11.	My getting away from the house (home) generally depends on someone else making the decisions.	1	2	3	4	5
12.	Visits from my family (or friends) seem to be due to their own decisions, and not my influence.	1	2	3	4	5

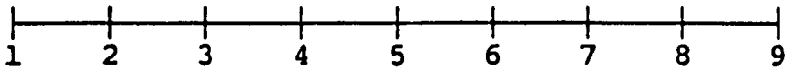
1 Strongly agree	2 Agree	3 Undecided	4 Disagree	5 Strongly disagree

13.	People generally do not allow me to help them.	1	2	3	4	5
14.	I can entertain friends when I want.	1	2	3	4	5
15.	Keeping in contact with interesting ideas is easy for me to do.	1	2	3	4	5
16.	I am able to find privacy when I want it.	1	2	3	4	5

DATE:_____

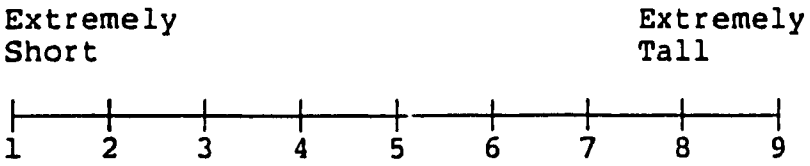
T R I--S C A L E S

Code Number:_____ Sex:_____ Age:_____



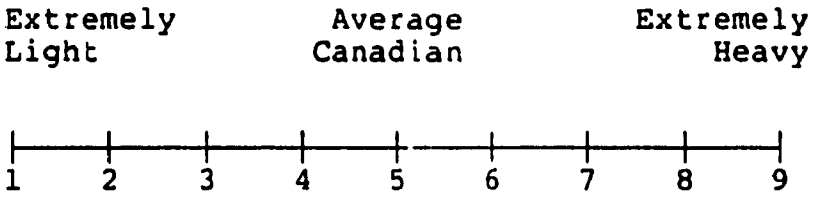
This is a rating scale. We will be using such scales during our visit.

HEIGHT



This particular scale is for height. Think of a dwarf. He would be rated as extremely short--at number 1. A giant, on the other hand, would be rated as extremely tall--at number 9.

WEIGHT



This is a scale for weight. At one end there are the extremely heavy people. At the other end there are the extremely light people. You will see an arrow in the middle, that is at 5. Number 5 represents the weight of the average Canadian adult. Someone above average would rate himself on number 6, 7, 8 or 9. The exact rating will depend on how heavy he is. The fatter he is the closer to 9 he would be. An extremely fat person would rate himself as 9. Someone below average would be rated 4, 3, 2 or 1. The skinnier he is the closer to 1 he would be. So, an extremely skinny person would rate himself as 1.

Where would you put yourself on this scale? Mark the scale with an X. The X stands for your present weight.

Now think of older people in general -- people above 65. Where would you put them on the weight scale? Mark the scale with an O. The O is for old people in general.

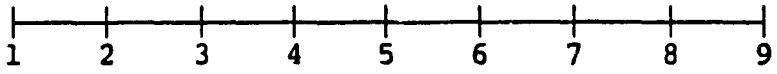
Now think of your ideal weight. You know, when you were at your best. How would you rate your weight at that time? Put a B on the scale for best weight. How old were you when you were your best weight? (Age)

We would like you to rate some other things. Some of them you will find easy. Some of them may sound a little strange.

Happiness

1.

Extremely Unhappy — Average Canadian — Extremely Happy



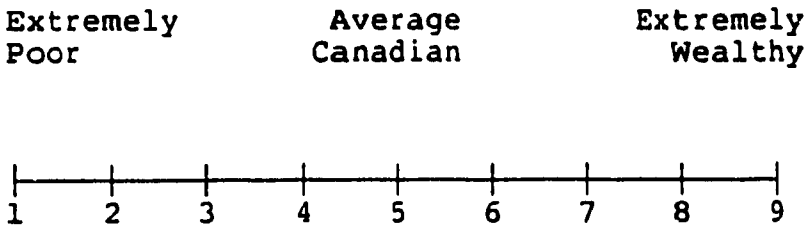
This is a scale for happiness. Some people are extremely unhappy. They would be rated as 1. Some people are extremely happy. They would be rated as 9. The average Canadian is at number 5.

How would you rate yourself on this happiness scale? Mark the scale with an X.

Now, think of older people in general. How would you rate them on this scale? Mark the scale with on O.

Think of the time when you were happiest. What would your rating be then? Mark the scale with a B. At what age were you happiest? (Age)

FINANCIAL SITUATION



This is a financial scale. People who are extremely poor are rated as 1. People who are extremely wealthy are rated as 9. The average Canadian is rated as 5.

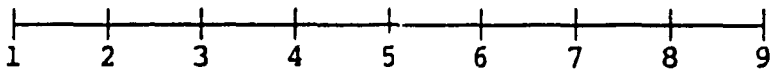
Where would you put yourself on this scale? Mark the scale with an X.

Now think of older people in general. Where would you put them on this scale? Mark the scale with an O.

Think of the time when your financial situation was at its best. What would your rating be then? Mark the scale with a B. How old were you then? (Age)

HEALTH

Extremely Ill	Average Canadian	Extremely Vigorous



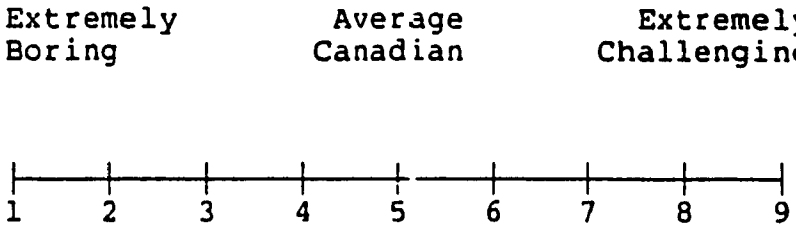
This is a health scale. People in extremely poor health are rated as 1, that is, extremely ill. People with excellent health are called extremely vigorous, that is 9. The average Canadian is rated as 5.

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

Now think of older people in general. Where would you put them on this scale? Mark the scale with an O.

Think of the healthiest time of your life. What would your rating be then? Mark the scale with a B. How old were you then? (Age)

ACTIVITIES



This is an activities scale. Some people find their activities extremely boring. They would be rated as 1. Other people find their activities to be extremely challenging. They would be rated as 9. The average Canadian is rated as 5.

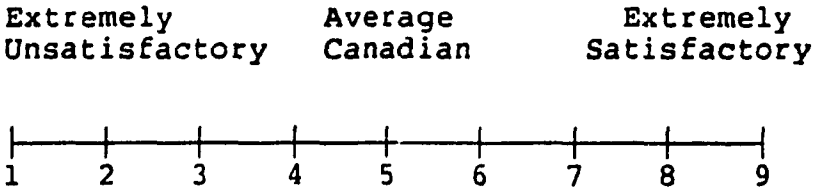
Where would you put yourself on this scale? Mark the scale with an X.

Now, think of older people in general. How would you rate them on this scale? Mark the scale with an O.

Think of the time when you found your activities most challenging. What would your rating be then? Mark the scale with a B. How old were you then? (Age)

5.

FAMILY RELATIONSHIPS



This is a family relationships scale. Some people have extremely unsatisfactory family relationships. They would be rated as 1. Some people have extremely satisfactory family relationships. They would be rated as 9. The family relationships of the average Canadian are rated at 5.

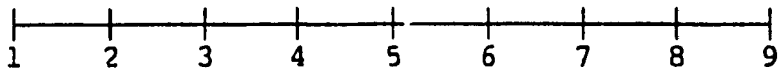
How would you rate yourself on this scale? Mark the scale with an X.

Now, think of older people in general. How would you rate them on this scale? Mark the scale with an O.

Think of the time when your family relationships were best. What would your rating be then? Mark the scale with a B. How old were you then? (Age)

PLEASURE FROM COMPANIONS

Extremely Annoying	Average Canadian	Extremely Enjoyable



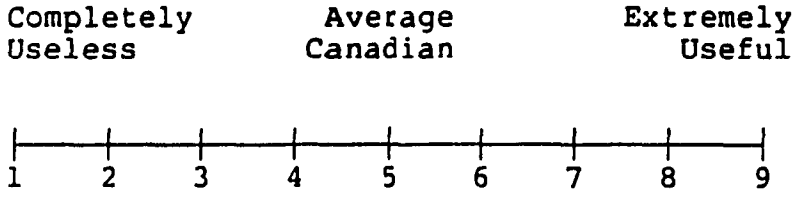
This is a companionship scale. The rating is for the pleasure obtained from companions. Companions are people you associate with. Family is not included. People with extremely annoying companions would be rated as 1. People with extremely enjoyable companions would be rated as 9. The average Canadian would rate his companions at 5.

What kind of companions do you have? Mark the scale with an X. Now think of older people in general. What kind of companions do you think they have? Mark the scale with an O.

Think of the time when you found your companions most enjoyable. What would your rating be then? Mark the scale with a B. How old were you then? (Age).

7.

USEFULNESS



This is a usefulness scale. Some people feel completely useless. They would be rated as 1. Some people feel extremely useful. They would be rated at 9. The average Canadian is rated at 5.

How would you rate yourself on this scale? Mark the scale with an X.

Now, think of older people in general. How would you rate them on this scale? Mark the scale with an O.

Think of the time when you were most useful. What would your rating be then? Mark the scale with a B. How old were you then? (Age)

Code No._____

ACTIVITIES

Here is a list of activities that some people do. Please read over this list and check each activity that you engage in or do and if so, how often.

Activity	Frequency				
	Less than once a year	1-11 times a year	1-3 times a month	1-6 times a week	daily
1. Socializing (not with family)	___	___	___	___	___
2. Visiting with family members	___	___	___	___	___
3. Gardening	___	___	___	___	___
4. Reading	___	___	___	___	___
5. T.V./Radio	___	___	___	___	___
6. Sit & Think	___	___	___	___	___
7. Caring for younger/ older family members	___	___	___	___	___
8. Arts/Crafts/Hobbies	___	___	___	___	___
9. Walking	___	___	___	___	___
10. Fraternal/Community Organization/Clubs Activities	___	___	___	___	___
11. Housework	___	___	___	___	___
12. Meditation/Worship	___	___	___	___	___
13. Personal Care	___	___	___	___	___
14. Napping	___	___	___	___	___
15. Shopping	___	___	___	___	___
16. Cards/Games	___	___	___	___	___

Activity	Frequency				
	Less than once a year	1-11 times a year	1-3 times a month	1-6 times a week	daily
17. Volunteer Work	___	___	___	___	___
18. Writing	___	___	___	___	___
19. Working Part-time/ Full-time	___	___	___	___	___
20. Sports	___	___	___	___	___
21. Political Activities	___	___	___	___	___
22. Theatre, Cinema	___	___	___	___	___
23. Other	___	___	___	___	___

Code No.:_____

Instructions: Please check those symptoms or diseases you have experienced in the past 5 years.

Item Number	Disease Items	
1.	Headache	
2.	Dizziness	
3.	Varicose veins	
4.	Hemorrhoids	
5.	Low blood pressure	
6.	Drug allergy	
7.	Bronchitis	
8.	Hyperventilation	
9.	Bursitis	
10.	Lumbago	
11.	Migraine	
12.	Hernia	
13.	Irregular heart beats	
14.	Overweight	
15.	Anemia	
16.	Anxiety reaction	
17.	Gout	
18.	Pneumonia	
19.	Depression	
20.	Kidney infection	
21.	Inability for sexual intercourse	
22.	Hyperthyroid/Hypothyroid	
23.	Asthma	
24.	Glaucoma	
25.	Gallstones	
26.	Arthritis	
27.	Slipped disk	
28.	Hepatitis	
29.	Kidney stones	
30.	Peptic ulcer	
31.	Pancreatitis	

Item Number	Disease Items	
32.	Deafness	
33.	Collapsed lung	
34.	High blood pressure	
35.	Epilepsy	
36.	Chest pain	
37.	Nervous breakdown	
38.	Diabetes	
39.	Blood clot in blood vessels	
40.	Hardening of the arteries	
41.	Emphysema	
42.	Tuberculosis	
43.	Alcoholism	
44.	Drug addiction	
45.	Cirrhosis of the liver	
46.	Parkinson's disease	
47.	Blindness	
48.	Stroke	
49.	Bowel problems	
50.	Heart failure	
51.	Heart attack	
52.	Brain infection	
53.	Multiple sclerosis	
54.	Uremia	
55.	Cancer	
56.	Leukemia	
57.	Cataracts	
58.	Prostectomy	
59.	Difficulty in focussing vision	
60.	Rheumatism	
61.	Other (specify)	
62.	Are you on any medications regularly?	

Names of Current Meds	Purpose of Meds

TESTS TO BE ADMINISTERED

ADMINISTER THE TESTS ACCORDING TO THEIR ORDER BELOW

SESSION 1

Life Interview
Eysenck Personality Inventory (EPI)
Prose Memory - Wechsler Memory Scale
Boston Cookie Jar Test (Boston)
Munsh
Picture Arrangement
Ryff
Denise's Storytelling
Release from Proactive Interference
Desire and Belief Scale
Trail Making Test
Activities

SESSION 2

Sequential Geometric Design
Benton's Controlled Word Association Test
Recall of Sequential Geometric Design
Tri-Scales
Fingertapping Test
Digit Span - Wechsler Memory Scale
Design Fluency
Seriousness of Illness
Wisconsin Card-Sorting Test
Life Experiences Questionnaire
Paper Formboard Test - Army M Test
Social Support Questionnaire