The relationship of physical mobility, social integration, and social satisfaction to older unmarried persons' well-being.

> Mary T. Fox School of Nursing McGill University, Montreal July, 1994

A Thesis submitted to the Faculty of Graduate Studies in partial fulfilment of the requirements of the degree of Master of Science

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Abstract

This study explored the relationship of physical mobility; social integration with children, wiblings, other relatives, and close friends; and social satisfaction with friend and family relations to the well-being of unmarried Canadians age 75 and older. This study also explored the relationship between each of four social integration measures and physical mobility in potentiating well-being. To take into account any possible effects of demographics the following were included in a multiple regression analysis with the major study variables; age, gender, marital status and living arrangements. A correlational cross-sectional design, using a subsample of 754 unmarried persons living in the community was selected from an archived data set, Statistics Canada's 1985 General Social Survey. No significant interactions were identified between social integration and physical mobility. The results lend support to the importance of physical mobility and the quality of relationships to the older person's well-being. Physical mobility, satisfaction with friendships, being older, and satisfaction with family relations were identified as

constituting the best set of variables most strongly related to well-being. Together they accounted for 40% of the variance (\underline{p} <.01). Physical mobility was more strongly related to the well-being of men age 75 to 79 than that of any other gender-age group. Practice and research implications are discussed.

Résumé

Cette étude a exploré les relations de la mobilité physique; l'intégration sociale avec leurs enfants, leurs frères et soeurs, autres membres de famille, et amis proches; et la satisfaction sociale des rapports avec la famille et amis aux bien-être des Canadiens non-marriés agés de plus de 74 ans. De plus, cette étude a regardé le rapport entre chacuns des variables d'intégrations sociaux et la mobilité physique en retrouvant le potentiel d'un effet de bien-être. Pour tenir compte des effets démographiques les variables suivant sont inclus dans une analyse de régression multiple: l'âge; le sexe; l'état civil et le domicile. Un design corrélational transversale, utilisant un sous-ensemble de 754 personnes non-marriés, demeurant dans la communauté, a été choisi d'une base de donnés d' Enquête Sociale Générale 1985 aux archives à Statistique Canada. Aucune interaction significative a été identifée entre l'intégration sociale et la mobilité physique. Les résultats appuient l'importance de la mobilité physique et la qualité des rapports sociaux au bien-être de la personne âgée. La mobilité physique, satisfaction envers l'amitié, être plus agée

et la satisfaction avec les relations familiales etaient identifiés comme constituants les meilleurs variables reliés les plus fortement au bien-être. Ceux-ci representaient 40% de la variance (p<.01). La mobilité physique a été plus fortement reliée au bienêtre des hommes âgés de 75 à 79 à comparer avec toute autre groupe d'âge-sexe. Les implications de recherches et pour la pratique sont discutés.

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Chapter 1

Introduction

Over the last forty years much attention has been devoted to the study of well-being. As demographics began to indicate an aging population, researchers and clinicians took interest in the factors associated with the quality of these additional years. During this time, physical mobility was consistently found to be one of the strongest predictors of well-being. Social integration was also identified as significant, although it was found to explain a much smaller proportion of the variance in well-being.

Most well-being studies, which explored the importance of social integration, have tended to include all network members, particularly those of families, into a general measure of integration. The confounding of all members into one index is considered a major limitation and underscores the need for research distinguishing kinship ties.

A relatively new phenomenon has been the shift towards exploring the qualitative aspects of relationships. Findings are beginning to suggest that the quality of relationships is more important to

well-being than the quantity of ties. Additional studies, however, are needed before conclusions can be drawn.

In response to the limitations in this area of research, the purpose of this study was to explore the best set of variables most strongly related to wellbeing. The variables considered in this study included: physical mobility, social integration with children, siblings, other relatives and friends; and social satisfaction with family and friends.

An additional purpose of this study was to ascertain if a relationship exists between any of the social integration measures and physical mobility such that a well-being effect is potentiated. This question evolved in response to the nursing literature on mobility. For example, Tilden and Weinert (1987) and Hoeffer (1987) proposed that a mobility limitation impacts on well-being because it threatens to alter one's social involvement. Few researchers to date, however, have empirically explored this.

Unfortunately, the covariance of marriage with social integration presents a methodological issue in discerning the relationship between physical mobility

and social integration in the prediction of well-being. Hence, for the purpose of this study, the sample was limited to individuals who were neither married nor living as a couple.

In this study, it was assumed that social relationships remain important throughout life because they foster health and well-being. It was also assumed that because of the physiological changes and chronic illnesses associated with aging, the older person is at risk for decreased contact with his or her social network.

Chapter 2

Literature Review

This review of the literature is divided into four major sections. First, literature pertaining to the concept of well-being is presented. Because health is a major component of the well-being index developed for use in this study, a separate section exploring the relationship between health and well-being is presented. Second, a selected review of the physical mobility literature is presented. This is followed by methodological issues pertaining to the study of mobility and the association between physical mobility and well-being. In the third section, social integration is presented. Literature corresponding to older adults' relationships with their friends and family members follows. In addition, literature explicating the instrumental support provided by family members and the emotional support from friends is presented. Literature that refers to the qualitative aspects of social relationships is discussed in the fourth section. In closing, the conceptual framework guiding this study is presented.

<u>Well-Being</u>

"The literature on subjective well-being is concerned with how and why people experience their lives in positive ways, including both cognitive judgements and affective reactions" (Deiner, 1984, p. 542). As such, a vast array of measurement terms have been employed in its interpretation. For example, Lambert, Lambert, Klipple, & Meshaw (1990) measured well-being using a general mental health scale which was comprised of two subscales measuring anxiety and depression. In studies led by Fitzpatrick, a depression scale alone (1988), and in combination with a self-esteem scale (1991), was used to describe wellbeing. Similarly, Wolinsky, Coe, Miller, and Prendergast (1985) used the results obtained from a morale scale to express their participants' levels of well-being. In his review of empirical studies on this topic, Deiner (1984) revealed that satisfaction with life and positive affect measures are most frequently used by well-being researchers. Although these definitional variations may present a challenge in drawing conclusions across studies (Gooding, Sloan, & Amsel, 1988) most instruments grounded in these various

conceptual definitions have been found to correlate substantially (Deiner, 1984; Larson, 1978; Lohman, 1977; McCrae, 1986). Hence, it has generally been acknowledged that the core of these measures integrates the person's subjective appraisal of the various dimensions of his or her life (Deiner, 1984; Larson, 1978).

Health and Well-Being

The theoretical background to develop this study includes a review of the literature in which terms considered similar to well-being were employed. In this investigation, however, Bradburn's conceptual definition of well-being is espoused.

Bradburn (1969) defined well-being as a subjective global appraisal of one's "daily life." In addition, he proposed stress to be an integral part of everyday living, a belief also shared by the McGill Model of Nursing. The essence of Bradburn's conceptualization is that its formulation did not evolve from a pathological definition of health, but rather, from focusing "attention on an individual's life situation and how he copes with it" (1969, p. 3). The relevance of this perspective to the practice of nursing lies in

its similarity to the McGill Model; both incorporate health as the central paradigm amonyst person and environment. Such a conceptualization mandates the inclusion of health, yet health has traditionally been neglected in the development of well-being instruments. George and Bearon (1980) argued that the meaning of self-rated health is unknown and for this reason it should not be included in well-being tools. Self-rated health, however, has been found to account for two thirds of the variance in life satisfaction (Palmore & Luikart, 1972).

In the McGill Model of Nursing, health has been defined as a dynamic construct incorporating coping and development within a learning framework (Gottlieb & Rowat, 1985, 1987). It is in the process of striving for health that an individuals's life satisfaction is enhanced (Gottlieb & Rowat, 1987). In this definition, health appears to be subsumed under well-being. Such an illustration precludes delineating health as the mere absence of illness, rather, health is depicted as an entity separate from, but, which can co-exist with illness (Allen, 1981, 1982). Ebersole and Hess (1994) portrayed a similar conceptualization when explaining

that in illness and disability the older person can achieve a high level of well-being.

Studies have only recently begun to explore the relationship between health perception and well-being, but most have done so using health as an independent variable. In this study, health is conceptualized as an outcome variable, and as such, constitutes a major dimension of well-being.

Physical Mobility

Longitudinal studies have found the aged to experience a gradual decline in physical abilities with concomitant decreases in activity levels (Erikson, Erikson, & Kivnick, 1989; Verbrugge & Balaban, 1989). These decrements have been generally acknowledged to relate to the physiological changes and higher prevalence of chronic illness associated with aging (Bircherall & Streight, 1993; Ebersole & Hess, 1994; Kart, Metress, & Metress, 1992). It has been estimated, for example that 86% of individuals over the age of 65 are afflicted with at least one chronic illness (Birchenall & Streight, 1993). Clarification of the relationship between age and physiological changes and its impact on functional ability, however,

has been seriously hampered by methodological shortcomings (Bowling, 1991; Ebersole & Hess, 1994; McDowell & Newell, 1987; Merbitz, Morris, & Grip, 1989).

Methodological Issues in the Study of Physical Mobility

Researchers who have uncovered an inverse relationship between age and mobility, have mainly done so by comparing older with younger adults in crosssectional studies. Hence, it is possible that identified differences were related to factors other than aging (Ebersole & Hess, 1994).

Most mobility studies have been conducted with subjects younger than age seventy-five (Didier et al., 1993; Hinson & Gench, 1989; Roach & Miles, 1991). This is a serious limitation given that individuals older than 74 have been found to manifest significantly lower levels of mobility (Ferraro, 1980; Hale, Delaney, McGaghie, 1992; Patrick, et al., 1981; Statistics Canada, 1991a). Moreover, national statistics indicate that less than half of the population between the ages of 65 and 74 report functional limitations, whereas, almost three guarters of those older than 74 do so (Ficke, 1992; Statistics Canada, 1991). As such, the



importance of conducting future studies with samples older than 74 cannot be underestimated.

The majority of mobility studies have targeted populations afflicted with specific chronic diseases (Jette & Brach, 1981). Subsequently, the results obtained from these studies will be included in this literature review. Generalizations of findings to the elderly population, however, are tenuous.

With an increasing prevalence of chronic illness, scales were devised to measure the recovery of functional independence (McMillen Moinpour, McCorkle, & Saunders, 1988). The majority of these tools, such as the Katz Activities of Daily Living Scale (ADL), have been designed to measure self-care ability (McMillen Moinpour et al., 1988). Other measures, such as the Haber Disability Scale (Ferraro, 1980) detect difficulties with general mobility movements. Most researchers have used either of these types of measures as indices of disability while acknowledging both as integral to functional status (McMillen Moinpour et al., 1988). Although general physical movement measures have been purported to be more sensitive than ADL measures (Jette & Branch, 1981; Myers & Huddy, 1985) not enough comparison studies have been done to infer overall differences. Moreover, differences in types of scales, as well as variations within similar scales, constrain the comparison of findings across studies (Ficke, 1992).

The items of most mobility scales have been selected by clinicians based on their estimations of essentialness for adequate functional capacity (Bowling, 1991; McDowell & Newell, 1987). For this reason, the majority of tools have been criticized for lacking a clear conceptual basis (Bowling, 1991). Indeed, evidence of elders' perceptions of mobility limitations or functional capacities in the development of these tools is lacking. Only one study, which used a scale that conceptualized functional limitation within the context of elder's perceptions, was located. It suggested that mobility scales designed to take into consideration elder's perceptions of mobility generate lower disability scores than scales not designed as such (see Ficke, 1992).

The sensitivity of capacity versus performance based scales has also been infrequently examined. Performance based measures assess whether or not

respondents do a particular activity, whereas capacity oriented measures assess if a respondent can actually do it (McDowell & Newell, 1988; McMillan Moinpour et al., 1988). Performance based measures have been criticized for their potential to assess factors extrinsic to ability to perform an activity (McDowell & Newell, 1987; McMillan Moinpour et al., 1988). These factors are relevant to the selection of items for the construction of an index of mobility in this study. Few studies, however, have rigorously explored these differences. This is unfortunate because most mobility scales are self-report measures (Bowling, 1991).

The final measurement issue pertains to the contribution of individual items to overall mobility scores. Most mobility items are of the ordinal level of measurement, with overall scores obtained by summing responses across items of varying levels of difficulty. It is therefore possible for subjects to obtain identical mobility scores yet have very different functional abilities (Fisher, 1993; Merbitz et al., 1989). Consequently, this threatens to weaken inferences derived from the information provided by these tools (Merbitz et al., 1989). As such, the

weighting of individual items, according to degree of mobility information imparted, is integral to the mobility scale devised for use in this study. Physical Mobility and Well-Being

Physical health status, measured by a variety of functional indices, has consistently been found to be the strongest predictor of well-being in samples representative of the elderly population (Bowling, 1990; Bowling, Farguhar, Grundy, & Formby, 1993; Gooding et al., 1988; Grant & Chappell, 1983; Wolinsky et al., 1985). In the gerontological literature, the association between mobility and well-being has often been conceptualized in terms of what mobility allows elders to do in their daily lives, rather than how it makes them feel physically. Ebersole and Hess (1994) for example, defined mobility as "the capacity one has for movement within the micro- and macrocosm" (p. 35). Accordingly, they purported mobility to be essential to social contact and activity. Similarly, Hoeffer (1987) explained that a mobility limitation impacts on wellbeing because it threatens to alter the nature of one's social relationships and involvement. Tilden and Weinert (1987) also proposed individuals afflicted with

chronic illnesses to be at risk for diminished participation because of physical limitations, as well as altered perceptions of the ability to maintain equitable relationships.

Evidence supporting such propositions has existed in the literature for considerable time. Using simple correlational statistics, Shanas and her colleagues (1968) for example, found that elders who were unable to go outside because of mobility limitations, reported less social contact and more loneliness. Despite this early finding, few researchers have explored if physical disability influences social relationships and Jubsequently well-being.

Social Integration

In the literature on social relationships, social ties and frequency of interaction have often been collectively referred to as social integration (Harel & Deimling, 1984; House, Landis, & Umberson, 1988; House, Umberson, & Landis, 1988; Turner et al., 1983). Within this definition, social integration has been conceptualized in many different, yet similar ways.

Social integration has also been portrayed as a rocial resource (Harel & Diemling, 1984;

Schwartzer & Leppin, 1991; Turner, Frankel, & Levin, 1983). Researchers who have espoused this conceptualization have attempted to demonstrate a relationship between social integration and social support. For example, Turner and his associates (1983) explored the relationship of social integration with a variety of social support measures; significant low to moderate correlations were found.

Number of social ties and frequency of interaction have also been defined as strictly structural variables (Acock & Hurlbert, 1990; Antonucci, 1990; Israel & Antonucci, 1987; Kahn & Antonucci, 1980, 1981). Despite this structural conceptualization, social ties and interaction have been linked to the processes of social relationships. Kahn and Antonucci (1980, 1981), for example, described social ties and social interaction as the characteristics of relationships in which individuals may be available to provide support.

Social integration has been portrayed as residing on a continuum, with social isolation at the opposite end (House, Umberson, & Landis, 1988). In this depiction, social support has been purported to be one of the processes through which social integration has

its effect. Although, social integration has been found to significantly relate to perceived availability of support (Seeman & Berkman, 1988), this conceptualization has been criticized for its inability to provide information about perception of attachment or satisfaction with one's network (Acock & Hurlbert, 1990; Oxfam & Berkman, 1990).

The study of social integration, measured in terms of number of ties and/or frequency of interaction has been further admonished for not providing information about resources exchanged or perceptions of support (Antonucci, 1990; Rook 1984). On the other hand, Wellman and Berkowitz (1988) have advocated the study of relationships in terms of structural measures claiming these to be more credible than social support measures. Wellman and Berkowitz (1988) have criticized support measures for assuming all interactions to be supportive. Research, indeed, has begun to uncover the complexity and sometimes negative side of "supportive" interactions (Rook, 1984; Tilden & Gaylen, 1987).

A limitation of most of the studies on social relationships is that the rationale or benefit of combining number of ties with frequency of contact has

not been conceptually explained. There are equally as many studies which have combined these variables as there are those which have examined them separately. The fact that the majority of social relationship studies have been conducted using archived data sets may account for this inconsistency.

A serious limitation of social relationship studies is that most have examined ties in persons aged sixty-five or older. Some have even included fifty year olds in their samples of older individuals. The social ties of people who are 65 years old may very well be different from those who are 85, particularly given today's average life expectancy.

Family and Friend Relationships

It has been commonly acknowledged that the elderly maintain close friendships and have frequent contact with their adult children (Antonucci, 1985a; Blieszner, 1989). Relationships, in general, have been identified in qualitative studies to offer a sense of meaning to life (Thorne, Griffin, & Adlersberg, 1986) and to be integral to perceived levels of health and well-being (Fugate Woods et al., 1988; Ryff, 1989). Research has, however, begun to uncover that ties with family differ

from those with friends.

Personal friendships seem to offer a unique source of support since they are often based on mutual choice and need; generational similarities in values and beliefs; and involve a social interchange between equals (Ishii-Kuntz, 1990; Litwak, 1989). Friendships have also been heralded as providing enhanced access to the community and subsequent greater ties (Wellman & Berkowitz, 1988). As such, friendships contribute to an individual's sense of belonging (Crohan & Antonucci, 1989).

The empirical evidence to substantiate such propositions is rather impressive. It is well documented that friendship interaction is more important to elders' morale and well-being than are interactions with family members (Adams & Blieszner, 1989; Crohan & Antonucci, 1989; Ishii-Kuntz, 1990; Johnson, Thomas, & Matre, 1990; Matthews, 1986; Olsen, Iversen, & Sabroe, 1991; Peters & Kaiser, 1985; Stolar, MacEntee, & Hill, 1993). In fact, the quality and frequency of interactions with friends has been found to strongly correlate with life satisfaction (Blau, 1981; Larson, 1978; Lee & Ellithorpe, 1982; Lee &

Ihinger-Tallman, 1980; Lee & Ishii-Kuntz, 1987; McGee, 1985; Ward, Sherman, & Lagory, 1984). Conversely, interaction with younger family members has been found in these studies to have very little impact.

It is relevant to note, however, that sibling relationships in old age have received relatively little attention (Hooyman & Assuman Kiyak, 1991). As well, researchers, who did not specifically compare the relationships of children and friends, have tended to include all family members in a general measure of integration. The confounding of all family members into one measure of ties and/or contact is considered a major limitation and underscores the need for further research differentiated by kinship ties.

Family Integration and Instrumental Support

In one study, more than half of the respondents older than 85 reported receiving instrumental assistance from an adult child on a regular basis (Johnson & Troll, 1992). Another study revealed that almost 90% of the services provided to the aged are informally delivered by family members (Kendig, 1986). It seems, however, that the concrete help given by children to parents in their later years is not related to lack of alternative resources. Research has indicated that when elderly are in need of instrumental support they report strong preference for adult children over friends or formal providers (Ingersoll-Dayton & Antonucci, 1988; Kahn & Antonucci, 1986). Notwithstanding the prominence of adult children in their parents' lives, few have been identified by older parents to be important sources of emotional support (Seeman & Berkman, 1988) or confidantes (Johnson & Troll, 1992).

Friendship Integration and Emotional Support

It seems that a strong emotional component is unique to friendships (Seeman & Berkman, 1988). Shea, Thompson, and Blieszner (1988) for example, found status and love to be the most frequently reported types of support exchanged between older friends. Similarly, Crohan and Antonucci (1989) found emotional intimacy to be prevalent in older friendships.

The availability of friendships in old age has been infrequently examined. The few studies which have done so, indicate conflicting results. Some studies have found friends to be less common with age (Babchuck, 1978-79; Connidis & Davies, 1992; Morgan,

1988; Morgan, Schuster, & Butler, 1991). Others have found no change (Antonucci & Akiyama, 1987; Kahn & Antonucci, 1983). The designs of these studies were cross-sectional and, as such, were unable to detect change in network size over time.

Social Satisfaction

In gualitative studies, satisfaction with relationships has emerged as a dominant theme of health and well-being (Fugate Woods et al., 1988; Ryff, 1989). In their Canadian study, Wellman and Berkowitz (1988) found that 16% of their respondents' active social ties were described as nonsupportive. The importance of this lies in the fact that conflicting social ties have been shown to have a much greater effect on well-being scores than ties described as supportive (Antonucci & Jackson, 1987; Rook, 1984; Waltz, 1986; Wineman, 1990). Findings such as these denote the serious methodological issues that pervade the study of social relationships. The majority of researchers have tended to rely on instruments which tap into areas of support received while neglecting satisfaction. Indeed, results obtained may have been confounded by relational conflict inherent in the assisting behaviors.

Although still a relatively new endeavour, social relationship researchers have begun to use equity theory to study the negative aspects of social ties. Equity theory deals with justice and takes into account the history of giving and taking in relationships. Its proponents contend that when the ratio of contributions and benefits in a relationship are unequal, psychological distress results (Nye, 1979). This distress subsequently incites either partner to restore justice, actually or psychologically (Taylor & Moghaddam, 1987). Researchers have found that when friendships are perceived as balanced, older individuals report greater levels of satisfaction with these relationships (Roberto, 1989; Roberto & Scott, 1986; Rook, 1989) and less loneliness (Rook, 1989). Moreover, the giving and taking in relationships has been expressed by participants to potentiate their own personal learning and development (Thorne et al., 1986). "Overbenefitting" in friendship exchanges, in particular, has been found to be associated with more distress (ingersoll-Dayton & Antonucci, 1988; Roberto & Scott, 1986).

Longitudinal studies on older friendship development suggest that physiological status plays a particularly strong role in changes in social integration and relational satisfaction. Blieszner (1989), for example, found that elders who came to define new friendships as "close" increased the frequency of their interactions and exchanged resources more often. Relationships which did not evolve to be defined as such were explained by the onset of disability. Cross-sectional studies have identified similar relationships. Older people with higher levels of functional disability have been found to report less availability of friends as well as less satisfaction with their extended social networks (Fitzpatrick et al., 1988, 1991; Stewart et al., 1989). In these studies, this was found to negatively affect wellbeing.

The principles of equity appear to operate differently in relationships between family members than between friends. Research has shown that when childrer do not provide support it is considered especially negative, having a strong effect on their parents' well-being (Antonucci & Jackson, 1987;
Ingersoll-Dayton & Antonucci, 1988). Roberto (1989) described the "obligatory nature" of intergenerational relationships whereby the parent-child relationship starts off and remains unbalanced for considerable time. Subsequently, in old age, parents may feel justified in receiving help from their adult children.

The findings generated from this relatively new area of inquiry underscore the necessity of not only including measures of satisfaction in studies on social relationships and well-being, but also, of differentiating satisfaction measures by the type of relationship. A strength of these studies is that they have begun to indicate that the aged evaluate their relationships with family members very differently from those with friends.

Conceptual Framework

The McGill Model of Nursing was used to guide this study. Within this model, the person is depicted to be in constant interaction with the environment. Hence, the social environment is postulated to be the context within which health evolves and develops. In this study, it is assumed that social relationships remain important throughout life because they foster health

and well-being.

In this investigation, social satisfaction is hypothesized to have a direct effect on well-being. Physical mobility and social integration are hypothesized to exert a potentiating effect on wellbeing. The merging lines connecting physical mobility and social integration in the conceptual framework illustrate this multiplicative effect (see Figure 1). In this sense, the dynamic interplay between the person and his or her social environment in potentiating wellbeing is captured.

Well-being, within this study, is viewed as a multidimensional construct comprising health as a major component. Unlike most studies, which have tended to include health as a independent variable, health in this study is viewed as part of the outcome variable. As illustrated by the spiral, the process of achieving well-being is conceptualized as an evolutionary and goal directed process.



Figure 1. Conceptual framework depicting well-being as a function of the main effect of social satisfaction and of the interactional effect between physical mobility and social integration.

Chapter 3

Methods

Design and Purpose

This study employed a cross-sectional correlational design for the purposes of: 1. exploring the relationship of physical mobility, social integration, and social satisfaction to the well-being of unmarried older Canadians; and 2. exploring the relationship, if any, between physical mobility and social integration in potentiating the effect on well-being.

Research Questions

Given the assumptions and hypotheses in this study, the following questions were explored: 1. Of the proposed variables (physical mobility; social integration with children, siblings, other relatives, and friends; social satisfaction with family relations and friendships) what set best predicts the well-being of older unmarried people? 2. Do any of the social integration variables interact with physical mobility to potentiate a well-being effect?

Sample

The sample for this study was obtained from an archived data set of Statistics Canada's 1985 General Social Survey, the GSS. The GSS randomly sampled names of individuals aged sixty-five and older from a 1981 Canada wide census entitled the Labor Force Survey. The GSS excluded people on Indian reserves, full time members of the Canadian armed forces, residents of nursing homes, people without telephones, and those who were unable to communicate because of language difficulties (Statistics Canada, 1985).

The GSS used a stratified design to over represent the elderly population. Individuals older than 74 were given three times the probability of selection.

For this present investigation, only subjects older than 74 were selected from the GSS sample. With increasing life expectancies, it was felt that this age group is more representative of Canada's current elderly population.

In addition, married elders and those living common law or as a couple were not included in this study. Married elders have consistently been found to have significantly more extensive social networks with

greater contact and higher levels of well-being (Antonucci & Akiyama, 1987; Babchuck, 1978-79; Kahn & Antonucci, 1983; Stolar, MacEntee & Hill, 1993). The covariance of marriage and social integration presents a methodological issue in discerning the relationship between physical mobility and social integration in the predication of well-being.

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The total sample, for this investigation involved 754 people. Although the descriptive statistics for the sample include all 754 subjects, one subject was eliminated from the regression analysis. This subject was identified as a multivariate outlier. Setting

All interviews for the GSS were conducted in participants' home between September 20th and October 10th of 1985 by trained research assistants. The interviews lasted approximately 30 minutes.

Instruments

For the purposes of this study, six instruments were developed by combining items in the GSS. These instruments included the following: 1. The physical mobility scale; 2. The well-being index; 3. Four social integration measures; one for children, a second for siblings, a third for other relatives, and a fourth for friends.

Two items from the GSS, friendship satisfaction and satisfaction with family relations, were used as single item measures. To take into account any possible effects of demographics, the following were coded as dummy variables and included in the regression analyses: age, gender, marital status, and living arrangements.

Physical Mobility Scale

From the GSS data set, fourteen questions assessing mobility were selected for the construction of a mobility scale (see Appendix A). Seven dichotomous items asked respondents if they had trouble with various activities and/or movements. A three point ordinal item, which assessed the amount of difficulty, corresponded to each dichotomous item.

The objective of this tool was to provide indices of mobility in community dwelling elders for the purpose of hypothesis testing. Physical mobility was conceptualized as self-assessed functional ability to perform generalized gross and fine motor activities

and/or movements.

Items from the GSS which assessed self-care ability were not selected for the mobility tool. It has been recognized that one's social network and support system can influence perception of self-care capacity (Applegate, Blass, & Franklin Williams, 1990; Bowling, 1991; Myers & Huddy, 1985). This could result in biased mobility scores.

Items related to exercise in the GSS were also not included in this measure. These items are performance based; they established participation in various activities rather than level of ability. As such, responses obtained may have been related to factors other than a person's mobility level (McDowell & Newell, 1987; McMillan Moinpour et al., 1988). Furthermore, these items may confound the social interaction measures since forty percent of elders who regularly exercise do so with either a friend or a family member (Stephens Craig, 1990).

Content validity was established by conducting a literature review on mobility measurement. The results of this review follow.

An assortment of the items contained in the

mobility scale developed for this study have been included in numerous mobility instruments. In general, many of the items in a physical movement and activity scale used by Myers and Huddy (1985) are similar in content and scaling to those selected for this study. Myers and Huddy (1985) compared three self-report instruments and found a scale measuring physical movements and activities to be more sensitive and have more discriminatory power than either a gross mobility scale or a modified version of the Katz Activities of Daily Living scale.

Walking, bending and using stairs have frequently been included in mobility tools (Ferarro, 1980; Garrad & Bennet, 1971; McWhinnie, 1981; Meenan, Gertman & Mason, 1980; Patrick et al., 1981; Rand Corporation, 1979). Similarly, carrying a heavy object is a classic item of the Organization for Economic Cooperation and Development Long Term Disability Questionnaire (McWhinnie, 1981) and of the Rand Health Inspection experiment (Rand Corporation, 1979). These types of gross motor items address substantial levels of disability appropriate to the very elderly population (McDowell & Nevell, 1987).

Ability to grasp, which assesses fine motor movement, has been included in the Lamber Disability Screening questionnaire (Patrick et al., 1981); the Tufts Assessment of Motor Performance (Haley, Ludlow, Gans, Faas, & Inacio, 1991); and the Haber Disability Scale (Ferarro, 1981).

To facilitate analysis of the total scale score, the items were reordered in SAS and in the editing section of the Testgraf program. In Testgraf, a computer package designed for the graphical analysis of questionnaire data, this was accomplished by using fixed weights. This was necessary since the items possessed inconsistent scoring options. For example, the ordinal items contained options 0, 1, 2. Although 0 and 1 indicated low to high mobility, 2 represented an intermediate level. The dichotomous items had options 0, 1 but manifested the reverse order of mobility; 0 indicated high mobility and 1 indicated low mobility. Thus, a total score of fourteen could signify either minimum or maximum mobility. Incorporating fixed weights into the scale resulted in new scores ranging from a minimum mobility level of three to a maximum of thirty-one.

Subsequently, internal consistency was assessed by Cronbach's alpha in SAS. A coefficient of .85 was obtained indicating an acceptable level of reliability.

The Testgraf package was then used to analyze the internal structure of the physical mobility scale. The results of this graphical analysis are presented in Appendix B of this document.

Testgraf was designed to approximate and utilize the probability of selecting an option as a function of the trait being measured (Ramsay, 1993). In this study, two plots for the analysis of each item were generated. The first was a plot of the characteristic curves; they depict the degree to which each option of the various items contributed to the total mobility score (see Appendix B; plots 1, 3, 5, 7, 9, 11, 13, & 15). The second was a plot illustrating the extent to which the scores on each item were a function of the total scale score (see Appendix B; plots 2, 4, 6, 8, 10, 12, & 14).

Plot one shows that the probability of selecting option 2, which measured no difficulty walking, increased with the average scale score. For option 1, indicating trouble walking, the reverse occurred.

Similarly, plot 3 demonstrates that the probability of selecting no trouble walking (option 0) increased with total mobility score. The reverse occurred for maximum difficulty walking (option 1). Intermediate walking ability (option 2) was normally distributed, approaching a 50% selection probability by those with a total mobility score of fourteen. In addition, items one and two both directly increased as a function of the total mobility score (see Appendix B; plots 2 & 4).

The preceding discussion of the graphical analyses for items one and two indicates that both substantially contributed to the overall mobility trait measured. Likewise, the plots of the other items, except for those demonstrating grasping and reaching ability, validate their contribution to the overall mobility trait.

Unlike most of the curves depicting no trouble in the various activities, those for the grasping items did not begin with a probability of zero (see Appendix B; plots 21 & 23). They indicate, rather, that people with a total score of only 3 had almost a 20% chance of selecting the option corresponding to no trouble

grasping. This may be related to the fact that grasping is a fine motor activity whereas the majority of items of the mobility scale are gross motor. Hence, this item contributed less to the overall trait being measured. This effect is particularly noted in the curves corresponding to item number 12 (see Appendix B; plot 23). The curve for option 1, for example, indicates that almost no subject was completely unable to grasp. Moreover, plot 24 shows that degree of grasping difficulty varied little as a function of total mobility. In this plot, the cross-hatchings on the function line give further information about item 12. These cross-hatchings represent 95% point-wise confidence intervals for the true curve (Ramsay, 1993). Unlike preceding items, they are particularly tall below scores of fifteen for this item. This further substantiates that item 12 contributed little information for low to mid mobility scorers.

From plots 25 and 26 it is evident that item 13, which measured ability to reach over one's head, contributed to the overall mobility score. Its ordinal counterpart, however, reveals that inability to reach did not contribute to the overall trait as much as

other items. In plot 27 the curves show that only the most immobile people, those with scores of eight or less, could not reach over their heads at all (option 1) or had some difficulty doing so (option 2). Moreover, while plot 28 reveals that the average score on this item increased as a function of total mobility score it is less steep than those of almost all other items.

These analyses indicate that grasping, and reaching to a lesser extent, did not contribute to the overall trait as much as the other items did. Variations in the high contributors, however, signify that each item did not uniformly impart mobility information. To illustrate, the characteristic curves of item 4 will be compared with those of item 6 (see Appendix B; plots 7 & 11). Item 4 asked subjects if they were completely unable to walk up and down stairs. Its options included "not applicable" (option 0), indicating no trouble at all; " o" (option 2), indicating an intermediate level of ability; and "yes" completely unable (option 1). Individuals with the lowest mobility scores, between 3 and 5, had a 50 to 65% probability of being completely unable to walk up

and down stairs (option 1). At a scale score of 5, option 2, indicating intermediate ability, began to dominate until a scale score of 20. At this point, subjects began to increasingly select option 0, no trouble at all with stairs.

Item 6 asked respondents if they were completely unable to carry a 5 kilogram object over a distance of 10 meters. Response options were the same. The high probability of being completely unable to do this activity was exhibited by option 1. This option was dominant for subjects with low to moderate mobility levels and was only briefly overtaken by the intermediate option (2); no trouble (option 0) quickly took over at a scale score of 16. Conversely, the intermediate option of item 4 was more characteristic of a middle range of mobility.

The literature on mobility measurement has widely acknowledged that the varying levels of item difficulty could lead to misinterpretation of total mobility scores (Fisher, 1993; Merbitz et al., 1989). Almost all mobility items are of the ordinal level of measurement, with overall scores obtained by summing responses across items. Hence, it is possible for

subjects to obtain identical mobility scores while portraying very different functional abilities (Fisher, 1993; Merbitz et al., 1989). In this study, the importance of optimally weighting each item according to degree of mobility information provided was essential. Accordingly, the scores for each participant's index of mobility were derived by maximum likelihood estimation using the Testgraf program. The new mobility scores ranged from -2.5 to 2.5; the latter indicates a higher level of mobility.

Maximum likelihood estimation produced these scores by weighting items and options according to the degree of mobility level information they provided (Ramsay, 1993). This approach has been recognized to produce estimates with good statistical properties (Morrison, 1990; Ramsay & Winsberg, 1991).

Well-Being Index

Well-being in this study was conceptualized as a multidimensional construct integrating a person's subjective appraisal of four dimensions of his or her life. These included life satisfaction, self-affect, satisfaction with major activity, self-rated health and health satisfaction (see Appendix C). These items were

aggregated to form an index of well-being for the purpose of hypothesis testing.

Content validity of this tool is supported by the literature on well-being. In general, the literature recognizes well-being as a subjective, rather than objective phenomenon (Diener, 1984). A major advantage of the items for this tool is that they are all selfreports.

Selection of the item assessing respondents' feelings about their lives is substantiated by its inclusion in numerous scales constructed by vell-being researchers (Ducharme & Rowat, 1992; Ishii-Kuntz, 1990; Levitt, Antonucci, Clark, Rotton, & Finley, 1985-86; Neugarten, Havinghurst, & Tobin, 1961). Satisfaction with life has been purported to represent a person's cognitive appraisal of life in relation to goal achievement (Neugarten, Havinghurst, & Tobin, 1961).

Item number five asked respondents to describe themselves along a gradient of happiness. This item has been claimed to represent a more affective estimation of one's current life situation (Zhan, 1992). Its inclusion is justified by the fact that general affect is the major evaluative component of

Bradburn's (1969) well-being scale.

Self-rated health has only recently been incorporated in well-being tools, mainly by health care researchers (Ducharme & Rowat, 1992; Stewart et al., 1989). In addition to this cognitive estimator of health, an affective measure assessing health satisfaction was included in the well-being measure. It was felt that these items together would give a broader evaluation of a person's health perception.

Item number three assessed respondents' feelings about their major activity. Neugarten and colleagues (1961) proposed enthusiasm with one's self-defined major activity to be an essential component of life satisfaction. In addition, satisfaction with time spent has been found to be a significant predictor of morale in older individuals (Mancini & Orthner, 1980) and to significantly correlate with life satisfaction (Riopel Smith, Kielhofner, & Hawkin Watts, 1986).

Construct validity of the well-being index was demonstrated through principal component analysis using the factor procedure in the SAS statistical package. A principal component was generated, accounting for 58.6% of the variance in the items. Moreover, each of the

items loaded highly on the principal component, ranging from .66 to .83. Thus, this measure manifested an acceptable level of construct validity.

Internal consistency reliability of the well-being tool was assessed by Cronbach's alpha. Reliability was demonstrated by a substantially high coefficient of .82.

The five items selected for the well-being tool each consisted of a four point ordinal scale. The order of the scale items was reversed, resulting in items ranging from very dissatisfied (1) to very satisfied (4). The well-being scores were derived by summing across the items and dividing by the number of responses answered. This resulted in a continuous measure with scores ranging from 1 to 4; the latter indicates a higher level of well-being.

Item options of "no opinion", which less than 3.8% of the sample selected, and "not stated", which less than 1% selected, were treated as missing data. In other words, these scores were not given weight when averaging the items for each individual's well-being score.

Social Integration Measures

In this study, social integration as conceptualized by House, Umberson, and Landis (1988) was employed. House, Unberson, and Landis (1988) explained that integration can be measured by number of social ties or frequency of interaction and can be differentiated by type of relationship. As such, integration was assessed for relationships with children, siblings, other relatives, and close friends using an index derived from the combination of three items (see Appendix D). These three items assessed number of ties, frequency of face to face contact, and frequency of letter/telephone contact for each of the four relationships. This resulted in four measures of integration for the purpose of hypothesis testing. Unfortunately, contact with grandchildren was not assessed in the GSS and thus could not be included in this study.

The four questions assessing number of children, siblings, other relatives, and close friends in the GSS were originally measured as ratio variables. Prior to constructing the integration measures corresponding to each relationship, these variables were assessed for

outliers. This was accomplished by analyzing histograms and boxplots generated from the proc univariate procedure in SAS. All of these variables possessed extreme outliers. For example, although 85% of the subjects had 4 or fever siblings this item ranged from 0 to 13. Consequently, this variable exhibited 37 outside values (more than 1.5 interguartile ranges, IQRs, above the 3rd guartile) and 7 detached values (more than 3 IORs above the 3rd quartile). As it is well know that outliers can seriously affect the fitting of a model (Draper & Smith, 1981; Kleinbaum, Kupper, & Muller, 1988) this variable was subsequently ordered from 0 to 4; values less than 4 represent absolute values and 4 indicates 4 or more siblings. Number of children exhibited a similar pattern and accordingly was assigned the same intervals.

Number of relatives and number of close friends had a much wider range than other ties. For example, the number of relatives ranged from 0 to 98 with 32 outside and 33 detached values. This variable was subsequently ordered from 0 to 4. Zero represents its absolute value; 1 represents one or two relatives; 2

represents three or four relatives; 3 represents five or six relatives; and 4 indicates seven or more relatives. Number of close friends displayed a similar pattern and was given the same scoring option. These intervals were chosen as they are reflective of the wider range of relatives and friends reported by the respondents. For example, almost 82% of respondents had less than seven relatives and close friends. This type of classification for these variables has been adopted by Sabin (1993). Moreover, the transformation of ratio variables to interval or ordinal levels of measurement has been found, in general, to result neither in biased estimates (Johnson & Creech, 1983; Traylor, 1983) nor decreased discriminatory power (Weiss, 1986). In fact, one can confidently perform these transformations when the number of item categories is greater than four and the sample is large (Johnson & Creech, 1983).

The items assessing face to face contact and telephone/letter contact consisted of a five point Likert scale ranging from daily (option 1) to never (option 5). Once again, the order of these items was reversed to convey increasing social contact.

Transformations were performed on these variables for all relationships. To facilitate discussing these modifications, only the item assessing frequency of face to face contact with close friends is presented in the following paragraph.

In addition to the 5 ordered options previously mentioned, the item assessing face to face contact with close friends had a "not applicable" option (option 0). This option was available for subjects who did not have any close friends. To facilitate the construction of an ordered scale, this option was combined with the never option. In effect, this new item (see Appendix D) gave a score of 0 to subjects who did not have any contact with their friends as well as to those who did not have contact with friends because they reported not having any. This resulted in a five point Likert scale ranging from never seeing friends (option 0) to seeing friends daily (option 4). The same intervals were assigned to the item assessing frequency of telephone /letter contact with close friends. This new scoring option corresponded to the intervals measuring number of ties and facilitated combining the three items to form an index of integration with friends.

Similar to other researchers (Berkman & Syme, 1979; House, Landis, & Umberson, 1988; Johnson et al., 1990; Russel, Cutrona, Rose, & Yurko, 1984), the mean of each participant's scores on the three variables was taken in order to obtain an index of integration with friends. This controlled for missing values, although the proportion of subjects who had not answered the questions was less than one percent. The new scores were continuous and ranged from 0 to 4. Zero indicates that the subject does not have any friends and 4 indicates that the subject has at least seven friends with whom he or she talks to on the telephone and sees daily. A similar approach was adopted by Luke, Norton, & Denbigh (1981) in forming a measure of integration to take into account the absence of certain relationships in particirants' lives.

Construct validity of these four integration measures was assessed by principal component analysis using varimax rotation. Validity was adequately demonstrated. Loadings ranged from .79 to .92 between number of ties, face to face contact, and telephone /letter contact for each specific relationship (see Table 1).

Table 1

Principal Component Analysis of the Social Integration

Measures Ranked by Varimax Rotation Factor Loading

<u>ariable</u> <u>F</u>	<u>actor 1</u>	Factor 2	2 Factor 3	Factor 4
CHILDREN				
mber	.829			
ce to Face Conta	ct .921			
one/Letters	.903			
OTHER RELATIV	ES			
mber		.828		
ce to Face Conta	ct	.910		
one/Letter		.886		
CLOSE FRIENDS	 			······································
mber			.787	
ce to Face Conta	ct		.890	
one/Letter			.830	
SIBLINGS				
mber				.790
Face to Face Contact				.853
lephone/Letter				.843
genvalues	2.383	2.379	2.155	2.098
Variance	19.860	19.829	17.956	17.491
genvalues Variance <u>te</u> . Loadings < .	2.383 19.860 20 not r	2.379 19.829 eported.	2.155 17.956	

Internal consistency reliability was assessed by item-total Spearman correlations (see Table 2). The high correlations obtained demonstrate an acceptable level of reliability.

Social Satisfaction Measures

Relational content has been defined as the quality of social relationships and includes aspects such as social support, conflict, and regulation or control (House, Umberson, & Landis, 1988). In this study, quality of family and friend relationships was assessed by two single item self-reports indicating level of satisfaction (see Appendix E). These items are of the ordinal level of measurement with options ranging from very dissatisfied to very satisfied. Single item measures have been found, in general, to possess acceptable psychometric properties (Youngblut & Casper, 1993).

Renowned social relationship researchers have used items similar to the social satisfaction measures used in this study; this validates the use of these items in this present study. For example, Antonucci and Akiyama (1987) as well as Ishii-Kuntz (1990) used two single item Likert scales to assess satisfaction with friends

Table 2

Item-Total Spearman Correlation Coefficients of the Social Integration Measures with Face to Face Contact, Telephone/Letter Contact, and Number of Relationship ties

Social Integration	Face to Face	Phone/Letter	Number
With Children	,89**	.84**	.82**
With Siblings	. 88**	.85**	.82**
With Relatives	.93***	.92***	.89**
With Close Friends	. 84**	.81**	.80**

<u>Note</u>. **<u>p</u><.0001 ***<u>p</u><.0



and family relations. In both studies these items were depicted as quantitative measures tapping into qualitative aspects of ties; this conceptualization was espoused in this study.

Demographic Measures

To simplify their interpretation, the original dummy variable coding of the following demographic variables were reclassified. Marital status was reclassified as follows: widowed subjects were given a 0; separated/divorced subjects 1; and single/never married subjects 2. Living arrangement was also recoded; those living alone were classified as 0 and those living with others as 1. The GSS age groups of 75 - 79 and 80 or older were recoded; 75 to 79 year olds were given a score of 0 to replace the original 13 and those older than 80 were given a score of 1, previously coded by 14. Gender was recoded by a 0 for females and a 1 for males. Classifying one group by a zero when two groups are represented in nominal variables has been recommended as a means to simplify statistical interpretation (Draper & Smith, 1981).

Method of Data Analysis

Statistical procedures pertaining to the tools have been discussed in the instrumentation section of this document. All data, except for the Testgraf analysis of the physical mobility tool, were coded and analyzed on the Statistical Analysis System, SAS.

The descriptive information about the sample was obtained by univariate analyses in SAS. Discrete data were analyzed by nonparametric statistical procedures and continuous variables were analyzed by parametric procedures.

The data were assessed for multivariate outliers by analyzing studentized residuals in the general regression analysis. Only one residual was identified as a significant outlier; it had a probability = .01. Subsequently, the corresponding subject was eliminated from the sample.

Prior to answering the research questions, a collinearity diagnostics was performed on the data in the SAS package. This analysis displayed proportions of shared variance amongst the independent variables. This assessment was relevant because multicollinearity is often a problem in well-being studies (Deiner, 1984)

and particularly when testing for interactional effects (Kleinbaum et al., 1988). This can have significant ramifications to the reliability of the parameter estimates as it is well known that moderate to extreme multicollinearity can seriously affect the fitting of a model in least squares analyses (Draper & Smith, 1981).

The data were analyzed by stepwise regression in SAS using a selection level entry of .05. A summary table for each stepwise regression procedure is presented in the results section. These tables illustrate the steps at which variables were entered, the standardized regression coefficients (st est), the squared multiple correlation coefficients (\mathbb{R}^2), the squared partial correlation coefficients (\mathbb{P}^2) and the corresponding partial F values (<u>F</u>) with levels of significance (<u>p</u>).

Assumptions

In this study, it was assumed that social relationships remain important to the older person because they foster health and well-being. It was also assumed that a mobility limitation impacts on wellbeing because it not only limits social involvement, but also, threatens to alter the nature of one's social

relationships.

Limitations

It is recognized that restricting the sample to individuals who are not presently married, living common law, or as a couple is a trade off. Although limiting the study to this subsample allowed for a deeper exploration of the relationships amongst the variables, it nonetheless, limits generalizability of the findings. This is not considered a major limitation given that 60% of individuals over the age of seventy five are presently unmarried (Statistics Canada, 1991b).

Another limitation is the maturity of the data. Since the data were collected in 1985 it may not be generalizable to today's older population. This has been recognized as one of the common drawbacks of secondary analyses (McArt & McDougal, 1985).

The item which assessed quantity of relatives asked respondents to indicate the number of relatives with whom they have had contact with in the last three months. It is recognized that this item is somewhat confounded by frequency of interaction. All of the other items assessing number of ties were not qualified

by frequency of interaction.

Lastly, the GSS data set does not include any questions on frequency of interaction with grandchildren. This is unfortunate because satisfaction with family relations includes feelings towards all family members. As well, satisfaction with various family relationships is tied up in one general question assessing family satisfaction rather than one corresponding to each type of relationship. The unavailability of specific variables of interest to the researcher has been deemed another disadvantage of secondary analyses (Gooding, 1988).

Ethical Considerations

The data, for this study, were obtained from a data bank located in the central computer system of McGill University. This data bank, which was supplied by Statistics Canada, does not contain the names of any of the participants. Hence, anonymity has been protected and cannot be violated. In addition, any published articles resulting from this study will indicate Statistics Canada as the provider of the data.

Chapter 4

<u>Results</u>

The purpose of this study was to explore the importance of physical mobility and social relationships to the well-being of older unmarried persons. An additional purpose was to verify if physical mobility and social integration interact to potentiate well-being.

Given that multicollinearity is often a problem in well-being studies, and particularly when testing for interactional effects (Diener, 1984), the results of a collinearity diagnostics are initially reported in this chapter. Subsequently, the findings of the study are presented.

Age group, as originally measured in the GSS, was identified as a significant predictor of well-being in this study; this occurred when all of the independent variables were initially regressed on well-being. As such, the findings of this investigation are divided into two major sections. First, descriptive information about the sample is presented according to demographic variables and the principal variables under investigation. These variables are initially described

for the total sample and then for the GSS age categories of 75 to 79 and 80 or older. Second, the results of the data analysis are presented generally for the total sample and then specifically for the two age groups.

Collinearity Diagnostics of the Independent Variables

A collinearity diagnostics was performed on the independent variables by examining: 1) variance inflation factors (VIF) of the predictor variables and 2) an eigenanalysis of the predictor correlation matrix. The independent variables included: physical mobility; social integration with children, with siblings, with other relatives, and with close friends; friendship satisfaction; satisfaction with family relations; age; gender; marital status; and living arrangements. This analysis was conducted for the total sample and when the sample was differentiated by age and gender.

VIFs, which indicate inflation in the variances of the independent variables due to collinearities amongst them, should be less than eleven (Kleinbaum et al., 1988). The maximum VIF in this study was 10.74.

An eigenanalysis of the predictor correlation

matrix indicated no excessive multicollinearity. The degree to which a matrix of independent variables is ill-conditioned or singular is represented by the condition numbers (CNs) generated by this analysis. Thirty is said to reflect moderate to severe collinearity (Kleinbaum et al., 1988); all of the CNs in this study were less than 16. This eigenanalysis, however, detected some shared variance between satisfaction with family relations and satisfaction with friendships; they had principal component loadings of .57 and .51 respectively. Although two or more loadings greater than .50 may be of concern, they should always be analyzed in relation to their associated condition number (Kleinbaum et al., 1988). The condition number for satisfaction with family relations and friendships was merely 9.67. This suggests a minimal correlation, inconsequential to least squares analysis. No other principal component had more than one variable load highly on it. Descriptive Information about the Sample

The sample was comprised of 754 individuals who were neither married nor living common law at the time of data collection. This selection criterion was

adopted to facilitate testing of interactional effects between each of the social integration variables and physical mobility.

The participants were predominantly female, older than 80 and living alone (see Table 3). No significant differences between the two age groups were found on the demographic variables (see Table 4).

The sample also reflected the cultural diversity of Canada. Thirty-four percent of the participants, for example, were born in a country other than Canada. Languages spoken at home included: English (79%), French (14%), and others (7%). In addition, 53% of the subjects reported that they were protestant, 4% catholic, 4% agnostic, and 39% stated they belonged to other denominations.

More than two thirds of the participants had less than a high school education. In general, this is reflective of the educational opportunities that existed when the participants in this age group were school aged.

Table 5 displays the average score on the major variables under investigation; Table 6 presents them according to age group. The sample had a slightly
Frequency of Demographic Study Variables for Total

Sample

<u>Variable</u>	Frequency	<u>Percentage</u>	
Gender			
Female	567	75%	
Male	187	25%	
ge Group			
75 to 79	346	46%	
80 or Older	408	54%	
farital Status			
Widowed	639	85%	
Single/Never Married	79	114	
Separated/Divorced	36	5%	
living Arrangements			
A lone	519	69%	
With Others	235	31%	

Description of Sample on Demographic Variables by Age Group

<u>Variable</u>	N aged 75	5-79 (%)	N_aged	<u>1 80+ (%)</u>	<u>x²(df)</u>
Gender		<u></u>			.00(1) ns
Female	259	(75.07%)	307	(75.25%)	
Male	86	(24.93%)	101	(24.75%)	
Marital Statu		······································			.07(2) ns
Widowed	291	(84.35%)	347	(85.05%)	
Separated/Di	vorced 17	(4.93%)	19	(4.66%)	
Single	37	(10.72%)	12	(10.29%)	
Living Arrang	ements			3	.14(1) ns
Alone	249	(72.17%)	270	(66.18%)	
With others	96	(27.83%)	138	(33.82%)	

<u>Note</u>. ns = nonsignificant, \underline{p} >.05

Variable	R	ang	2	N	M	<u>SD</u>
Well-being	1	to	4	754	3.15	.63
Physical Mobility	-2.5	to	+2.5	754	. 22	1.36
Bocial Integration	with					
Children	0	to	4	753	2.12	1.29
Siblings	0	to	4	754	1.52	1.10
Relatives	0	to	4	753	1.27	1.15
Close Friends	0	to	4	753	2.01	1.20
Social Satisfaction	with					
Family Relations	1	to	4	726	3.73	.52
Friendships	1	to	4	731	3.65	.62

Description of Sample on Major Study Variables

Note. unequal N because of missing values

Tal	ble	6
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Description of Sample on Ma	or Study	Variable	s by Age
<u>Variable</u>	Ħ	<u>9D</u>	<u>t(df)</u>
Well-being		-2	.07(751)*
Age 75-79 (N=345)	3.10	.64	
Age 80+ (N=408)	3.19	.61	
Physical Mobility		4	.18(751)***
Age 75-79 (N=345)	. 44	1.35	
Age 80+ (N=408)	.03	1.35	
Integration with Children	بېسىمى <u>دە ئەرەپ يىكى تەرىپىيە</u> بېرە بىرىمىرى نىرىي ب		.05(751) n s
Age 75-79 (N≠345)	2.11	1.29	
Age 80+ (N=408)	2.12	1.29	
Integration with Siblings		4	.38(751)***
Age 75-79 (N=345)	1.71	1.06	
Age 80+ (N=408)	1.36	1.12	
<u>Note</u> , unequal N because of	missing d	lata	
ns = nonsignificant <u>p</u> >.05			
* <u>p</u> <.05, ** <u>p</u> <.01, *** <u>p</u> <.0001			

⁴variable analyzed by nonparametric ANOVA

Table 6 (continued)

Description of Sample on Maj	or Study	<u>/ Varia</u>	bles by Age
<u>Variable</u>	M	SD	<u>t(df)</u>
Integration with Relatives			07(750) ns
Age 75-79 (N=344)	1.27	1.23	
Age 80+ (N=408)	1.28	1.16	
Integration with Close Frien	ds		2.70(750)**
Age 75-79 (N≖344)	2.14	1.15	
λge 80+ (N=408)	1.91	1.24	
Satisfaction with Family Rel	ations ^a		1.22(-) ns
Age 75 to 79 (N=333)	3.71	.06	
Age 80+ (N=392)	3.75	.01	
Satisfaction with Friendship) s a		1.00(-) ns
Age 75 to 79 (N=332)	3.63	.03	
Age 80+ (N=398)	3.66	.00	
Note: unequal N because of 1	uissing (data	
ns = nonsignificant, <u>p</u> >.05			
*p<.05, **p<.01, ***p<.0001			
⁴ variable analyzed by nonpar	ametric	λνονλ	

above average level of mobility with younger participants scoring significantly higher on this index.

In contrast, younger participants had lower wellbeing scores. Most participants, however, had relatively high well-being scores and were quite satisfied with their family relations and friendships. As well, the majority had average scores on the various social integration measures, although, younger participants were somewhat more integrated with their siblings and friends.

In summary, the 754 unmarried people sampled by the GSS represented a cross-section of Canada's older unmarried community dwelling population. Most reported being very satisfied with the major domains of their lives. As well, despite a wide range of mobility levels, most participants were living on their own. Analysis of the Research Questions for the Total Sample

This study explored the following questions: 1. Of the proposed variables (physical mobility; social integration with children, siblings, relatives, and close friends; and social satisfaction with family relations, and with friendships) what set best predicts

well-being in older unmarried people? 2. Do any of the social integration variables interact with physical mobility to potentiate the effect on well-being?

These questions were answered simultaneously. A general approach, which integrated four separate interaction terms as independent variables, was employed. These constructed variables were included with the major independent study variables and the selected demographic variables in the regression analyses.

Table 7 displays the summary of the stepwise regression analysis for the total sample. Of the 15 variables entered, only four were selected for entry. Not one of the four significant predictors was removed at any of the steps during the procedure.

Physical mobility was the best predictor; it accounted for 24% of the variance in well-being. Satisfaction with friendships followed. It explained an additional 13% of the variance.

Age group was selected at step 3. This variable had been coded as a dummy variable; 75 to 79 year olds were given a score 0 and those 80 or older were given a

Summary of Stepwise Regression Procedure; Total Sample							
Step	Variable	st est	R ²	pR ²	F	Ð	
1 Phy	ysical Mobility	. 46	.2442	.2442	226.90	.0001	
2 Fr	iend Satisfaction	n.32	.3788	.1346	146.77	.0001	
3 Age	e Group	.12	.3938	.0149	18.64	.0001	
4 Far	mily Satisfaction	n .11	.4038	.0018	9.12	.0026	

score of 1. As such, the associated positive standardized coefficient indicates that older participants reported somewhat higher levels of wellbeing across increasing ranges of mobility and friendship satisfaction.

Satisfaction with family relations was selected lasi. Although significant, this variable accounted for less than .2% of the variance in well-being. In addition, none of the social integration variables interacted with physical mobility to potentiate a wellbeing effect.

Analysis of the Research Questions According to Age Group

The separate regression analysis for those aged 80 and older involved 368 subjects. The summary of this stepwise procedure, which included all independent variables, is presented in Table 8. In general, the results of this analysis correspond to those for the total sample. Physical mobility and satisfaction with friendships were the best predictors of this age group's well-being. Although satisfaction with family relations followed, it only marginally improved the fit.

Summary of Stepwise Regression Procedure; Subjects Age 80 and Older

Ste	ep Variable	st est	R ²	pR ²	£	<u>p</u>
1	Physical Mobility	. 45	. 2484	. 2484	127.59	.0001
2	Friend Satisfaction	.28	.3634	.1149	69.52	.0001
3	Family Satisfaction	.12	.3739	.0106	6.49	.0112

The separate regression analysis for subjects aged 75 to 79 involved 345 subjects, 82 men and 249 women. Although all of the independent variables were included, feelings about family relations was not selected in the stepwise procedure. In this analysis, physical mobility and satisfaction with friendships remained the most significant predictors of well-being. Unlike the analysis for the older age group, a significant difference in gender was revealed (see Table 9).

With the selection of gender, the sequential error sums of squares decreased from 21 to 2. Since females were coded as 0 and males as 1, the negative standardized gender coefficient indicates that males started off with slightly lower levels of well-being. This difference was further explored with the addition of a gender by mobility interaction term. Subsequently, the gender by mobility term was selected at step 4. Its positive coefficient indicates that with increasing physical mobility the rate of men's well-being began to increase more than it did for women.

Summary of Stepwise Regression Procedure; Subjects Age 75 to 79

St	cep Variable	st est	R ²	pR ¹	E	p
	Subjects Age 75	-79		<u></u>		
1	Physical mobility	. 43	. 2766	. 2766	126.16	.0001
2	Friend Satisfactio	on .38	. 4339	.1573	91.42	.0001
3	Gender	18	.4468	.0130	7.69	.0059
4	Gender by Mobility	.13	. 4563	.0095	5.69	.0177
	Females Age 75-	-79				
1	Physical Mobility	. 43	. 2485	.2485	79.38	.0001
2	Friend Satisfactio	on .39	.3971	.1485	58.88	.0001
_	Males Age 75-79	•				<u></u>
1	Physical Mobility	.60	. 4662	. 4662	70.75	.0001
2	Friend Satisfactio	on .35	.5830	.1168	22.41	.0001

To discern the importance of physical mobility to this younger group's well-being, a separate regression analysis was conducted according to gender. The following independent variables were included: physical mobility, satisfaction with friendships and satisfaction with family relations.

The results, as illustrated in Table 9, explicate the particular importance of physical mobility to younger males' well-being. Physical mobility was given a substantially larger weighting (.60) in the men's analysis than in the women's (.43). Similarly, mobility explained younger men's well-being considerably more ($R^2 = 47$ %) than the well-being of their female counterparts ($R^2 = 25$ %).

The men in this age group reported higher mobility levels ($\underline{M} = .92$, $\underline{SD} = 1.27$) than the women ($\underline{M} = .28$, $\underline{SD} = 1.34$). This was statistically significant $\underline{t}(343) = -3.85$, $\underline{p} = .0001$. In fact, these men were more mobile than any other gender-age group. The women in the younger age group were somewhat more satisfied with their friendships ($\underline{M} = 3.67$, $\underline{SD} = .12$) than were their male counterparts ($\underline{M} = 3.51$, $\underline{SD} = .00$); this was also statistically significant with a chi-square(1) =

4.61, \underline{p} = .03. Variations in the demographic and study variables, which could potentially explain the difference between men and women in this age group, were not found.

Summary of Findings

In summary, this investigation revealed physical mobility and friendship satisfaction to be the major predictors of well-being for unmarried older Canadians. Together they accounted for 40% of the variance. Social integration, unexpectedly, was not significant. Subsequently, none of the social integration variables interacted with physical mobility to potentiate a wellbeing effect.

Age group was found to be a significant predictor of well-being. When this was further explored, the major predictors' remained the same. The importance of satisfaction with family relations, however, was identified as a significant predictor only for subjects older than 80; although, the effect was weak. Moreover, a strong gender difference for younger participants was uncovered. For men, physical mobility had a strong well-being effect; the final model explained 58% of their well-being.

Chapter 5

Discussion

The purpose of this study was to explore the importance of physical mobility and social relationships to the well-being of older unmarried people. An additional purpose was to verify if physical mobility interacted with any of the social integration variables to potentiate well-being. To facilitate investigation of the second research question, an unmarried sample was selected.

The findings of this study are discussed separately for each of the two research questions. The analysis of the first research question uncovered significant age and gender differences. As such, interpretations of these findings are incorporated in the discussion of the major predictors. The major well-being predictors identified in this study are presented according to the steps in which they were selected during the regression procedure. In closing the discussion, implications for the practice of nursing and suggestions for further research are explored.

2

First Research Question

The first research question asked: What set of independent variables best predicts the well-being of older unmarried people? The independent variables included: physical mobility; social integration with children, siblings, other relatives, and close friends; and social satisfaction with friendships and with family relations. Marital status, age, gender and living arrangements were also included in order to distinguish possible demographic differences.

This study identified, in the following order, physical mobility, friendship satisfaction, and age group as the best set of variables most strongly related to well-being. Satisfaction with family relations was also significant, although its partial correlation with well-being was weak.

The significance of this best set of variables must be interpreted in view of the subjective nature of the measures and the cross-sectional design employed in this study. As such, the direction of the relationship cannot be established despite the fact that the variables were selected in the stepwise procedure at relatively high alpha levels.

This criticism notwithstanding, the selection of physical mobility as the most significant predictor of well-being is consistent with other studies in which various indices of physical functioning were employed (Bowling, 1990; Bowling et al., 1993; Gooding et al., 1988; Grant & Chappell, 1983; Wolinsky et al., 1985). Thus, it is logical to deduce that self-rated physical mobility is one of the most important factors to the well-being of unmarried Canadians during their later years.

Unlike other studies, physical mobility was more strongly identified for the well-being of 75 to 79 year old men than for any other age-gender group. The sampling strategy employed in this present study may be integral to the interpretation of this finding. Whereas more than two thirds of the 75 to 79 year old men in this study were either widowed or separated /divorced, the majority of men in other studies have been married. The integral role that marriage plays in men's well-being has been widely documented in the literature (Antonucci, 1985a, 1985b, 1990). For example, Antonucci and Akiyama (1987) found married men to rely almost exclusively on their wives for virtually

all kinds of support. Alternately, women have been found to possess more varied systems of support; this has consistently been reported in the literature (Antonucci, 1985b, 1990; Antonucci & Akiyama, 1987; Babchuk, 1978-79). Hence, for younger men, who may not have cultivated other supportive ties, physical mobility may be a significantly more important resource. The lack of a significant univariate gender difference in the well-being of this age group is consistent with this reasoning.

No clear explanation exists for why a gender difference was found in the younger age group but not in the older age group. It is possible that factors not measured in this study account for this inconsistent gender difference.

The significance of satisfaction with friendships corresponds to the findings of other studies. It is important to note, however, that the inclusion of relational satisfaction as a potential predictor in well-being studies is a relatively new phenomenon. Traditionally, only the quantitative aspects of social relationships have been included and, as such, were frequently identified as significant predictors of

well-being. In this study, both quantitative and qualitative friendship variables were included but only friendship satisfaction was selected. The incorporation of both measures as possible predictors may have precluded selection of social integration with friends. This is consistent with other recent studies that included both gualitative and guantitative measures of relationships as independent variables (Ishii-Kuntz, 1990). Although this study did not explore the function of friendships, the strong emotional component unique to friendships has been identified by others (Crohan & Antonucci, 1989; Seeman & Berkman, 1988; Shea et al., 1988). Thus, it can be said that the gualitative as opposed to the quantitative aspect of friendships is more important to the well-being of older Canadians who are unmarried. This may be related to the emotional support and intimacy furnished by friendships.

The potential of an artificially inflated correlation between friendship satisfaction and wellbeing cannot be entirely eliminated. Diener (1984) has cautioned that the subjective nature of these questions tends to result in artificially high correlations. In

comparison to friendship satisfaction, however, satisfaction with family relations manifested an extremely weak relationship to well-being in this study. This suggests that the relationship of friendship satisfaction to well-being originated from a dimension of variation, independent of its nature of questioning.

The weak relationship between satisfaction with family relations and well-being may be explained by the shared variance in the domain of guestioning. This interpretation, however, does not explicate the lack of consistency of the significance of satisfaction with family relations across the two age groups. That is, satisfaction with family relations demonstrated a significant, albeit low, correlation with well-being in subjects older than 79 but not with well-being in subjects between the ages of 75 and 79. Although not measured in this study, it is possible that in advanced age the adult becomes more dependent on family members for the provision of instrumental support. In this case, satisfaction with family relations may become somewhat more important to the older person's wellbeing.

Being older was identified as a significant predictor of well-being. Findings in the literature have been inconsistent. Some researchers have found older elders to report lower levels of well-being (Gooding et al., 1988; Heidrich, 1993), whereas, others have found them to report higher levels (Ferraro, 1980). Many other studies have not uncovered significant differences in well-being related to age. This study employed a cross-sectional design. As such, the univariate finding that older adults reported higher levels of well-being regardless of their levels of mobility and satisfaction with friendships, may be suggestive of cohort differences. This speculation does not exclude the possibility that with advancing age individuals evolve to a higher level of well-being which transcends physical limitations.

Second Research Question

The second research question explored the relationship of physical mobility with each of the various social integration measures in potentiating well-being. A general approach, which integrated four separate interaction terms as independent variables, was employed. These constructed variables were

included with the major study variables and selected demographic variables in the stepwise regression analyses. Because of the covariance marriage has consistently demonstrated with social integration in other studies, an unmarried sample was selected to answer the second research question. As such the second research question asked: Do any of the social integration variables interact with physical mobility to potentiate the well-being of older unmarried people?

None of the interaction terms were selected as significant predictors during either the stepwise procedure with the general sample or with the sample differentiated by age group. Although social integration and physical mobility did not interact to potentiate well-being in this investigation, this does not infer that an interactional effect does not exist. This position has been contended by others. For example, Finney, Mitchell, Cronkite, and Moos (1984) proclaimed that although true interactional effects exist in many studies, research designs are infrequently strong enough to detect them. In this present study, the items assessing number of ties were transformed from continuous to interval variables.

Statisticians have found such transformations to neither produce biased estimates (Johnson & Creech, 1983) nor impact strongly on the discriminatory power of the measures (Weiss, 1986). The possibility, however, that these transformations decreased the variation of the social integration scores in this study cannot be entirely eliminated.

The social integration measures manifested both relatively high construct validity and internal consistency reliability. Despite this, however, the possibility that an interaction exists between one of the individual components of these measures should be considered as an alternative explanation for the negative result corresponding to this research question.

It is highly unlikely that other statistical procedures would have been more powerful in detecting the interactions explored by this research question. In general, product term regression has been identified as a stronger statistical approach than a multiple within-groups analysis (Finney et al., 1984).

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Implications for the Practice of Nursing

The findings of this study do not support the premise that a mobility limitation impacts on wellbeing because it threatens to alter one's social involvement. Rather, physical mobility and friendship satisfaction manifested main effects to the well-being of older unmarried persons. The significance of these factors has important implications for the nurse working with older unmarried Canadians.

Gottlieb and Rowat (1987) stated that helping people to recognize and utilize their strengths and resources in order to obtain a higher level of health is within the domain of nursing. Hence, a deeper understanding of the importance of physical mobility and the qualitative aspects of friendships is crucial for the nurse working with unmarried elders. Nursing interventions may include exploring the meaning of a mobility limitation with the older person. Subsequently, tailored interventions could be aimed at collaboratively exploring strategies that maintain and strengthen mobility, as well as those that facilitate coping with a mobility limitation in the context of every day living.

The importance of satisfaction with one's friendships was identified as germane to the well-being of Canadians in their later years. Thus, it appears essential that the nurse assess not only the history and dynamics of families but also of important friendships as identified by the client. The significance of friends may be related to the strong emotional component unique to this relationship as identified by other researchers. Although the function of friendships was not explored in this study, friends may be regarded as important resources when considering strategies intended to help the unmarried person cope with the stressors inherent in everyday living during their later years.

In closing, this study found satisfaction with family members to significantly relate to the wellbeing of participants older than 79 but not to the well-being of younger participants. It was speculated that with advancing age the instrumental assistance provided by family members becomes more pronounced. As such, feeling satisfied with one's family relations becomes more salient. Hence, exploring family relationships may be an important part of the

assessment phase for the nurse working with older families.

Directions for Nursing Research

This study explored the relationship between physical mobility and social integration in potentiating well-being. It was hypothesized that mobility limitations impact on well-being because they restrict involvement in social relationships. Moreover, it was assumed that social relationships are germane to the health and well-being of the older individual.

Although no significant interactions between social integration and physical mobility were found, this study did identify the importance of the qualitative aspects of social relationships. Hence, investigating interactions between mobility and relational satisfaction is a possibility for future research. This would help explicate propositions held by other researchers. For example, Tilden and Weinert (1987) explained that a mobility limitation impacts on well-being not only because of physical restrictions but also because of beliefs regarding the inability to maintain balanced relationships. General measures of satisfaction, such as those used in this study, would not discriminate the importance of the various relationships that the elderly possess. Nor would such measures take into account the different principles of equity perceptions which exist for various types of relationships.

This study used variables available in the GSS for the measures. The social integration measures may be criticized for their inability to tap perceptions of integration. Additional studies, incorporating perceptions of social integration could possibly uncover significant well-being main effects as well as interactional effects with physical mobility.

The relative importance of the set of variables which most strongly correlated with well-being should be examined with age as a continuous variable. With Canada's population living longer, measuring age as a cortinuous variable would permit a deeper understanding of well-being differences as they relate to age.

Last of all, this study unexpectedly uncovered physical mobility to be a stronger predictor of the well-being of unmarried men who were in the younger age group of this elderly sample. Few studies have

examined this cohort of the older population. Surely, qualitative and quantitative studies are needed in order to more clearly explicate this finding. Similarly, inquiry into the lower well-being predictive power of mobility in younger women and older elderly may provide rich data for the understanding of other well-being factors.

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Appendix A

Physical Mobility Scale

1. Do you have any trouble walking?

- 1) yes
- 2) no
- 9) not stated
- 2. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated
- 3. Do you have any trouble walking up and down stairs?
 - 1) yes
 - 2) no
 - 9) not stated
- 4. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated

Note. Items as measured in GSS.



- 5. Do you have any trouble carrying an object weighing five kilograms ten metres?
 - 1) yes
 - 2) no
 - 9) not stated
- 6. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated
- 7. Do you have any trouble standing for a long period of time?
 - 1) yes
 - 2) no
 - 9) not stated
- 8. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated

Note. Items as measured in GSS.

- 9. Do you have any trouble bending down to pick up an object from the floor?
 - 1) yes
 - 2) no
 - 9) not stated
- 10. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated
- 11. Do you have any trouble using your fingers
 - to grasp or handle?
 - 1) yes
 - 2) no
 - 9) not stated
- 12. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated

Note. Items as measured in GSS.

13. Do you have any trouble reaching above your head?

•

- 1) yes
- 2) no
- 9) not stated
- 14. Are you completely unable to do this?
 - 0) not applicable
 - 1) yes
 - 2) no
 - 9) not stated

Note. Items as measured in the GSS



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Appendix B

Testgraf Analysis of the Physical Mobility Scale

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Plot 2: Expected score for item 1 (trouble walking) as a function of expected mobility score.







Plot 4: Expected score for item 2 (can't walk) as a function of expected mobility score.







Plot 6: Expected score for item 3 (trouble stairs) as a function of expected mobility score.







Plot 8: Expected score for item 4 (can't stairs) as a function of expected mobility score.







Plot 10: Expected score for item 5 (trouble carry) as a function of expected mobility score.







Plot 12: Expected score for item 6 (can't carry) as a function of expected mobility score.







Flot 14: Expected score for item 7 (trouble standing) as a function of expected mobility score.



Plot 15: Characteristic curves for item 8 (can't stand); probability of selecting each option as a function of expected mobility score.



Plot 16: Expected score for item 8 (can't stand) as a function of expected mobility score.



Plot 17: Characteristic curves for item 9 (trouble bending); probability of selecting each option as a function of expected mobility score.











Plot 20: Expected score for item 10 (can't bend) as a function of expected mobility score.







Plot 22: Expected score for item 11 (trouble grasping) as a function of expected mobility score.







Plot 24: Expected score for item 12 (can't grasp) as a function of expected mobility score.







Plot 26: Expected score for item 13 (trouble reaching) as a function of expected mobility score.







Plot 28: Expected score for item 14 (can't reach) as a function of expected mobility score.

Appendix C

Well-Being Index

- 1. How would you describe your state of health?
 - 1) poor
 - 2) fair
 - 3) good
 - 4) excellent
 - 9) not stated
- 2. How do you feel about your health?
 - 1) very dissatisfied
 - 2) somewhat dissatisfied
 - 3) somewhat satisfied
 - 4) very satisfied
 - 9) no opinion / not stated
- 3. How do you feel about your job or major activity?
 - 1) very dissatisfied
 - 2) somewhat dissatisfied
 - 3) somewhat satisfied
 - 4) very satisfied
 - 9) no opinion / not stated

<u>Note</u>. Order of GSS items reversed and no opinion / not stated options combined.
- 4. How do you feel about your life as a whole?
 - 1) very dissatisfied
 - 2) somewhat dissatisfied
 - 3) somewhat satisfied
 - 4) very satisfied
 - 9) no opinion / not stated
- 5. Would you describe yourself as . . .
 - 1) very unhappy
 - 2) somewhat unhappy
 - 3) somewhat happy
 - 4) very happy
 - 9) no opinion / not stated

Note. Order of GSS items reversed and no opinion / not stated options combined.

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Appendix D

Social Integration Measures

Social integration with Children

- 1) How many children do you have?
 - 0) none
 - 1) one
 - 2) two
 - 3) three
 - 4) four or more
 - 9) not stated
- 2) How often do you see your children?
 - 0) never / not applicable, has no children
 - 1) less than once a month
 - 2) at least once a month
 - 3) at least once a week
 - 4) daily
 - 9) not stated

Note. Number of ties reclassified; originally measured as a ratio variable in GSS. Order of items assessing contact reversed; and never & not applicable options combined.

- 3) How often do you have contact by letter or telephone with your children?
 - 0) never / not applicable, has no children
 - 1) less than once a month
 - 2) at least once a month
 - 3) at least once a week
 - 4) daily
 - 9) not stated

Social Integration with Siblings

- 1) How many brothers or sisters do you have?
 - 0) none
 - 1) one
 - 2) two
 - 3) three
 - 4) four or more
 - 9) not stated

<u>Note</u>. Number of ties reclassified; originally measured as a ratio variable by GSS. Order of items assessing social contact reversed; never and not applicable options combined.

2) How often do you see your br	rothers and sisters?	1
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- 0) never / not applicable, has no siblings
- 1) less than once a month
- 2) at least once a month
- 3) at least once a week
- 4) daily
- 9) not stated
- 3) How often do you have contact by letter or by telephone with your brothers and sisters?
 - 0) never / not applicable, has no siblings
 - 1) less than once a month
 - 2) at least once a month
 - 3) at least once a week
 - 4) daily
 - 9) not stated

<u>Note</u>. Number of ties reclassified; originally measured as a ratio variable in GSS. Order of social contact items reversed; never and not applicable options combined.

Social Integration with Relatives

- How many other relatives have you had contact with in the last three months?
 - 0) none
 - 1) one or two
 - 2) three or four
 - 3) five or six
 - 4) seven or more
- 2) How often do you see your relatives?
 - 0) never / not applicable, has no relatives
 - 1) less than once a month
 - 2) at least once a month
 - 3) at least once a week
 - 4) daily
 - 9) not stated

<u>Note</u>. Number of ties reclassified; originally measured as a ratio variables in GSS. Order of social contact variables reversed; never and not applicable options combined.

- 3) How often do you have contact by letter or telephone with your relatives?
 - 0) never / not applicable, has no relatives
 - 1) less than once a month
 - 2) at least once a month
 - 3) at least once a week
 - 4) daily
 - 9) not stated

Social Integration with Close Friends

- Other than relatives, how many people do you consider close friends?
 - 0) none
 - 1) one or two
 - 2) three or four
 - 3) five or six
 - 4) seven or more

Note. Number of ties reclassified; originally measured as a ratio variable in GSS. Order of social contact variables reversed; never and not applicable options combined. 2) How often do you see your close friends?

- 0) never / not applicable, has no close friends
- 1) less than once a month
- 2) at least once a month
- 3) at least once a week
- 4) daily
- 9) not stated
- 3) How often do you have contact by letter or telephone with your close friends?
 - 0) never / not applicable, has no close friends
 - 1) less than once a month
 - 2) at least once month
 - 3) at least once a week
 - 4) daily
 - 9) not stated

Note. Number of ties reclassified; originally measured as a ratio variable in GSS. Order of social contact items reversed; never and not applicable options combined.

Appendix E

Social Satisfaction Measures

- 1) How do you feel about your family relations?
 - 1) very dissatisfied
 - 2) somewhat dissatisfied
 - 3) somewhat satisfied
 - 4) very satisfied
 - 9) no opinion / not stated

2) How do you feel about your friendships?

- 1) very dissatisfied
- 2) somewhat dissatisfied
- 3) somewhat satisfied
- 4) very satisfied

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9) no opinion / not stated

<u>Note</u>. Order of scale as measured in GSS reversed. No opinion and not stated options combined.