PERSONAL COMPETENCE AND ENVIRONMENTAL PRESS CHARACTERISTICS RELATED TO ADAPTIVE FUNCTIONAL ABILITY AMONG OLDER MEN AND WOMEN

by

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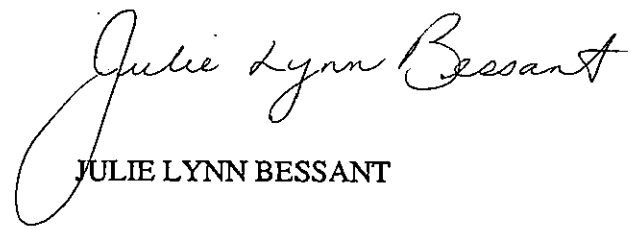

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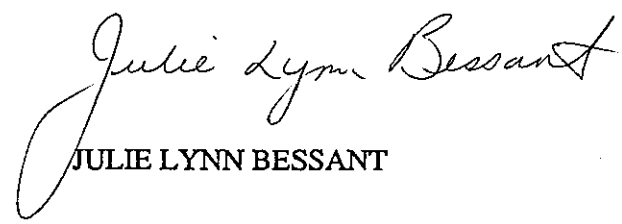

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ABSTRACT

Independence is highly valued in society at any age. Maintaining that independence remains a goal that is carried into old age. Among the community elderly, independence is often measured by the ability to satisfactorily complete a variety of everyday activities that are essential for sustaining life and household. Despite its prominence in social gerontological studies, little is known about the factors that influence the ability to function independently. This study addressed this gap by investigating the role of a number of factors in determining functional ability among older men and women.

The study of behavior, such as functional ability is consistent with a developing theoretical perspective known as the person-environment transactions paradigm. This paradigm implies that behavior is a function of a complex set of relations between and among the older individual and his/her surroundings. This study applied the P-E paradigm as a framework to further understand the behavioral outcome of functional ability.

Using data from the Region of Waterloo Accommodation Survey, the study investigated two specific research questions including, which relationships existed between and among the person and environment factors with respect to functional ability and to what extent did these factors directly and indirectly affect functional ability. Since the P-E process was expected to differ between older men and women, two models were estimated according to gender. The associations within each model were tested using path analysis. This statistical technique was chosen because it allowed for the investigation of the processes depicted in the ecological equation associated with the P-E paradigm, B=f(P,E,PxE).

The analyses suggested that the P-E process resulting in functional ability was different for older men and women. The environmental press factors affecting IADL included perceived support, accessibility, actual support and living arrangement. In contrast, only one personal competence variable, perceived health was associated with IADL in the model for women. In the model for men both perceived health and age were observed to be related to IADL. While these direct paths varied in magnitude across the models, the more notable contrast was the difference in the type and number of associations observed between the independent variables. This observation indicated that the process influencing functional ability was more complex for women than men. In this process, age, perceived health and actual support received played integral roles. Furthermore, the environmental press dynamics were more complex in the women's model. The role of income and accessibility also varied between the models, supporting the notion that financial and transportation limitations are particularily problemmatic for older women. This fact is exacerbated at the societal level by the greater proportion of women in the older age groups.

This study demonstrated that the degree of chronic illness was not the sole determinant of functional ability but, that other personal and environmental factors contribute to the subjective evaluation of independence in functional ability. Furthermore, it suggested that gender was a contextual variable influencing the P-E process. The practical implications of these insights into functional ability are that health and social service intervention strategies can be refined in order to better meet the needs of the men and women who comprise the older segment of the population.

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I also appreciated the support I received from a group of special people. I would like to thank, Yurij, Mom, Tracy, Joan, Nancy and Erin for promising I would make it with a little help from my friends.

DEDICATION

Dedicated to the memory of my grandparents:

Agnes and James Gordon

Margaret and Robinson Bessant

Whose joie de vivre in their later years inspired

my interest in the study of aging.

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Chapter I

INTRODUCTION

1.1 Introduction

The differential life courses of men and women often present dissimilar opportunities and obstacles in old age. These experiences inevitably influence their adaptive responses to the changes associated with aging. One of the major outcomes of this adaptive process is the individual's level of independent functioning within the community (McPherson, 1983; Lawton and Brody, 1969; Lowenthal, 1964).

Independence in a community setting involves the successful completion of a variety of everyday activities necessary to sustain life and household (Hoglund, 1985). Maintaining independence in daily functioning is expected of those in later life given the norms of self-sufficiency. Understanding the process through which older individuals maintain independence in functioning, in light of physical and social changes, has both theoretical and practical implications. As Hickey (1980: 76) remarks, it is important to understand "why and how people perform in a certain way in the face of aging and the accompanying conditions."

From a practical standpoint, functional ability can be translated into a measure of need for assistance. This measure is a crucial element in the determination of health and social service requirements as well as the planning and development of such services (Fillenbaum, 1985; McAuley and Arling, 1984; Wan, 1982; Branch and Jette, 1981). However, to date there has been a tendency to overlook this direct avenue of needs assessment in favour of relying on research studies that employ functional ability as an indicator of service need.

Few studies have investigated functional ability as a dependent variable and consequently, little is known about the influencing factors that act on an individual's functioning (Palmore, 1981). The merit of such an investigation into functional ability lies in its ability to explain why individuals with similar disease characteristics report different levels of functioning. Furthermore, these predictors of functional ability provide involved insight into the causal processes in satisfactory and unsatisfactory adjustment to aging (Palmore et. al., 1985). In terms of practical application, such additional information on the factors effecting functional ability would enable intervention strategies to address specific needs of vulnerable groups more accurately and effectively (Palmore et. al., 1985).

In order to understand functional ability, it is necessary to consider the various social, physical and personal circumstances that influence the independent accomplishment of daily activities (Hoglund, 1985). The investigation of these factors requires studying the older individual within a larger context (Moos, 1974). Faletti (1984) identifies a recent theoretical paradigm in social gerontology as having merit for the further understanding of functional ability in context. This paradigm, person-environment relations, implies that functional ability as a behavior is a function of a complex transaction between the older individual and his/her environment (or surroundings).

Two distinct streams of concentration fall within the person-environment relations (transactions) paradigm. The practical application of the P-E paradigm focuses on the design of housing and environments for older people (Carp, 1978-79). In contrast, the second area involves the development of models of P-E transactions as a means of understanding adaptation and related behavior such as morale and wellbeing (Murray, 1938; Lewin, 1935). The basic premise underlying these models is the ecological equation of the P-E paradigm, B=f(P,E,PxE), where P represents personal characteristics; E equals the environment or complete surroundings of the individual; and B represents the behavioral outcome such as functional ability (Lewin, 1951).

The application of this paradigm as a conceptual guide to research in aging is in its infancy. As a result, several conceptual and methodological deficiencies have yet to be addressed. In applying the person-environment paradigm to the study of functional ability, this study deals with three areas which have been overlooked and are of interest to the sociology of aging. More specifically, these areas include definitional problems of the multidimensional environment, the association between person and environment factors and the omission of gender as an important contextual consideration.[1]

The environment, as encompassed in the paradigm, has incorporated either the social or the physical surroundings about the individual. However, in order to understand an individual's level of functioning or behavior, a fuller definition of environment is required. Thus, the environment may be portrayed as a multidimensional domain or construct subdivided into those factors associated with physical characteristics or social attributes. This multidimensional interpretation of environment rests on the categorization proposed by Lawton (1970). According to Lawton, the physical environment is the non-personal and non-social aspects of the surroundings. In contrast, the social environment includes the significant others (i.e. family, kin, etc.) constituting the relationships with older persons. The social environment thus defined incorporates a microsociological (interpretive) approach to the analysis of the relations between older individuals and their familial surroundings.

The environment has been described as providing resources, demands, presses or supplies (Lawton and Nahemow, 1973; Murray, 1938). In this study, the multidimensional environment, comprised of physical and social characteristics, involves those factors which surround the indi-

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[1] In this study a distinction is made between sex and gender. Consistent with Mackie (1983), sex is defined as the biological dichotomy, distinguishing men and women by physiological differences. Mackie defines gender as the cultural embellishment on anatomy as well as sociocultural elaborations of the sex differences. Thus, gender differences between men and women are those characteristics that are socially defined and constructed (Gee and Kimball, 1986). In this study where reference is made to differences that have both a biological and social component the term gender is employed.

vidual and exert their influence by providing opportunities or creating barriers in the process of functioning independently.

The association between those factors characterizing the person and those denoting the environment has not received much research attention. Typically in social gerontological studies, three research strategies are utilized to examine the behavior of older people. These three strategies include: 1) person factors; 2) environment factors; and 3) both person and environment factors. However, these strategies have often failed to analyze the interrelationships operating between and among person and environment factors as they relate to behavior. Furthermore, since functional ability as the focus of study has been neglected, the interrelationships of person and environment factors as they relate to functional ability have concomitantly been overlooked. In order to capture these interrelationships, the person-environment paradigm is employed in this study. This paradigm provides a conceptual framework in which to organize the variables under study and thus allows for the examination of the complex process defined as B=f(P,E,PxE).

Finally, gender has been ignored as a way of contextualizing the processes in the P-E transaction. Specifically, recent research has emphasized that the experience of aging and daily functioning is different for older men and women (Martin Matthews, 1987; Marshall, 1981). This is in part a result of a lifetime of differences because, "throughout life, gender permeates every social relationship and every sphere of human activity" (Mackie, 1983: 3). Moreover, according to Jacobson (1979: 103):

> women play different roles, hold different positions, carry out different tasks, have different upbringings and different expectations. We [women] do not experience the world in the same way nor do we [they] understand it from the same perspective as do men.

Thus, this study addresses the need for a gender comparison with regard to the person and environment transaction in old age that influences functional ability. That is, the situations and experiences of older women and men are compared and contrasted in order to enhance the understanding of how personal and environmental factors influence adaptive functional ability.

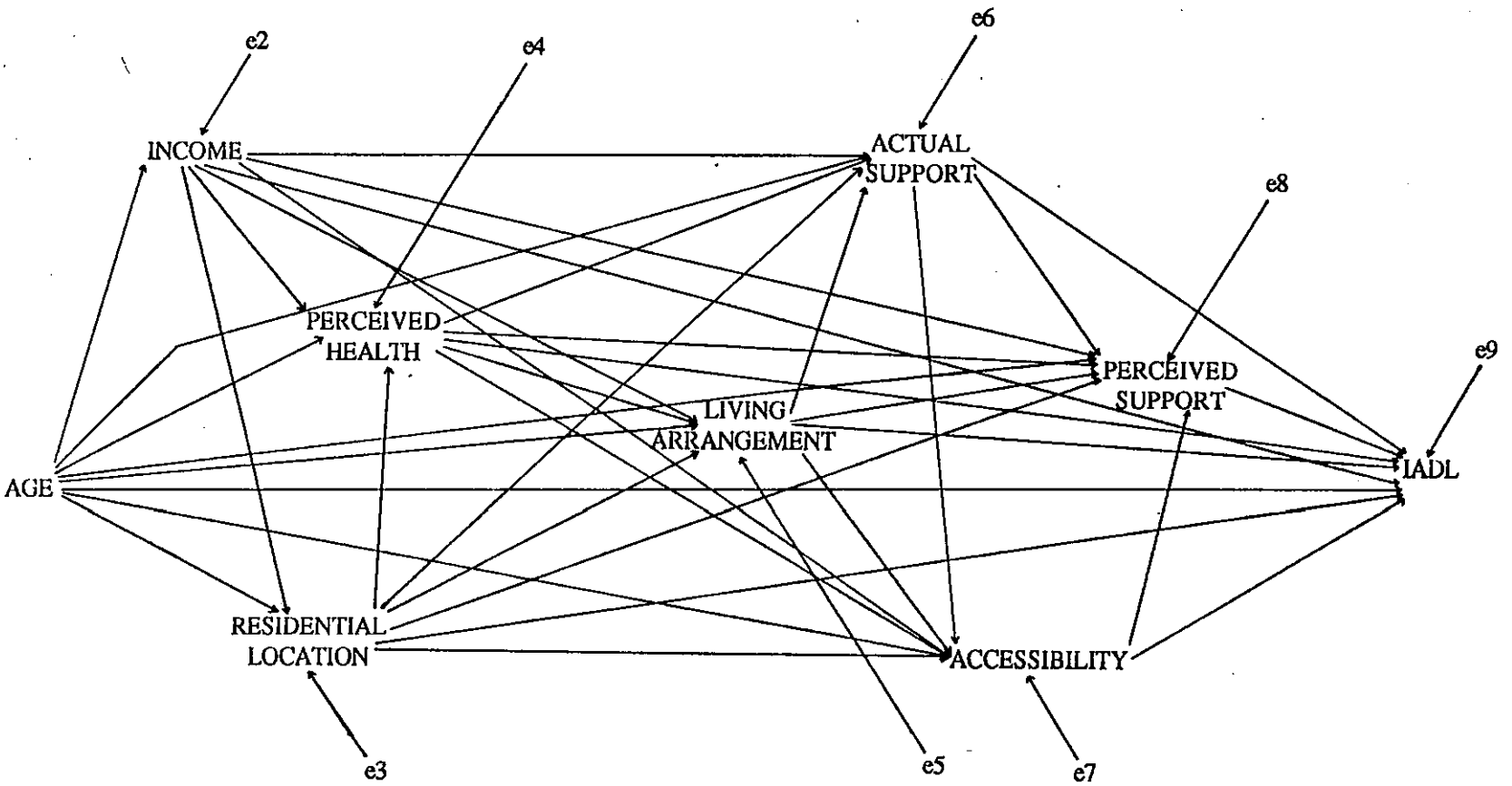
1.2 Conceptual Model

The conceptual model provides a framework within which the person-environment transaction paradigm is operationlized in this study (Figure 1.1). The framework depicts, at the conceptual level, three domains representing each element in the equation B=f(P,E,PxE); the person (left); the environment (centre); and the behavioral outcome (right). In addition, the framework organizes the indicators within each domain and specifies the interrelationships among these variables.

The person domain is comprised of variables that characterize the individual and are acted upon by structural influences from society. These variables, age, income and perceived health, connote some degree of personal competence in terms of determining functional ability. To illustrate personal competence, income in old age is a product of individual characteristics and social conditions (i.e. labour force participation trends and work histories) that serve to structure, define and determine the level of income after retirement.

The domain of environment is more complex and as discussed above involves factors from the social and physical milieux. The environment, described in terms of presses, can be positive (opportunities) or negative (obstacles). More specifically, presses are the available environmental resources utilized by the individual as mechanisms to enhance adaptation. For example, in order to compensate for a decline in physical health, older individuals tend to seek supportive assistance from their familial and social contacts. The physical environment comprised of the objective characteristics of a setting acts to structure and constrain interactions and activities of the older person. The environmental press factors investigated in the study include: residential location and accessibility limitations (physical environment) and living arrangement, actual and perceived support (social environment).

FIGURE 1.1: The Conceptual Model of the Person-Environment Transaction Paradigm.



The behavioral outcome under investigation is represented by the domain of adaptive functional ability and is operationalized by an instrumental activities of daily living scale (IADL). The IADL scale consists of those complex everyday tasks involved in independent community living such as cooking, cleaning, shopping, banking and yardwork (Fillenbaum, 1985; Lawton and Brody, 1969).

As illustrated in the conceptual model, an older person's ability to function independently is affected by his/her personal characteristics, on which structural constraints operate, and the environmental resources available to him/her. The linkages between the variables in the model represent hypothesized relationships as indicated by previous social gerontological research. These relationships are tested using path analysis.

The basic theorem of path analysis is that the zero order correlations between exogenous and endogenous variables can be decomposed into direct, indirect (a relationship involving an intervening variable) and undeterminable effects (Pedhazur, 1982; Asher, 1976; Alwin and Hauser, 1975). Thus, path analysis allows for the determination and examination of the direct effects of both personal competence and environmental press factors, as well as the transaction between these variables (indirect effects) on the dependent variable, IADL functioning.

Finally, the effect of the P-E transaction on adaptive functional ability is expected to vary between men and women. Thus, in order to address the gender issue, within the P-E paradigm, two models are estimated for the two subsamples, men and women. This is consistent with existing research and allows the influence of gender to be examined without disturbing the general model (Liang, 1982; Medley, 1976). Furthermore, this approach highlights the influence of gender on the relationships in the model and the potential differences in the effects of the variables on functional ability for older men and women.

To summarize, the purpose of this study is to advance the understanding of the person-environment transaction as it relates to functional ability. It does so by expanding the conceptual interpretation of environment to include both physical and social aspects. Secondly, it analyzes the differences and similarities in the P-E transactions as they effect the functional abilities of older individuals. Finally, in differentiating the model by gender, the study investigates a critical determinant of the P-E transaction and its behavioral outcome in old age.

The remainder of this study examines the development of the person-environment paradigm from its early usage to recent applications in gerontology. A review of the literature is presented which highlights the variables and their contingent relationships as they are depicted in the conceptual model presented above. This is followed by a brief discussion of the statistical methods and operationalization of the variables and model. The findings and discussion of the descriptive statistics and path analysis are presented within the framework of the P-E paradigm. In addition, throughout the study, gender differences are highlighted as they relate to the P-E transaction and consequent behavioral outcome, functional ability.

Chapter II

THEORETICAL UNDERPINNINGS OF THE P-E PARADIGM

2.1 Introduction

The sociology of aging is criticized for a paucity of theory (Marshall, 1986; Maddox and Campbell, 1985). Furthermore, the subject matter of the specialization is termed amorphous in nature, "ranging from individual's adjustment to old age, at the micro level, to such macro level concerns as the dynamics of population aging and the role of age as a structural component of society" (Gee and Kimball, 1987: 5). Despite this, there exists two distinct approaches to sociology that have been adopted by the sociologists of aging and serve to guide research at both the micro and macro levels of analysis. These opposing ideologies or perspectives are identified by Dawe (1970) as the sociology of order and the sociology of control. The 'first' and 'second' sociologies are commonly referred to as the normative and interpretive perspectives, respectively (Marshall, 1987b, 1986, 1980a, 1980b; Gee and Kimball, 1987; McPherson, 1983; Dowd, 1980).

Marshall (1980a, 1980b) contends that much of sociology and gerontology reflects a normative bias. According to Dawe (1970) the normative perspective views the individual as reactive to the wider environment. Although society's norms and values are external to the individual, they are learned and internalized through socialization. Society remains a cohesive system through the mechanisms of social control and individual behavior is determined and regulated by societal rules.

Conversely, interpretive sociology incorporates symbolic interactionalist thought and the *verstehned* approach of Weber (1978). This perspective views individuals as social actors who

seek to master their situations, relationships and institutions through negotiation. The social reality is constructed by individuals within the society through interaction. Counts and Counts (1985: 20) identify the interpretive position within gerontology:

> old people are not passive recipients of the behaviors of others. The elderly people ... negotiate their status; they attempt to exploit the advantages and minimize the weaknesses of old age; and they employ strategies to maintain and extend their authority.

Marshall (1980a, 1980b) notes that the key assumption underlying much of the work in this perspective is that individuals are somewhat free to choose and create their world. However, people do not have limitless choice, that is, choices are possible only when alternatives exist. It is the social structure that places such constraints on individual choice.

Marshall (1987b) attempts to organize the various approaches brought to the study of aging in sociology in his heuristic taxonomy (Figure 2.1). This taxonomy rests on the micro/macro and normative/interpretive dichotomies. However, these two dimensions are each connected by a third category. The 'linking' approaches to sociology of aging connect the micro and macro levels of analysis, while the 'bridging' approaches connect the normative and interpretive perspectives.

Of particular relevance to this study is the positioning within this grid of environmental theory. Marshall (1987b) identifies environmental theory as a link between the micro and macro levels of analysis within the normative perspective. A closer examination of person-environment theories would suggest, however, that Marshall's categorization is inappropriate.[1] The early person-environment theories are normatively based, but in response to criticism of environmental determinist orientations, recent theoretical developments incorporate a clearly interpretive perspective.

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[1] Marshall (1987b) qualifies his typology with two cautionary notes: first, he suggests that none of these theories falls exclusively within one block; second, he adds that the proponents of each theory often change their perspective over time, thus, altering the position of the respective theory within the typology.

FIGURE 2.1: A TAXONOMY OF SOCIAL GERONTOLOGICAL THEORIES

	MICRO	LINKING	MACRO
NORMATIVE	Functionalist role/ socialization Theory Activity Theory Developmental Life Span Theory	Disengagement Theory Environmental Theory Social Clock Perspective	Modernization Theory Age Stratification Theory Conventional Social Anthropology, Macro-economic and Demographic Theory
BRIDGING	Generational Solidarity Framework Network Theory Exchange Theory Continuity Theory	Life Course Perspective Systems Perspective	Interest Group Theory
INTERPRETIVE	Career and Status Passage Theories Identity and Labelling Theory Dramaturgical Perspective Phenomenology	Critical Theory Subculture of Aging Theory Generational Conflict Perspective Symbolic Anthropology	Political Economy Approaches Conflict Theory

SOURCE: MARSHALL (1987).

2.2 *The Development of the P-E Paradigm in Aging Research*

The application of the person-environment paradigm to gerontological concerns is a relatively recent endeavor. The proponents of the approach have justified their interest in the study of older people and their environments by highlighting two known observations of aging and environment. First, individuals as they age become increasingly more sensitive to environmental characteristics and change (Lawton, 1980; Rowles, 1978; Regnier, 1975; Pastalan and Carson, 1970). Second, the demographic trends involving an aging population instigate practical concern about the welfare of these older individuals, particularly their living conditions.

Apprehension about the adequacy of existing services for the elderly acted as an impetus for the growth of P-E study during the 1970's (Rowles and Ohta, 1983). Satisfactory accommodation, as a basic human right, was the focus of much policy attention. The quality of community and institutional dwellings and the wellbeing of their inhabitants required immediate investigation. This policy direction provided significant amounts of research funding available for studies on design of space and the evaluation of housing and relocation projects (Rowles and Ohta, 1983). As a result, research concentrated on the elderly in specific physical settings:

> it is those older people who are in trouble in particular places who strike our attention: the isolated, lonely, living alone; the inner-city resident afraid to walk in her neighbourhood; the suburban elderly, grown old in a location with few goods and services; the poor rural resident without emergency resources; the resident of the substandard nursing home; the involuntary evicted renter in an old neighbourhood experiencing regentrification; and so on (Lawton, Windley and Byerts, 1982: 4).

Such research activity contributed to the considerable growth in the field of aging and the environment. Consequently, person-environment relations emerged as a specialization within gerontology with a distinct group of prominent scholars, namely: Golant (1984a, 1984b, 1979), Carp (1983, 1978-9, 1976), Rowles (1983, 1978), Kahana (1982a, 1980), Lawton (1982, 1973, 1970), Moos (1980), Newcomer (1976), Gubrium (1973, 1972) and Pastalan (1970).

These researchers represent a number of disciplines including sociology, psychology and geography. This diversity serves to enhance the understanding of person environment relations since all behavioral scientists share a general interest in the link between behavior and the environments of individuals (Lawton, 1982). The contextual or situational circumstances surrounding an individual are recognized as having an influence on the behavior of the person.[2] Although the circumstances of interest to behavioral scientists vary, the common underlying notion of a person and environment relationship pervades the disciplinary boundaries. Thus, the study of person-environment (P-E) relations or transactions has developed as a multidisciplinary effort.

Since the nature of environmental inquiry is multidisciplinary, definitions and operationalizations of the concept of environment vary across the social sciences. Social psychologists and sociologists tend to examine how people use space in their social transactions and how the arrangement of space affects social experience and use of space (Fleming et. al., 1985; McPherson, 1983). Alternatively, sociologists have referred to and studied the social dimensions of the environment including group processes, normative and cultural pressures (Lawton, 1982).

This multidisciplinary interest in P-E transaction results in diverse definitions of the environmental component. The call for a consensus in definition is met by Lawton (1982, 1970) who categorizes the different dimensions of the environment into a taxonomy (Figure 2.2). According to Rowles and Ohta (1983), Lawton's taxonomy addresses the need for a distinction between the objective, directly observable dimensions and subjective aspects of environmental experience.

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[2] A subfield of sociology known as 'human ecology' recognizes the relationship between the person and the environment. However, the work of the pioneers, such as Park (1925, 1936) and Burgess (1925), and the more contemporary research of the 'neo-orthodox ecologists', Hawley (1978, 1950, 1944), Duncan (1964, 1959) and Duncan and Schnore (1958), have tended to concentrate on large aggregates as the unit of analysis. This macro level orientation has been to the exclusion of the interpretive perspective and the corresponding micro-sociological inquiries.

FIGURE 2.2: ENVIRONMENTAL TAXONOMY.

ENVIRONMENT	DESCRIPTION
PERSONAL	The significant others constituting the major one to one social relationships.
SUPRA-PERSONAL	The modal characteristics of all people within physical proximity to the individual.
SOCIAL	The norms, values and institutions operating in the individual's subgroup, society or culture.
PHYSICAL	The nonpersonal, nonsocial aspects of the surroundings.

SOURCE: Lawton (1982).

Several P-E theorists argue that there is no clear distinction between the person and the environment in the P-E transaction (Rowles and Ohta, 1983). However, the framework of separate person and environment factors developed by Moos (1980), which is consistent with this study, provides a clear and simple solution to this debate. Moos(1980) suggests that the environment constitutes a system comprised of the physical setting, group aggregates and interactions and the social climate. Conversely, the person system consists of sociodemographic and health characteristics of the individual.

Within the person-environment relations paradigm, a limited number of theories or models have been presented by the prominent investigators of the relationship. These models have collectively contributed to the refinement of the study of aging and the environment.

2.3 Person-Environment Models

In general, P-E theory is rooted in the work of Lewin (1951) who posited that behavior was some function of persons in interaction with the environment. This hypothesis is illustrated by the equation, B=PxE. Contemporary P-E theorists use this equation and its expanded form, B=f(P,E,PxE), as the basis for their models which depict the transaction between the older person and the environment. For them, transaction denotes the active or purposeful behavior of the older person designed by them to accomplish a given task. Thus, the performance of the task or activity (the transactional outcome) is a joint product of the person and the environment.

Two generic types of models have dominated P-E theory in gerontology within the last decade, namely the 'press-competence model' and the 'P-E congruence model'. While both emphasize adaptation and subjective wellbeing, the former concentrates on the interaction of P-E factors. The latter highlights congruence or fit in terms of the discrepancies between individual needs and abilities and environmental demands and supplies. Both models represent important refinements in P-E thought.

2.4 Models of Competence and Press

One of the most prominent P-E theorists is M.P. Lawton. In collaboration with his colleagues he has contributed a vast amount of information on aging and the environment. An early attempt by Lawton and Simon (1969) to explain the behavior and morale of elderly persons as a product of the interaction between personal competence and environmental attributes resulted in the 'environmental docility hypothesis'. This posits that as an individual ages, personal competence declines and external environmental stressors become more influential in determining the outcome. More specifically, the hypothesis states that the less competent individual, in physical, social or psychological terms, is extremely vulnerable to increasing environmental demands and should be able to tolerate less environmental press before reaching stress thresholds.

Lawton (1977:8) defines competence as "a term which describes essentially what lies within the person ... it is convenient to think of competence as representing the givens within the individual" such as physical health, sensory-perceptual capacity, motor skills, cognitive capacity and ego strength. Furthermore, external factors such as low income or "ageism may be experienced in such a way as to reflect reduced competence" (McPherson, 1983: 283).

Environmental press is an aspect of the environment which has a potential demand character. That is, 'presses' are those aspects of the environment which are known to be behavior-activating to some individuals. They may be positive, neutral or negative (Lawton, 1977: 8)[3]. The behavioral outcome is seen as a function of personal competence and environmental press. More specifically, the behavior is the result of a press of a given magnitude acting on, perceived by or utilized by an individual of a given level of competence. It is Lawton (1982) who suggests that functional health is a prime example of a behavioral outcome resulting from the interaction of P-E factors.

Lawton and Nahemow (1973) subsequently elaborated on this notion in the ecological model of aging. Their model depicts the 'environmental docility hypothesis' clearly, and illustrates that behavior is a function of the competence of the older person and the environmental press of the situation (Figure 2.3).

The ecological model of aging addresses the constant fluctuations in the balance between personal competence and environmental press and shows how behavior, ranging from adaptive to maladaptive, is a function of changes in one or both of the two dimensions of the transaction. According to the model, every individual experiencing a given environmental press tends to establish an adaptation level. The adaptation level is characterized as a neutral stimulus level that is in part determined by the level of competence and results in a positive emotional/affective state

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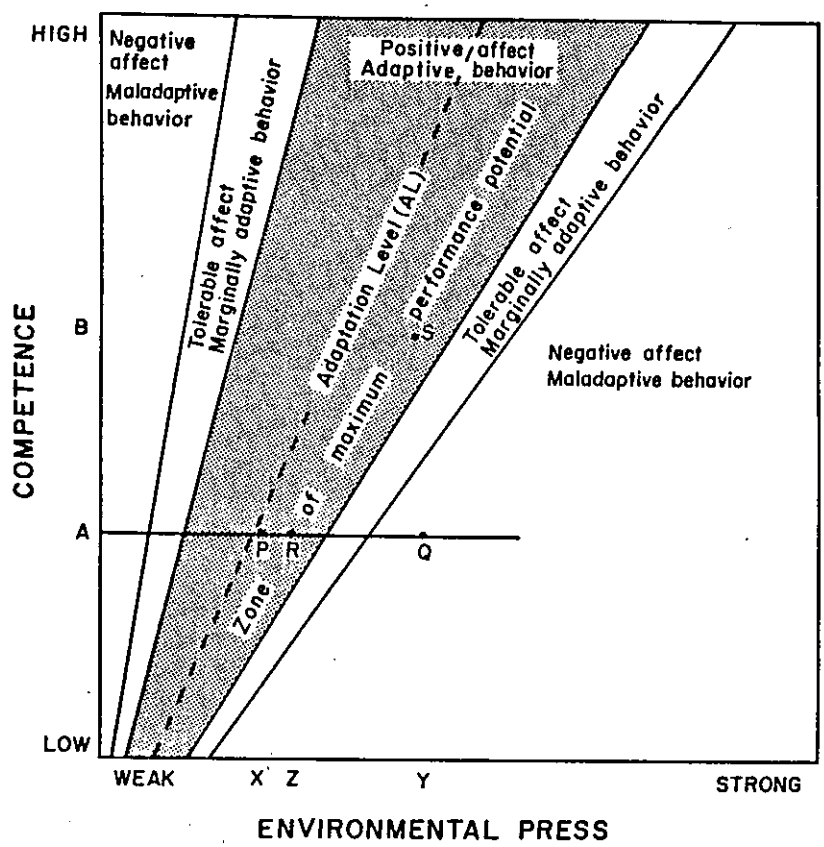
[3] This definition is consistent with that of Murray (1938) who defined press as an environmental force (physical, interpersonal, social) that tended to activate an interpersonal need.

Figure 2.3: Figure 2.3: Ecological Model of Aging.



Source: Lawton and Nahemow (1973).

or wellbeing. As illustrated, the shaded area of the model represents the balance between competence and environmental press. At this equilibrium, the greater the competence the greater the ability to tolerate and adapt to higher levels of environmental press. When the environmental press is too demanding and surpasses the individual's competence, the behavioral outcome is negative (right side of curve). A similar negative state is the consequence of insufficient demands in the environment - an unstimulating situation (left side of curve). Where manageable challenge occurs the balance is retained.

The environmental docility hypothesis exemplifies a passive interpretation of the individual. It is this passive interpretation of the individual which has received considerable criticism. A number of researchers note several shortcomings in Lawton's hypothesis including a purpose that was too narrow. Lawton's critics argue that in seeking to understand pathology, the environmental docility hypothesis does not facilitate the understanding of 'normal' community residents coping well with the environment (Carp, 1983; Lieberman and Tobin, 1983). In addition, they suggest that Lawton emphasized the demand qualities of the environment, within the context of the P-E transaction, to the exclusion of the potential resources within the environment. Thus, these critics argue that Lawton needs to expand the model to include the purposeful seeking out and fulfilling of needs by the individual through the maximum utilization of environmental resources.

In response to these criticisms, Lawton (1987) proposes another thesis called the 'environmental proactivity hypothesis' in which older individuals are considered actively involved in their needs satisfaction. From his study of older apartment dwellers, Lawton provides an example of proactivity; leaving an apartment door open is a social invitation when disabilities inhibit leaving the dwelling for social interaction. Lawton's hypothesis also states that environmental resources are better used by individuals of higher competence and as competence increases the environment becomes a potential source of increasing diversity in the person's ability to satisfy needs. Therefore, the environment may be considered rich in positive and negative press.

A lesser known P-E model that bears resemblance to the work of Lawton is that of Gelwick and Newcomer (1974). They posit that "the ability of the individual to function within any environmental setting depends on his capacities and the characteristics of the setting" (Gelwick and Newcomer, 1974: 39). Their model implies that adaptive behaviors, such as functional ability, are the result of interactions between personal capacities (i.e. physical health) and environmental supports (i.e. resources and incentives in the environment). A match of personal capacities and

environmental supports is associated with a range of adaptability. Conversely, mismatches in which there is too much support lead to dependency, and where too little support exists (i.e. excessive environmental demand) the result is a diminished level of functioning.

In summary, the P-E paradigm is exemplified in both of these models. The essential difference which exists between the two, is one of specificity. While the Gelwick and Newcomer model (1974) is a very general application of the P-E paradigm, Lawton's model tends to be much more specific. In particular, Lawton's model emphasizes the dynamics occurring within the P-E interaction as well as the behavioral outcome of that transaction.

2.5 Models of P-E Congruence

An alternative perspective to the investigation of P-E transaction involves models of congruence or fit. These models emphasize the goodness of fit between the person and environment factors. Goodness of fit is assessed by the degree of congruence between the individual's needs and the extent to which the environment meets those needs. Therefore, optimal fit results in adaptation and ultimately contributes to a sense of wellbeing for the individual.

The first congruence model of P-E transaction was developed by French et. al. (1974). Employing the groundwork provided by French et. al. (1974), as well as Lewin (1951) and Murray (1938), Kahana (1982) proposed an 'environmental congruence model'. This model recognizes that each older individual has a unique set of needs and that varied characteristics of the environment either facilitate or hinder the satisfaction of those needs (Kahana et. al., 1980). Consequently, individuals with certain needs are likely to reside in environments congruent with those needs. Incongruence is a result of a change in either the person's needs or their environment. When this occurs, Kahana (1982) proposes that adaptive strategies are employed to re-establish the optimal fit. These strategies may involve a change in needs or a change in environ-

ment, the successful execution of which improves subjective wellbeing (Kahana, 1982; Kahana et. al., 1980). However, failure to restore congruence between needs and environmental setting results in lower functioning and concomitant stress or discomfort.

Kahana's model provides a means of understanding the impact of special supportive environmental settings on the wellbeing and adjustment of older people.[4] The model has been applied to institutional settings where a positive relationship between P-E fit along the dimensions of privacy, autonomy versus control and expression was found (Kahana et. al., 1980).

Like Kahana's congruence model, Carp's (1983, 1978-9) hypothesis posits that the living environment which provides the appropriate need satisfaction potential tends to affect behavior by improving the quality of adaptive responses and sense of wellbeing. Carp (1983) views the older individual as an active agent who seeks the environment for the means of satisfying his/her needs. In order to meet those needs a person may have to adjust to the environment, modify it or leave it to go to a different environment more congruent with their needs.

The 'socioeconomic theory of aging', introduced by Gubrium (1973, 1972), represents a shift away from the emphasis on the built environment. This model focuses exclusively on the sociological dimensions of the older person-environment transaction. The corresponding hypothesis postulates a strong interrelationship between two contextual dimensions, the social (normative behavioral expectations in a social group) and the individual context (the resources of health, financial solvency and social support that influence behavior flexibility). The interaction and congruence between these two dimensions determines the successful adjustment to and satisfaction with change seen in activity levels leading to positive wellbeing and morale. For example, Gubrium (1972: 28) states,

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[4] Kahana's model is specific to the institutional environment and thus its range of applicability is limited in terms of other environmental settings.

> among persons with good health and solvency, normative burdens should be minimal in the sense that these individuals possess sufficient potential behavior flexibility to eclipse problems.

While the gerontological theory of aging represents a uniquely sociological approach to the P-E research tradition, it fails to include the physical environment dimension. This distinguishes it from mainstream P-E research which attempts to examine the complex interaction of personal characteristics and the multidimensional environmental presses that are the focus of this study.

2.6 Conclusion

Each of the models discussed above is rooted in the basic maxim that behavior is a function of the interaction of personal and environmental characteristics. Their respective contributions have solidified the place of the person-environment relations paradigm in gerontological inquiry. The evolution of the person-environment relations paradigm illustrates a transfer from a normative to an interpretive orientation. Thus, in the recent person-environment literature, the older individual is viewed as an active agent.

This change in perspective is observed in the refinement of the form of the person-environment transaction. Initially, P-E theorists and researchers adopted a determinist stance in which the older person was seen as a passive respondent to environmental conditions beyond his or her control (Rowles and Ohta, 1983). This form of the transaction is illustrated by the equation E--->P. This environmental determinism, according to Ittelson (1982) dominated social scientific thought in the early 1900's. Thus, human behavior was in large part determined by environmental circumstances.

Reacting to this environmental determinism, Rowles and Ohta (1983) explain that a diametrically opposed notion of the P-E relationship was developed. This alternative interpretation of the P-E relationship took the form, P--->E. It expressed the view that the environment exerted

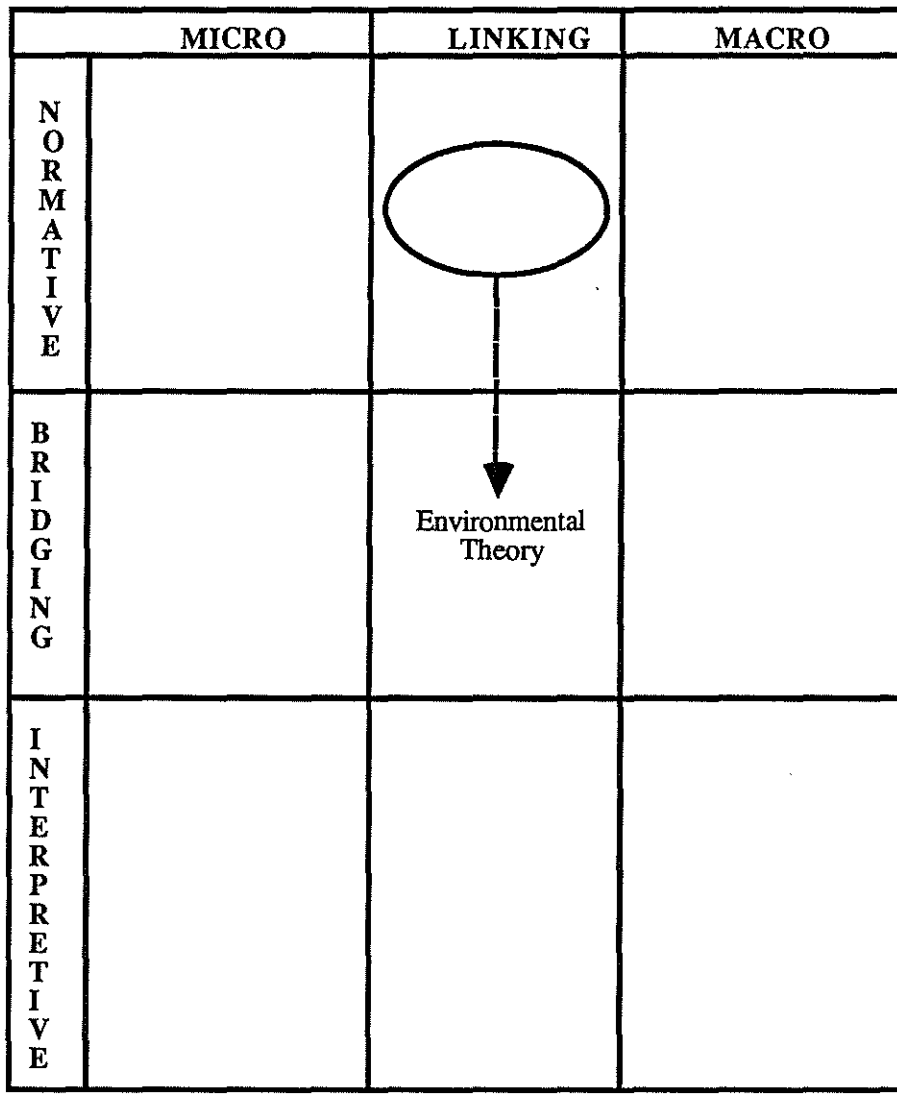
absolutely no influence on human behavior because individuals exhibited infinite adaptability to changes in their environment.

Gradually, a compromise between the two extremes was negotiated. The final result was the recognition of the transaction between the person and the environment as illustrated by, P<--->E. More specifically, the P-E transaction considered in this form is seen as an exchange process in which personal needs and preferences are met by resources available in the environment and that these resources are chosen and manipulated by the individual (Carp, 1983).

These developments in the interpretation of the P-E relationship call into question Marshall's (1987) categorization of environmental theory as normatively based. The interpretive underpinnings of recent P-E work suggests a repositioning of this theory within Marshall's taxonomy to the centre category. This new categorization identifies environmental theory not only as a link between the micro and macro levels of analysis but also as a bridge between the normative and interpretive perspectives (see Figure 2.4).

By placing environmental theory at this juncture between micro/macro and normative/ interpretive, set within the context of the historical development of the P-E paradigm, this chapter illustrates the utility of the paradigm for the sociology of aging. Given that this paradigm directs study towards a more holistic view of the dynamics between person and environment factors as they relate to behavior, the following chapter introduces and discusses each of the factors specified in the conceptual model presented in the first chapter.

FIGURE 2.4: A REVISED TAXONOMY OF SOCIAL GERONTOLOGICAL THEORIES



ADAPTED FROM: MARSHALL (1987).

Chapter III

LITERATURE REVIEW

3.1 Introduction

The conceptual model presented in Chapter One, depicts the variables employed in this study. While each of these variables has received substantial social gerontological consideration, they have not been used within the context of the person-environment paradigm. Moreover, the depiction of the causal ordering of these variables, as they relate to functional ability, has not been examined in previous research.

In the following review of the literature, each of the variables is discussed in succession according to the order illustrated in the model. Particular emphasis is placed on the empirically established associations between certain variables as they compare or contrast to those hypothesized in the model. In addition, relevant findings regarding the differences between older men and women are highlighted in order to support subsequent discussions of the impact of gender as a contextual determinant of person-environment transactions.

3.2 Age

The population of Canada is aging, meaning that there is an increase in the proportion of older people in the population. In 1981, 9.7 percent of the total population was over the age of 65. Population projections indicate that this segment of the population will increase to 12 percent of the total by the year 2001. This demographic trend is due to the collective effects of declining fertility and immigration rates and to a lesser extent, decreasing mortality rates (McDaniel, 1986).

In a rather minor way, increases in life expectancy rates have contributed to the aging of the population (McDaniel, 1986).

The life expectancies at birth for both men and women have increased so that women can expect to live 79 years as compared to the 71.9 years for men (Gee and Kimball, 1987; Chappell et. al., 1986; Verbrugge, 1985). The seven year difference between the life expectancy rates for men and women has been consistent for at least a decade. This difference however is minimized when life expectancy is calculated at age 65. Those men and women aged 65 can expect to live an additional 14.6 and 18.9 years respectively (a difference of 4 years). When life expectancies are calculated from age 85, the difference between men and women is a mere 1.4 years. At 85 years, the estimated number of remaining years is 6.5 for women and 5.1 for men.[1] The advantages in life expectancy for women must be considered in light of the disability free life expectancy rates. Using this indicator, the differences between men and women are less dramatic. That is, at age 65 while the average life expectancy of women is 4 years more than men, their disability free time advantage is only 1.7 years (Dulude, 1987).

These life expectancy rates influence the age distribution of the population over age 65. In addition, they also account for the increasing predominance of women in each age group compared to men. For example, the female to male ratio in 1981, for those between the age of 65 and 79, was 124 women to 100 men. As Table 3.1 illustrates, not only is the proportion of older women in each age category greater, but the imbalance becomes most notable at age 80. It is this 80+ age group that has experienced the most significant growth in the population (McDaniel, 1986; Health and Welfare Canada, 1983; Stone and Fletcher, 1980).

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[1] Three major hypotheses exist to explain the differences in life expectancy rates for men and women. Each discusses the survival advantages of women. These theories are the biological, socialization and social-structural hypotheses. They discuss the survival advantages of women in terms of chronological structure, the effect of socialization on types of behavior, and the social and economic conditions which women experience (Gee and Kimball, 1987).

TABLE 3.1: Percentage Age Distribution of Population 65 and over, by Age Group and Gender, 1981.

AGE GROUP	MEN	WOMEN
65 - 69	46.3	53.7
70 - 74	44.4	55.6
75 - 79	41.7	58.3
80 - 84	37.0	63.0
85 +	32.8	67.2

SOURCE: National Council of Welfare (1984).

The consequences of increasing age are incorporated into the discussions of the subsequent variables in the model. That is, since age is associated with these other factors , its influence is separately discussed as a causal factor affecting each variable.

One factor on which age operates is marital status.[2] There are considerable differences between older men and women across categories of marital status. The most notable is that 75 percent of men versus 40 percent of women are married. Three major factors account for this discrepancy in marital status, resulting in the observation that "most elderly men are married and most elderly women are widowed" (National Council of Welfare, 1984: 13). First, due to differences in life expectancies discussed above, women are more likely to outlive their spouses and experience widowhood. Second, women tend to marry men older than themselves; this is termed the mating gradient (Martin Matthews, 1987; Dulude, 1987). Finally, of those men and women who are widowed, more men tend to remarry. Remarriage for men is both more socially accepta-

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[2] While this variable is not included in the conceptual model, the implications of marital status are addressed in the interpretations of the findings.

ble and more feasible given the larger group of potential partners (Martin Matthews, 1987).

As Table 3.2 illustrates, more women than men are widowed in each age group. The differential widens with age to 80 years where 70 percent of the women and 28 percent of the men are widowed. After age 85, the difference between the sexes in terms of widowhood narrows but it is important to note that at age 85-89 half of the men are still married. These differences between men and women have varied implications for a significant number of other factors characterizing the lives of men and women in old age.

TABLE 3.2: Percentage Age Distribution of Population 65 and over by Marital Status and Gender, 1981.

	NEVER MARRIED		WIDOWED		DIVORCED		MARRIED	
AGE GROUP	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN
65 - 69	8.0	8.5	6.7	31.5	2.3	2.4	83.0	57.6
70 - 74	8.4	9.6	10.8	44.1	1.8	1.7	78.9	44.6
75 - 79	9.3	10.3	17.3	57.5	1.4	1.1	72.0	31.2
80 - 84	9.2	10.3	27.7	70.2	1.1	0.6	62.1	18.9
85 - 89	8.6	10.2	40.5	79.0	0.7	0.4	50.2	10.4
90 +	9.1	10.4	55.5	84.7	0.5	0.2	35.0	4.7

SOURCE: National Council of Welfare (1984).

In summary, while women have a survival advantage over men in terms of life expectancy, the remaining years of life often involve chronic disabilities and widowhood. The impact of widowhood on the lives of individuals, especially women involves adaptation to losses of companionship, continual assistance and income security. As a result of widowhood and life experiences, a number of factors have been considered women's issues. These factors include income, living arrangement, social support and transportation.

3.3 Income

The economic diversity of Canada's older population remains a dominant feature of any income profile of those over age 65. Despite the fact that this generation, as a whole, is "better off now than in the past" (Gee and Kimball, 1987: 53), national statistics indicate that 11.7 percent of the elderly still live below the poverty line (National Council of Welfare, 1984).[3] The diversity among the economic positions of the elderly is most evident when older men and women are compared; with 31 percent of older women versus 19 percent of older men living in poverty (National Council of Welfare, 1984).

Certain trends in the distribution of older individuals living below the poverty line are illustrated in Table 3.3. A comparison of families headed by elderly men and women indicates a significant contrast. That is, while the proportion of families headed by older men has gradually declined, the percentage of households led by elderly women has undergone an increase. Thus, within a four year period, 1979-1982, the poverty gap between the genders as family household heads has widened so that in 1982, those led by older women were twice as likely to be poor as those headed by elderly men.

Another noteworthy observation involves the high rates of poverty among the unattached elderly. Again, a contrast between older men and women is evident. Over the same time span, the proportion of older men living in poverty decreased at a more rapid pace than that of women. As a result, the overall gap in poverty rates between the genders widened with women in the more economically disadvantaged position. It is important to note that those unattached persons, while receiving government pensions and supplements often remain in poverty because the public assis-

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[3] Actual income reported, being the most common measure of economic wellbeing, is gauged by a baseline indicator called the poverty line. The most common calculation of poverty is that of Statistics Canada which employs an expenditure based measure whereby if 58.5 percent or more of the total income is used on the basic necessities of life, the individual is considered poor (Statistics Canada, 1986b). Adjustments to this measure are made according to size and place of residence.

TABLE 3.3: Percentage of Population 65 and over in Poverty by Type of Household and Gender of Head, 1979-1982.

	FAMILIES		UNATTACHED	
	Male Headed	Female Headed	Male Headed	Female Headed
1979	21.8	22.2	58.6	68.8
1980	13.3	21.2	51.9	65.4
1981	12.9	24.7	48.4	62.2
1982	10.2	24.6	48.9	60.9

SOURCE: National Council of Welfare (1984).

tance is insufficient to raise their income above the poverty line (National Council of Welfare, 1984).

Gee and Kimball (1987) report that older couples and unattached men receive approximately 46 percent of their total income from public sources, while unattached women receive 53 percent of their income from such government sources.[4]

For those poor elderly, ninety percent of their incomes are comprised of OAS, GIS and in Ontario, GAINS (National Council of Welfare, 1984). Rose (1981) notes that more than half of all Canadians over age 65 receive some or all of a guaranteed income supplement. The basic

[4] Canada's pension system involves public and private input. The public contributions include the universal Old Age Security Pension (OAS) and supplements such as the Federal Guaranteed Income Supplement (GIS) and the Provincial Guaranteed Annual Income System (GAINS - Ontario). Both supplements are means tested whereby income and assets are criteria on which program eligibility and benefit amounts are determined. In addition to OAS, certain retirees receive Canada Pension Plan benefits (CPP). CPP is a mandatory, wage related pension scheme contributed to by all employed persons (Secretariat for Social Development, 1980). Moreover, CPP is designed to replace 25 percent of previous earnings and in order to receive full benefits, 40 years of work earnings is required (Gee and Kimball, 1987 and McDaniel, 1986). The private pension systems include private employer sponsored pension plans and personal savings plans programs (i.e. RRSP's).

For those poor elderly, ninety percent of their incomes are comprised of OAS, GIS and in Ontario, GAINS (National Council of Welfare, 1984). Rose (1981) notes that more than half of all Canadians over age 65 receive some or all of a guaranteed income supplement. The basic qualification for receipt of the supplement is a demonstration that the individual possesses little or no income beyond the universal old age security allowance. Unfortunately, modest savings or investments make many elderly ineligible for government supplements, and may classify them as a member of the 'near poor' category. It is suggested that those individuals living at the poverty line, or the near poor, are being ignored despite exhibiting the greatest need. Marshall (1981:31) cites Rix and Sheppard (1980) who state:

> what has happened is that many elderly have moved out of the ranks of official poverty and into the ranks of the near poor, where their consequent ineligibility for certain programs and services leads us to question the extent to which the economic status of the elderly has really improved.

Gee and Kimball (1987) estimate that when the near poor are considered, approximately 78 percent of the unattached elderly women are at an economic disadvantage.

Measurement of the incomes of the elderly, especially in light of the high proportion living in poverty, is under debate. More specifically, the adequacy of monetary income as the sole measure of economic status among the elderly is questioned. Several researchers suggest that although income is a simple measure of economic status, it is not equivalent to standard of living because it fails to incorporate other potential sources of income such as assets and in-kind income (Leon, 1985; Schulz, 1985; Burkhauser and Wilkinson, 1983). Also, monetary income does not indicate the adequacy of funds for needs such as home maintenance and property taxes. For the most part, income data is obtained through self reports by the respondent. McPherson (1983) states that inaccuracies in self-reported income data are highly possible due to intentional or unintentional incorrect reports. Radner (1982) adds that he found serious underreporting of income especially among older heads of households.

The reported level of income in old age is considered a determinant of a variety of other outcomes. For example, income influences the perception of need for assistance and wellbeing. Furthermore, adequate levels of income can help alleviate the stresses associated with chronic disabilities by providing the means to pursue alternative methods of accomplishing desired goals. The findings presented by the Seniors Secretariat et.al. (1985a) support this notion of income as an enabling factor in adaptation. They report that sources of assistance for those in need vary across income groups. Specifically, lower income elderly tend to be assisted by their children; middle income elderly receive help from their spouses and higher income elderly tend to receive the greatest proportion of assistance from paid help. The Seniors Secretariat et. al. (1985a) conclude that individuals at higher income levels are more likely to be in better health, have more social contacts and higher participation levels. Conversely, low income groups are most likely to report problems with transportation, the receipt of assistance and request for additional assistance.

The economic status of older individuals is determined by educational attainment, family background and employment characteristics such as industrial sector location (Dowd, 1980; Henretta and Campbell, 1976). O'Rand and Landerman (1984) found education to be an early determinant of adequate assets, pension eligibility and retirement income level from pensions. These factors affected income directly and indirectly through occupational attributes for both men and women. In addition, age is negatively related to income as savings and investments dwindle over retirement years (National Council of Welfare, 1984). Thus, age acts as a confounding factor in studies of income among the elderly.

Since men and women tend to follow notably different pathways through the major life events effecting income, their status and opportunities in later life vary accordingly (O'Rand and Landerman, 1984). Furthermore, the impact of life events and roles within the family enhance the differences between the retirement incomes of men and women. It is only the women's retirement income that is significantly determined by her roles within the family and the workplace.

As a result of the substantial differences between men and women's incomes in old age, poverty is considered a women's problem (Gee and Kimball, 1987; McDaniel, 1986; National Council of Welfare, 1984). Factors accounting for their economic disadvantage fall into the general categories of: life long dependency, labour force participation, service sector employment and work histories (Gee and Kimball, 1987).

Women have experienced a life long dependent status rooted in the traditional division of labour. The economic position of most elderly women is closely tied to her husband's financial status and longevity. Thus, older women are poor in part due to widowhood and the loss of the additional household income contributed by their husbands. Women's labour force participation characteristics are in part responsible for their lower incomes in old age. The majority of today's older women were fulltime homemakers and earning no wages. Thus, they did not make any contributions to pension plans and are now ineligible for retirement pension benefits. The one exception is the receipt of survivor's benefits, however, as both McDaniel (1986) and Dulude (1981, 1978) point out, many private pension plans do not have such a survivor's benefits clause. Due to the differences in mortality and longevity, this affects women disproportionately as they are more likely to experience widowhood. McDaniel (1986) also adds that women receive only partial survivor's benefits (60 %) if their husband received CPP and, in many cases, no survivor benefits from their husband's private pension.

Women and minorities of both sexes are disproportionately represented in the periphery industries in service and labour positions. Since they tend to have lower education, their location in the lower paid service sector of the labour force affects their wage scales and reduces the likelihood that they will receive private pension benefits (Gee and Kimball, 1987). Many women must work to contribute to the economic wellbeing of the family. Part-time employment provides the opportunity to maintain full-time domestic responsibilities and collect a salary. The part-time

employment market offers limited choice in job type. Furthermore, part-time work, less than 10 hours per week, does not entitle the individual to Canada Pension Plan benefits (Labour Canada, 1983) and part-time work does not provide private pensions.

Finally, women have non-continuous out of home work histories due to family events and obligations. The differential impact of family - related events on men's and women's work careers and income attainments is well documented (Rosenfeld, 1979; Corcoran and Duncan, 1979). These family events, including, child bearing, child rearing and parental care can decrease a woman's labour supply by delaying, interrupting or precluding paid labour force participation (Corcoran and Duncan, 1979). Thus, women's role demands and lower education are typically associated with lower life-time earnings and lower relative occupational status achievements. In retirement, women for the most part are not likely to receive maximum CPP benefits and their private resources are likely to be unsubstantial. Neysmith (1984) comments that the expectation of private input into retirement income from the majority of women is not feasible.

Although certain pension reforms are underway, including the splitting of pension credits and survivor's benefits and a drop out provision in the CPP act, a particularly important change for women in old age has not materialized, that of homemakers pension (Dulude, 1981, 1978). Private pension reforms to date include the portability of pension credits, the extension of pension schemes to part-time workers and indexing (Gee and Kimball, 1987; McDaniel, 1986).

In summary, statistics verify the disadvantaged position of elderly women in terms of retirement income. This position is determined by various factors operating over the lifecycle including lower education, type of participation and position within the labour force and non-continuous work histories due to family obligations. Since the majority of older women are somewhat dependent on their spouses the event of widowhood has a profound impact on their income levels. These income levels, in turn, influence many aspects of their lives including mobility and normal social, physical and emotional functioning within the community.

3.4 Residential Location

Martin Matthews and Vanden Heuvel (1986) note that much social science research assumes distinct differences in urban-rural environments and their inhabitants. The theoretical grounding for such a mindset can be found in the work of Tonnies and his concepts of 'gemeinschaft' and 'gesellschaft'. Gemeinschaft is characterized by country life where strong family and neighbour ties meet the needs of the rural population. Opposite to this characterization is gesellschaft, depicted as the calculated exchange relationships and weak community ties between the urban city dwellers. The deleterious effects of urban dwelling on family life and individual's quality of life were also addressed by Wirth in his essay on urbanism (Rowles, 1984). Wirth identifies large population size, high density and heterogeneity as primary characteristics of the urban environment. However, Rowles (1984) suggests that this uncharitable view of urban life is subject to debate.

The concentration of recent social gerontological literature has shifted away from questioning the relative goodness of either setting to a comparison of the physical and social differences in the urban and rural environments. Such comparisons investigate these differences in terms of the unique aging experiences each setting provides for the older resident. Lee and Lassey (1980) urge that the unique implications of rural or urban residence are only appreciated in full when the differences between the persons and their surroundings are compared and contrasted.

Studies comparing urban and rural differences are faced with a measurement and conceptual dilemma with regards to what constitutes rural. Martin Matthews and Vanden Heuvel (1986) have identified a variety of problems in research on rural environments. First, they identify the inconsistencies in rural definitions and comment that mere population size and density are inadequate parameters of rurality. Moreover, the comparison of urban/rural studies is constrained by the inconsistencies in the boundaries used for analysis of the rural concept. For example, interna-

tional comparisons using census data from Canada and the U.S.A. are problematic. In Canada, rural is defined as less than 1,000 and less than 400 persons per square kilometer as compared to the American criteria of less than 2,500 persons (Chappell et. al. , 1986; Martin Matthews and Vanden Heuvel, 1986).

Martin Matthews and Vanden Heuvel (1986) and Krout (1983) offer the criticism that the term 'rural' is rarely explicitly operationalized and is often used to refer to any setting outside a metropolitan area. Although it must be defined more precisely, the notion of rural as beyond an urban centre is an important consideration. Miller and Luloff (1981) suggest that rural denotes a relatively isolated area outside the influence of the metropolitan city. There is also the faulty tendency to equate rurality with agriculture and to ignore the diversity of rural areas (Martin Matthews and Vanden Heuvel, 1986).[5] According to Cape (1987) this:

> fails to acknowledge the rapid decrease in the number of people directly involved with farming, the diversity of rural settings in Canada and the heterogeneity of the rural population.

McPherson (1983) adds that the diversity is heightened by regional differences in rural populations and environments. In order to avoid this difficulty, several researchers suggest that urban-rural comparisons replace the dichotomization of settlement types with a continuum from urban metropolitan centre to farm environments.

Despite the recognition of such diversity in rural environments, Rowles (1984) concludes that rural areas share many characteristics in both a physical and social sense and are very different from urban ones. This view is supported by Martin Matthews and Vanden Heuvel (1986: 49) who conclude that there is "empirical support for the existence of an identifiable rural culture."

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[5] According to the National Council on Aging (1984), Statistics Canada makes the distinction between the farm and non-farm aspects of the rural environment.

In general, the rural environment has not received equal research attention as compared to that given urban settings. Lee and Lassey (1980) state that social gerontology and rural sociology have only recently evinced a marked concern with the problems of the rural elderly. Perhaps a major impetus behind this recent interest is the remarkable change in the demographic profile of the rural areas in Canada. Approximately 21.9 percent of Canadian elderly persons live in rural areas (Martin Matthews and Vanden Heuvel, 1986). More importantly, rural areas, especially small towns, are experiencing concentrations of elderly ranging from 13.5 percent to a high 30 percent of their overall population. These figures represent population distributions that the remainder of Canada is not expected to achieve until 2031 (Health and Welfare Canada, 1983; Ontario Advisory Council on Senior Citizens, 1980).

The aging of rural Canada is the combined result of significant out-migration of younger individuals and the number of elderly persons who have 'age in place' in rural areas.[6] However, the effects of these trends have been enhanced by the steady stream of return migrants and urban transplants from metropolitan areas. The net migration gains of elderly persons in non-metropolitan areas are documented and cited as a critical component of the elderly rural population growth (Cape, 1987; Golant, 1987; Martin Matthews and Vanden Heuvel, 1986; Krout, 1983; Stone and Fletcher, 1980). Krout (1983: 503) notes that:

> the movement of elderly into rural areas has been one of the most significant components of the surprising post 1970 non-metropolitan 'turnaround' from net out- to net in-migration.

Golant (1987), however, concludes that the shift of older people to non-metropolitan areas does not represent a strong current of migration away from the metropolitan areas.

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[6] The term 'aged in place' means to grow old without changing residences or if residences are changed, to remain in the same geographic locale. For example, a farmer who retires, sells the farm and moves to a house in the nearest hamlet or village with which he is most familiar or to a rural nursing home is considered to have aged in place.

There are fundamental differences between the elderly who relocate in a rural area around the time of retirement and those who are native to rural environments. The in-movers (or urban transplants) tend to be younger, married, better educated, and tend to be retired at younger ages (more female in-movers report paid labour force participation) and felt retirement to be a greater impact on lives than rural natives (Martin Matthews and Vanden Heuvel, 1986).

The current and future impact of these migrants on the population composition of the rural population is evident. The number of older females retirees from the cities has increased the number and proportion of older women in the rural population. In rural Canada, until recently, men out-numbered women but this excess of men has been steadily declining to the point where at present, there is a greater proportion of women (Kalbach and McVey, 1979: 159). This has implications for the needs of the population and consequent program and service delivery schemes in rural areas.

The majority of the social gerontological literature on the issue of rural aging focuses on the distinct differences between the individuals who experience old age in rural versus urban environments (Martin Matthews and Vanden Heuvel, 1986). Such comparisons focus on the objectively assessed characteristics of the elderly (Rowles, 1984; Lee and Lassey, 1980; Kivett and Scott, 1979). For the most part, the consensus is that "the rural elderly face substantial relative disadvantages in terms of the most objective dimensions of quality of life" (Lee and Lassey, 1980: 63).

These objective indicators include income, housing condition, health, service availability, transportation and contact with family. The associated findings are that the incomes of the rural elderly are lower, perhaps due in part to lower lifetime earnings and consequent CPP benefits and the lower probability of carrying a private pension plan (Lee and Lassey, 1980; Coward, 1979). Rural housing is older and of poorer quality (McPherson, 1983; Coward, 1979; Atchley and Miller, 1979). Rural elderly tend to be in poorer health and experience more serious problems that

interfere with daily task performance (Cape, 1987) and they have limited access to health and other formal support services (Coward, 1979). Furthermore, they have greater distances to travel yet inadequate or nonexistent public transportation systems (McKelvey, 1979; Patton, 1975). Finally, many rural elderly are widowed women and spatially isolated from children and other family members with less face-to-face contact (Rowles, 1983; Bultena, 1969).

Despite the geographic separation of rural elderly parents and children, Bultena (1969) and Shanas (1961) found a significant proportion of the elderly had at least one child living in the community. Although there are differences in urban and rural average family sizes (the rural families having more children), Cape (1987: 97) warns that "consanguinity is not a guarantee of adequate support". Along this same line of thinking, Coward (1979) contests the assumption that kinship ties of the rural elderly are stronger. Similarly, Lee and Lassey's (1980) data did not support this aspect of the gemeinschaft myth; although kin constituted a greater proportion of older rural women's social contacts. Lee and Lassey (1980) also did not find the rural family ties to have a noticeable impact on morale or life satisfaction. Lee and Cassidy (1985: 165) suggest:

> if the rural elderly really were uniquely advantaged by strong supportive kin networks, their needs for public services might indeed be less. The fact is that they are not.

According to Youman (1977: 89), "available evidence suggests that rural environments have less potential than urban settings for producing a favorable mental outlook among older people." Despite the disadvantages in objective conditions, there is strong evidence refuting Youman's conclusion. That is, the inferior objective conditions of the rural elderly are not necessarily paralleled by lower levels of subjective wellbeing (Lee and Lassey, 1980). Lee and Lassey (1980) found that when comparing objective and subjective indicators of the quality of life, the rural elderly were clearly disadvantaged with respect to socioeconomic status, health, availability of services and quality of housing but on the subjective indicators of morale, neighbourhood satisfaction and wellbeing, they scored as high or higher than their urban counterparts.

Several hypotheses have been postulated to explain the paradox between the subjective and objective indicators of quality of life. McPherson (1983) and Lee and Lassey (1980) suggest that these objective facts may not be perceived as negative or problematic by rural elderly. Moreover, they may be irrelevant to perceived quality of life and satisfaction. Rowles (1984) discusses two possible explanations for the apparent dissonance between objective conditions and subjective wellbeing. First, he questions the adequacy of the objective measures of income, housing quality and social contact. For example, he suggests that income may be inappropriate given that dollar income statistics do not account for the hidden resources of the rural elderly such as property, vegetable gardens and the lower expenses resulting from participation in what is generally more of an exchange economy. In addition, gradual housing quality deterioration over an extended period of time may make it less noticeable to the rural inhabitants or they might be reluctant to renovate due to outlay of cash. Finally, spatial separation does not appear to be accompanied by any lessening of emotional commitments or perceived adequacy of interaction (Rowles, 1984).

Rowles' (1984) second explanation rests on the premise that many rural environments foster high levels of social participation and support and that the rural milieu allows a more gradual process of retirement and transition to aged status. Fengler and Jensen (1981) support this contention citing their findings of high life satisfaction among the rural elderly to the greater frequency and quality of interaction with friends and neighbours in smaller communities. Finally, Rowles (1984) speculates that urban elderly may rate the subjective indicators lower because of feelings of relative deprivation.

Martin Matthews and Vanden Heuvel (1986) identify a second avenue of study on rural aging. This focus is less popular and involves the influence of physical locale on the experience of growing old and being older. This orientation recognizes a distinctive social cultural component that is nurtured by the physical and demographic attributes of rural environments. These

characteristics provide a mediating effect on the older person's experience of the physical setting (Rowles, 1984). Small towns, experience a degree of isolation and relative stability in their populations that encourages and maintains the development of supportive relationships over time. Riley and Toner (1968) suggest that the longer one lives in the community, the more extensive bonds of friendship are likely to be. Rowles (1983) terms this, awareness networks, in which individuals know the names, lifestyles, health and other intimate details about others in the community. This being 'known' has supportive potential for rural elderly as they become more environmentally vulnerable.

Rowles (1984) criticizes studies on rural environments because their narrow scope ignores certain crucial factors in environmental experience such as gender. The fact that the elderly are over represented in rural populations and that the majority of these elders are female widows suggests that attention to these gender differences are timely. However, little has been done on "how it is to be old, female, rural and Canadian" (Cape, 1987: 85). Cape (1982: 215) suggests that elderly rural women "remain largely out of sight and out of mind." She contends that rural existence adds additional risks to the hazards of being old and female with limited money and services since the ability to maintain an independent lifestyle depends in large part on the availability of vigorous men. Furthermore, women are more vulnerable because the traditional support system fails to provided sufficient daily routine care required by widows living alone. Cape (1987) concludes that rural support strategies are short on daily care but long on emergency aid. Over time, the vulnerability of urban transplants in widowhood may become evident. Despite their initial objective advantages over the rural natives, they do not have the entrenched supportive relationships and may find themselves committed to a lifestyle that was even more dependent upon the health of their late husbands.

In summary, there are substantive differences between the elderly who reside in urban and rural settings. A notable difference lies in the tendency of rural elderly to rate themselves better on subjective indicators as they relate to the quality of life than either their objective conditions or their urban counterparts would indicate. Furthermore, the implications of urban or rural living and the influences of the physical environment on life experiences in old age are important considerations in the investigation of the differences between rural natives, urban transplants and urbanites across gender.

3.5 Perceived Health

The subjective evaluation of health is an indication of an individual's general health status and wellbeing. As a complex phenomenon, the self reporting of health encompasses more than the absence or presence of disease; it represents a global dimension of health as physical, social and emotional wellbeing (Wolinsky et. al., 1984). Furthermore, self-reported health or perceived health is considered a function of an older person's overall optimism about life (Palmore and Luikart, 1972). This suggestion in part explains the high association between the perceived health and life satisfaction reports of the elderly (Larson, 1978).[7] Based on these interpretations, researchers are now investigating the role of perceived health in later life adaptation.

A small group of researchers have adopted a common perspective in attempting to explain perceived health as a factor in adapting to the changes related to old age; one that is employed in this study (Barresi et. al., 1983-84). From this perspective, perceived health is seen as a resource which the individual uses in combination with other resources to adapt to and maintain independence within the dwelling and community contexts.

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[7] It has been consistently found that perceived health is a better predictor of life satisfaction than more objective measures of health (Larson, 1978; Myles, 1978; Palmore and Luikart, 1972).

The influence of self-reported health on an older person's adaptive functional ability has received only cursory recognition in the social gerontological literature. Although they do not pursue the thought, Linn and Linn (1984: 604) suggest that "persons with good self assessments might be expected to function better despite physical limitation than persons with poor assessed health, or vice versa." Forbes and Jackson (1984:70) make further reference to perceived health as an adaptive mechanism. They quote Stolee et. al. (1982):

> an individual's preconception of his health is an important part of his ability to cope, whether or not it corresponds with an objective rating of his functional capacity.

Similarly, Maddox (1964) posits that perceived health, as an indicator of coping in old age, acts as a mediator between objective health status and a health-related behavior such as the occupancy or rejection of the sick role. Thus, "the subjective belief that one is healthy or ill may be more important than actual medical status in predicting an individual's general emotional state and behavior" (Maddox and Douglass, 1973: 88).

A fuller understanding of perceived health is gleaned from a review of the factors acting on the individual's evaluation. Strong empirical evidence identifies the number of chronic diseases and the level of disability or confinement to bed as the principal predictors of self-reported health (Mossey and Shapiro, 1982; Linn and Linn, 1980; Fillenbaum, 1979; Markides and Martin, 1979; Maddox and Douglass, 1973; Maddox, 1962). In addition, financial adequacy and education are also identified as positive influences on self-reported health (Jylha et. al., 1986; Cockerman et. al., 1983; Ferraro, 1980; Graney and Zimmerman, 1980, 1980-81; Markides and Martin, 1979; Palmore and Luikart, 1972). Osborn (1973: 217) concluded that:

> the higher social economic statused person is more positive in his evaluation ... because the consequences of ill health are less severe and the lower ranked person is realistic in his perception that the consequences of ill health are severe and that he is in 'poor' health.

Maddox (1962), also suggests that income influences optimism in health reports. Not unexpectedly, Markides and Martin (1979) found age and being a woman to have a small negative indirect effect through income on perceived health. Education influences the perception of health through the experiencing of more symptoms (Jylha et. al., 1986). As discussed, more illness and disability is associated with lower perceptions of health. These studies provide additional support for the direct association between socioeconomic status and perceived health ratings.

There has been significant discussion on the validity and reliability of self-rated health reports. The object of much debate involves what a self-rated health report actually reflects or measures. For the elderly population, some researchers maintain that perceived health ratings are relative. That is, ratings are explainable by reference group theory. This theory posits that a person's actions and expectations tend to reflect the norms of those groups in which they hold membership (Fillenbaum, 1979). Thus, perceived health ratings of elderly persons tend to be based on their comparisons of themselves to others in their age and sex category (Fillenbaum, 1979; Bultena and Powers, 1978; Shanas et. al., 1968; Maddox, 1962).

Self-rated health may also reflect the expectations that important others as well as society have of the older person's health. This is supported by Shanas et. al. (1968) in their cross-cultural study of elderly persons in three industrialized nations. They found that if illness was defined as normal for the elderly in a given nation (Denmark and Britain), it was more likely to be accepted and ignored when reporting the state of one's health. Conversely, where high levels of activity and independence were expected (U.S.A.), the respondents were more concerned with health and functional limitations and more comprehensive in defining the health problems. These findings are supported by Hickey (1980: 52) who suggests that if "the personal and social meanings of the symptoms portray a composite picture of functional adequacy, then perceived health status will be reported as good or excellent." That is, perceived health ratings reflect whether an

older person's health is adequate enough to meet the demands of their environment and fulfill their social roles.

The controversy surrounding the extent to which self-ratings of health are better indicators of actual or objective health status remains unresolved. A variety of researchers have found that self reported health among the elderly is a relatively accurate measure of objective health status (Ferraro, 1980; Fillenbaum, 1979; Maddox and Douglass, 1973; Palmore and Luikart, 1972; and Tissue, 1972). Evidence that the perceived health ratings are consistent and stable over time and are continually positively congruent with objective evaluations of health status is additional support for the validity of the subjective health measure (LaRue et. al., 1979; Maddox and Douglass, 1973; Maddox, 1962). Maddox and Douglass (1973) report that when incongruity in the subjective and objective ratings existed, the tendency was on over-estimation rather than an underestimation of health and for the subjective ratings to be better predictors of future physicians ratings. Shanas and Maddox (1985) and Linn and Linn (1980) conclude that the use of a perceived health measure in gerontological inquiry is brief, simple and highly reliable.[8]

Studies of the community elderly, have found that they tend to rate their health positively (Ferraro, 1980; Fillenbaum, 1979; Myles, 1978; Shanas et. al., 1968). Wolinsky et. al's (1983) findings indicate that over 70 percent of the elderly in their study perceived their general health as good or excellent. These favorable reports, even among the very old, occur despite the presence of at least one chronic disease and conflict with objective reports that would provide the basis for an unfavorable report (Cockerman et. al., 1983; Shanas et. al., 1968).

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[8] Other researchers do not share the contention that perceived health is a reliable measure. For example, Rosencranz and Pihlblad (1970) argue that the measure is uncertain due to the unmeasurable influences of the incomplete awareness of conditions and severity of illness, the possibility of hypochondrical tendencies and the influence of daily events on fluctuations in reported feelings on general wellbeing and health.

Maddox and Douglass (1973) discussed the general tendency of people to overrate their health and the possibility that older people tend to adjust their health expectations downward relative to physiological-medical standards. These conclusions are founded on the fact that of the 33 percent of incongruous ratings between subjective and physician's reports, the vast majority represented a more favorable self-reported health rating than medical evaluations.

Cockerman et. al. (1983) found that people define their health as much better than others their age after the age of 60. This finding supports their hypothesis that for present generations, the tendency to express a more positive self-rating of health was an age-specific characteristic of the cohort and that these aged persons adjust their perceptions of health in response to the aging process.

Comparisons between the old and old old suggest differences in self-ratings of health. In reviewing the literature, Maddox (1962) notes that among the elderly, the younger individuals (60-70 years) are more likely than the older persons to be pessimistic about their health. He suggests this occurrence is a reflection of the impact of the major role transitions such as retirement. Ferraro (1980) also found that older elderly reporting excellent health manifest approximately equal disability as the old who rated their health as good. These findings are not consistent with those of Shanas et. al. (1968: 214) who found:

> no marked decline with age in the proportion of elderly who feel their health is good. About the same proportion of persons in every age category say their health is good.

Shanas (1962) reports that many older adults who had suffered from chronic illness for an extended period of time rated their health better than did others who were in the initial stages of a chronic illness experience/episode.

Gender differences in perceived health reports are more inconclusive. Other measures of health have found gender differences that would be expected to have implications for the interpre-

tation of perceived health ratings. For example, women have longer life expectancies, more days per year of restricted activity, more bed disability days, more doctor's visits, they take more and more varied medications, have higher expenditures for health care, and higher rates of institutionalization than their male counterparts (Chappell et. al., 1986; Verbrugge, 1985, 1976; Verbrugge and Madans, 1985). Elderly women are less likely to report having zero, one or two chronic conditions but are more likely than men to report three or more (Health and Welfare Canada and Statistics Canada, 1981; Clark and Collishaw, 1975). Older women are also more likely than men to report greater physical disability especially joint and mobility impairments (National Council on Aging, 1978). Despite these findings the perceived health research to date has not contributed to a better understanding of gender differences.

Three common scenarios with regard to differences in the reports of men and women are evident in the literature: no difference, women's ratings better, men's ratings better. Harris (1978) and The Canada Health Survey (Health and Welfare Canada and Statistics Canada, 1981) indicate that elderly women are no more likely than men to perceive their health as fair or poor. LaRue et. al. (1979) qualify their finding of no difference by suggesting it may have been the result of the advanced age of the sample, a mean age of 84.4 years. Such a suggestion is valid given the findings of Kovar (1977), where the gap between men and women in self reported health tends to narrow after age 75.

To the contrary, Ferraro (1980) found older women to have better perceptions of health despite more disability and illness. Thus, women report better health in relation to men with similar objective conditions. He also suggests that old old women (75+) are more health optimistic than other aged persons. The findings of Fillenbaum (1979) and Engle and Graney (1985-86) are congruous with those presented by Ferraro (1980). All of these studies found the self-reported health of older men was lower than that of older women of similar health status. Fillenbaum

(1979) found that women who rated their health as excellent or good were more likely to report more chronic conditions than men of comparable ages. Cockerman et. al. (1983) caution that the interpretation of subjective health assessments should be undertaken in light of the corresponding objective health status, for any given self-assessment, women report more health problems. That is, women tolerate more health difficulties for a given self-assessment of health than do men. They warn that this has implications for assessing health, but more importantly for estimating health care service requirements.

In opposition to Fillenbaum (1979) and Ferraro (1980), Maddox (1964) suggests that being female is related to pessimism about health when medical evaluation is controlled. Dulude (1987) and Seniors Secretariat et. al. (1985b) found that women are more likely than men of the same age to rate their health as poor.

In summary, perceived health is a reliable measure of physical condition and general wellbeing. Furthermore, perceived health is considered a coping mechanism for the elderly. The level of perception of health is influenced by the individual's level of disability and socioeconomic factors. For the most part, elderly individuals are optimistic in their ratings of general health, however, changes in the rating across age are uncertain. Finally, while the self-reported health literature has not conclusively determined the existence of gender differences, the fact that it is a personal resource used in dealing with age-related changes has relevance to this study.

3.6 Living Arrangement

Demographers have drawn attention to the changing composition of the elderly Canadian households. Census statistics indicate that over the last three decades there has been a rapid increase in the absolute and relative number of elderly one-person households. Now the predominant household formations of the elderly are the one-person and the married couple households

(Miron, 1981; Goldblatt, 1981). Despite this, the elderly exhibit a variety of living arrangements that tend to vary by gender and age.

There are remarkable differences between older men and women across types of living arrangements. As Table 3.4 illustrates, the proportion of older women living alone at both age groups exceeds that of men, so that over 75 years, the majority of women reside by themselves. Correspondingly, more men than women tend to be living with their spouses. Of the remaining elderly, most men and some women live with relatives, while more women tend to live in collective dwellings. These figures illustrate the higher institutional rate for women, especially for those over age 75.

These gender differences in the likelihood of living alone or in a non-spousal arrangement are well documented (Stone and Fletcher, 1987, 1980; Abu-Laban, 1980). Social gerontological research identifies several demographic trends that have been responsible for the changes in living arrangements for older men and women. One factor is the previous decline in fertility which resulted in fewer children and relatives with which to cohabitate (Wister, 1985). It is suggested that higher fertility among older women may decrease the propensity to live alone (Thomas and Wister, 1984; Kobrin, 1976). Another factor involves changing patterns of marital status. This trend has resulted in a substantial increase in the number of widowed, divorced and single elderly women that maintain an independent dwelling.

Research on the rise of single-person households has found that the most dramatic change occurred among elderly widows in comparison to any other age, sex or marital status category (Fletcher and Stone, 1980; Stone and Fletcher, 1980). This significant increase in independent living has not been mirrored in the older male population because "most elderly men are married and most elderly women are single" (National Council of Welfare, 1984: 13). Since data show the disproportionate number of widowed and living alone to be older women, it has been suggest-

TABLE 3.4: Percentage of Population 65 and over by Living Arrangement and Gender, 1981.

	65 - 74		75 +	
LIVING ARRANGEMENT	MEN	WOMEN	MEN	WOMEN
Living Alone	11.3	29.8	16.2	35.7
Living with Others				
Spouse or Parent	78.2	53.1	59.0	24.5
Relative	4.3	10.3	8.3	16.5
Non-relative	2.4	2.5	2.9	2.5
Collective Dwellings *	3.3	3.7	13.1	20.2
Other	0.5	0.6	0.5	0.6
Total	100.0	100.0	100.0	100.0

* Include hospital, old age home, hotel and rooming house.

SOURCE: National Council of Welfare (1984).

ed that this is a women's issue. Women are at a disadvantage as they are more likely to be and stay widowed than men (Martin Matthews, 1987). Both the marital status differences and consequent living arrangement differences among older men and women can be explained by the life expectancy differential, in conjunction with the 'mating gradient'; the tendency for women to marry older men (Martin Matthews, 1987; McDaniel, 1986; Dulude, 1978). According to Stryckman (1982), women are less likely to remarry due to unfavorable social norms and there are fewer potential mates in the population (Martin Matthews, 1987).

Connidis and Remple (1983) state that since marital status and age differences significantly affect women but not men, gender may be one of the most salient factors in living arrangements. This suggests that with respect to living arrangements, to be old, female and widowed is a 'triple whammy' (Connidis and Remple, 1983). However, Miron (1981) suggests that those older men who live alone and are widowed may be worse off than the corresponding group of older women. These men are likely to be more disadvantaged in terms of social ties. Furthermore, assistance is more likely to be readily offered to and accepted by older women living alone rather than men.

For the widowed elderly, living with children or other relatives are alternatives to living alone. Connidis and Remple's (1983) findings show that the crucial difference in living arrangements is whether or not the individual had children, not how many children that individual actually had. Older individuals living with others, including children, tend to be older with lower incomes, with greater health and activity limitations, and exhibit more dependency in some daily tasks; and are slightly more likely to live in non-urban areas (Fengler et. al., 1983; Lawton, 1981; Shanas, 1979a, 1979b; Soldo, 1978). Important gender differences exist among those widowed elderly who reside with relatives. Older women are more likely to live with children, while men are more likely to live with unrelated individuals although women are more likely to be living with relatives outside the nuclear family (Lawton, 1981).

One cause and/or consequence of the shift toward more independent living is a change in intergenerational cohabitation. Wister (1985) suggests that the changes in social and family norms have encouraged the separate living styles of the elderly and consequently effected the shared living arrangements with family members. Wister (1985) notes that the preference for separate households for the elderly is shared by both the older individual and his/her family.[9] Similarly, Kivett and Learner (1982) report that when asked about preferred living arrangements,

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[9] Seelbach (1977) found variations in the population in terms of attitudes towards living with children. He found that urban, low income, minority women were more likely than other women to think favorably toward living with children.

older parents are most likely to say they prefer to live alone, but near relatives.[10] Shanas (1980: 58) states:

> many of the older women living alone are manifesting a strong desire for independent living. Rather than living with their children or other kin, they prefer to maintain an independent mode of living in a home of their own often with relatives at a reasonably close but respectful distance.

This phenomenon is termed 'intimacy at a distance' (Rosenmayr and Kockeis, 1963). Such an arrangement eliminates the potential problems of cohabitation with family. Fengler and Danigelis (1982) suggest the hesitation to live with relatives on the part of older widows may be caused by a fear of intergenerational conflict and loss of independence. Thus, older widows tend to choose that option only as a last resort when financial or health constraints necessitate a move to a more supportive setting (Troll et. al., 1979).

Lawton (1981) criticizes the living arrangement literature for its consistent failure to account for the separate effects of age, marital status and gender. More specifically, the confounding effects of age, gender and marital status on living arrangement have not received adequate interpretation by social gerontological researchers. Furthermore, Cafferata (1987) argues that living arrangement can not accurately be represented by the measurement of marital status because being widowed, divorced or never married does not preclude living with at least one other person.

In the past, living arrangements of the elderly were descriptive considerations that enabled further understanding of family relations and support provision. A person's living arrangement defines and constrains the nature of his/her social interaction within and beyond the dwelling unit. Since living arrangement influences one's access to social contact with others it has potential consequences for social support. Wister (1985: 127) also acknowledges this in that living arrangement:

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[10] A secondary hypothesis explaining the increase in one person households is the personal preference of many elderly for maintaining a separate and independent dwelling. This desire for privacy is often satisfied due to the improved economic security of a select group of elderly (Alwin et. al., 1985; Miron, 1981; Stone, 1981).

> choices also affect patterns of informal and formal support. With whom one lives can directly affect the intensity and quality of informal support, in turn shape the demand for formal support services in the community.

Cafferata (1987) concurs with Wister (1985) by suggesting that living with others implies some notion of substitution of home care.

An additional way of interpreting living arrangement, one consistent with this thesis, is to consider living arrangement with the underlying dimension of independence in living style (Lawton, 1980). Therefore, living alone represents one extreme on the scale of separateness or independence. The other end of the continuum which represents dependence, involves living arrangements such as cohabitating with others. Fengler et. al. (1983) note in their investigation of the variety of household types subsumed under 'living with others', that it is not who the 'other' is that makes the difference. Rather, it is important that some 'other' be present.

The importance of living arrangements to the wellbeing and independence of the elderly is found in the literature addressing risks to institutionalization. Brody et. al. (1978) report that functional ability was not as critical a factor in institutional placement as living arrangement, thus, living alone is a predictor of long term care institutionalization (Chappell et. al., 1986). Lawton (1980) infers that the presence of a more able spouse or living companion enables more impaired people to remain in the community, an arrangement often infeasible if living alone.

In summary, the household composition of the elderly has undergone significant change. The most prominent characteristic is the increase in single-person households. Of the factors determining this demographic occurrence, the increase in the number of widows has had the most impact. In addition, notable gender differences exist in the living arrangements of the older population. While men tend to live with their spouses, women most likely live alone. Furthermore, widowed women living with other people tend to reside with children, while widowed men are likely to reside with unrelated individuals. Finally, favorable living arrangements facilitate the

provision of social support. The availability of supportive assistance is crucial for the maintenance of adequate levels of independent functioning.

3.7 Social Support

The basic premise underlying social support research is that assistance provided to an older person is a means of augmenting or maintaining their competence within their milieu and stabilizing their level of independence. Such research is particularly pertinent to the understanding of the aging process. Major life changes such as declines in perceptual and physical capabilities, retirement, limited income, residential relocation, illness and death of significant others may strain the older person's adaptive capacities. During these transitions and adjustment periods, interdependence on family, friends and neighbours may be necessary to maintain optimal functioning. It is noteworthy that not all individuals require the same type or amount of support due to the wide variation in perceived and objective needs.

Social support as related to the care and wellbeing of the elderly has been of significant interest during the past two decades. Demographers have contributed to this interest in social support provision. The anticipated implications of fewer available care providers, due to fewer children, greater mobility in the younger population and greater participation of women in the paid labour force, are that less support will be available to the present elderly (Scott and Roberto, 1985; Treas, 1977).

According to Brownell and Schumaker (1984), additional factors have been responsible for the popularity of social support in psycho-social research, including gerontology. First, social support represents an extension of interpersonal relations known to be a determinant of quality of life. Second, social support research for the most part has confirmed the beneficial effects of supportive interpersonal associations. Researchers have recognized the salience of social ties for

health and wellbeing; for example, the role of social support in the etiology of disease, treatment and recovery. Cohen and Syme (1985: 5) suggest that the concept of social support gained popularity because of "its potential for aiding in the conceptual integration of the diverse literature on psycho-social factors and disease." Since physiological change is inevitable with aging, the application of the social support concept to the study of disease-related processes was an obvious extension of inquiry.

Social support research has been responsible in part for dispelling a variety of myths about the elderly. Research has refuted the myth of dissolution of the family and resultant isolation of the elderly (Shanas et. al., 1968). The work of Shanas (1979a, 1979b), Brody 1981, Brody et. al. (1978), Cantor and Little (1985), Cantor (1980, 1975) and Lopata (1975) has illustrated the important role of the family as a social support system. Contrary to the myth, empirical evidence has shown that children maintain regular contact with their aging parents and substantial amounts of supportive exchanges occur between the adult children and older parents. The relatively small number of elderly residing in institutions in part attests to the amount of care provided by families and friends for the impaired community elderly. In reviewing the findings of her work, Shanas (1979b: 3) concludes that:

> old people are not rejected by their families nor are they alienated from their children. Further, when old people have no children, a principle of family substitution seems to operate and brothers, sisters, nephews and nieces often fulfill the roles and assume the obligations of children.

Social support analysts have shown that families and other informal care providers such as friends and neighbours provide the majority of care. Moreover, formal assistance is usually elicited only when informal supports are insufficiently meeting the needs of the elderly.[11]

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[11] The issue of how these two social support systems interact is discussed in a further section; whether the formal system supplants or supplements the informal system.

Two distinct research orientations involving social support have evolved; an analytical tradition that emphasizes theory building and hypothesis testing and an applied tradition that concentrates on the evaluation of interventions (Rook and Dooley, 1985). Within the former, researchers are divided on the role of social support. There are those who contend that social contacts directly effect and reduce the effects of a given outcome (Lin et. al., 1979) and those who assert that social contact and assistance have the greatest impact on an outcome during periods of increased stress (Cassel, 1976). Thus, those individuals experiencing high levels of stress will require more assistance at certain times than those not exposed to such situations.

These two rival hypotheses within the analytic framework essentially argue that either social support benefits people experiencing life stress (buffering hypothesis) or that social support benefits individuals regardless of life situations (main effects hypothesis) (Rook and Dooley, 1985). Thoits (1982) offered an alternative interpretation; she considered that the direct (main effects) and indirect (buffer) contributions of social support coexist. Therefore, social support acts as a mediator between the stressful life event and the wellbeing of the individual and acts to maintain ongoing quality of life for the receiver. Cantor and Little (1985) are also proponents of neither hypothesis, having decided that "social support is important in facilitating one's coping with everyday hassles and chronic stressors." Brownell and Schumaker (1985) credit Cassel (1974) for his original conceptualization of social support as a buffer from the physiological and psychological consequences of illness. However, Rook and Dooley (1985) and Kessler and McLeod (1985) indicate that the weight of empirical evidence does not consistently favour the buffering hypothesis over the main effects hypothesis. The proponents of each hypothesis have not reached agreement and the debate continues in the research.

Despite the common underlying idea of social support as an influencing factor in health, wellbeing and behavior (Mitchell et. al., 1982) there remains no consensus or consistency among

or between the social science disciplines on the definition and conceptualization of social support. Brownell and Schumaker (1984: 5) explain:

> few researchers have defined social support explicitly. The very label conveys an intuitive sense of the phenomenon and its apparent obviousness may be a major reason for inadequate theoretical work in this area.

Social support is often not defined but discussed as a given (Scott and Roberto, 1985; Pilisuk and Minkler, 1980), or where definitions do exist they are often constructed to correspond to the focus of study. Thoits (1982) attributes this practice to the variety of phenomenon social support has come to encompass. However, among the more common definitions cited, there is consistency in the recognition of social support as vehicle to meeting needs, involving a subjective evaluation and a beneficial outcome.[12] For example, Tolsdorf (1976: 410) defines social support as "any action or behavior that functions to assist the focal person in meeting his personal goals or in dealing with the demands of any particular situation." Similarly, Thoits (1982: 147) considers social support to be "the degree to which a person's basic social needs are gratified through interaction with others." Perhaps the most comprehensive definition is that offered by Schumaker and Brownell (1984: 11):

> social support is an exchange of resources between at least two individuals perceived by the provider or the recipient to be intended to enhance the wellbeing of the recipient.[13]

Another methodological issue related to the study of social support is the variety of measurements used for research on this topic (Antonucci, 1985). First, the subjective approach used by Wellman (1981) involves gathering information on whom the respondent feels close to. Second, the categorical approach is expressed by asking the respondent the sources of support from an

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[12] Researchers recognize that not all contact results in supportive exchanges and that not all support is positive and effective in terms of the recipient's wellbeing (Hall and Wellman, 1985; Shinn, Lehmann and Wong, 1984; Johnson and Catalano, 1983; Kahn and Antonucci, 1982).

[13] Tolsdorf incorporates both the main effects and be buffering hypothesis of social support in his definition. Conversely, Schumaker and Brownell's definition considers both, but implicitedly by reference to wellbeing it encompassed the support required everyday and during stress.

extensive list of potential support providers. Finally, some measures ask the respondent who performs certain activities or functions for them, or vice versa, in specific existing or hypothetical situations (Wellman, 1981). Thus, the variety of phenomenon measured under the rubric of social support has resulted in confusion and difficulty in comparing findings.

In attempting to create order in the social support investigation, Schumaker and Brownell (1984) proposed a broad taxonomy of social support that distinguishes between the content of the supportive exchanges and the purposes or functions of social support. The content of social support incorporates the types of support provided or received while the purposes of social support involves a variety of personal needs potentially met by a supportive relationship. Such a taxonomy is useful in categorizing the work of various social support analysts. The content of social support is commonly classified along three major kinds of support, specifically emotional, tangible, and informational (Figure 3.1) (Cohen and Mackay, 1984; House, 1981; Berkman and Syme, 1979).

While such a taxonomy is beneficial in organizing a complex phenomenon, Schumaker and Brownell (1984: 12) warned that taxonomies can "run the risk of including all aspects of interpersonal transactions and thereby obscuring what is uniquely social support", and that social support taxonomies "should be reserved for exchanges of resources intended by the donor or perceived by the recipient as beneficial to the recipient."

The provision of social support has been confused with two closely related concepts, social network and social support system. Not unlike social support, "the term social network has come into prominence without benefit of an agreed - on definition" (Kane and Kane, 1981: 154). Cohen et. al. (1985: 303) note that:

> there has been a tendency to confuse the concepts of social supports and social networks. Social support is viewed as exchange between individuals which must be perceived as beneficial to the recipient. Therefore, more is usually better. The social network is a broader category that encompasses social support but it includes a variety of measures of social interaction that do not necessarily imply benefits to the recipient.

FIGURE 3.1: The Purposes and Content of Social Support Exchanges.

PURPOSES OF SUPPORT

- Gratification of affiliative needs; sense of belonging, nurturance, intimacy (Schumaker and Brownell, 1984; Berkman and Syme, 1979).
- Identity and self-esteem maintenance; socialization, reassurance of worth (Schumaker and Brownell, 1984; Cantor, 1979; Berkman and Syme, 1979).
- Stress reduction (Schumaker and Brownell, 1984).
- Health and independence sustaining (Schumaker and Brownell, 1984; Gottlieb, 1981).

CONTENT OF SUPPORT

- Emotional component including provision of confidence, acceptance, love, empathy, affection, sympathy, compassion, understanding and motivation (House, 1981; Schaefer et. al., 1981).
- Tangible component including the instrumental provision of direct aid, goods and services such as financial gifts, loans; gifts, housework, transportation, shopping (Krause, 1987; Schaefer et. al., 1981; Shanas, 1979).
- Informational component including provision of information and advice in order to help coping, problem solving and receiving feedback; intermediary role and advocate or link to bureaucracies (House, 1981; Schaefer et. al., 1981; Shanas and Sussman, 1977).

The social network is comprised of ties between a group of individuals interconnected by kinship, friendship or acquaintance (Lin et. al., 1979). This network provides the linkages or structural framework for the potential exchange of social support (Antonucci, 1985; Lin et. al., 1979). Therefore, the social support system is incorporated within the larger social network and consists of only those exchanges that assist an individual in meeting his/her needs. According to Cantor (1979, 1975), this system is comprised of an amalgam of services, ranging from the more personal idiosyncratic assistance from kin and significant others to the services offered by large bureaucratic organizations, both government and voluntary.

Research has shown gender differences in the size and diversity of social networks of elderly men and women. Generally, women appear to have larger and more multifaceted social networks than men (Dickinson and Martin Matthews, 1986; Antonucci, 1985; Campbell, 1980). More specifically, women also tend to have richer and more intense family (including children) and friend relationships than men (Powers and Bultena, 1976). Women seem to have superior interpersonal skills, perhaps rooted in their early socialization (Powers and Bultena, 1976). Women's ability and experience in establishing and maintaining social relationships places them at an advantage over men in old age. Through their social coping mechanisms they are better able to achieve higher flexibility in their social contacts, despite the changes over the life course as network members become unavailable through death, illness, frailty or geographical inproginuity (Antonucci, 1985; Kohen, 1983; Troll and Turner, 1979).

While men tend to turn to their wives for support, women are more likely to turn not only to their husbands but also to children, other family members and friends (Antonucci, 1985). Chiriboga (1982) suggests that men often have only one confidant, their wives. Men's disadvantaged social position in old age and especially in widowhood is also discussed by Dickinson and Martin Matthews (1986). They found men to have fewer functional friends in terms of available com-

panionship with which to confide or reassure them of their worth. Wister and Strain (1986) have suggested that men's social networks are not necessarily inferior to women but just different. Wister and Strain (1986) consider that perhaps men require less social interaction in order to be satisfied with life.

Married women tend to have the largest networks, while their unmarried male counterparts experience the smallest network (Longini and Lipman, 1981). Johnson and Catalano (1981) report an interesting comparison between childless married and childless unmarrieds. They found that childless married people tended to be more isolated and to rely almost exclusively on each other. Childless unmarried people were more resourceful and had greater diversity in their networks.

Social support research has not fully addressed the role of this phenomenon in the separate lives of older men and women (Heller and Mansbach, 1984) for two reasons. First, support has been investigated among the elderly without regard for their heterogeneity, including the basic differences of sex and gender with no reference to sample composition (Cantor, 1975). Complicating this, is that a significant proportion of samples are dominated or completely comprised of women (Stoller, 1985; Lopata, 1975). This does not allow for the generalization to the elderly population as a whole (Morris and Sherwood, 1984). The preponderance of older women in research samples is acknowledged by Heller and Mansbach (1984: 109) who state that, "most social support researchers study women; women are more willing subjects; they tend to be more sociable, and they certainly are more numerous among the elderly."

3.7.1 Informal Support System

The informal support system involves the natural helping network which consists of the family, kin, friends and neighbours of the older person who become involved in the provision of support. This system is particularly important in providing assistance to older persons experiencing difficulty in accomplishing their daily routine of tasks. There are a number of factors related to the receipt of informal support. Gender is one factor that has been shown to influence the likelihood of receiving informal support. In his study of natural helping networks, Stoller (1985) found informal support to be related to being female, living with others, experiencing activity limitations and not receiving any form of formal services. Rosenthal (1987) also found that women over the age of 70 received more and varied support than men. Similarly Fleishman et. al. (1984) report that women received more help from their children. Despite finding gender differences in the data, little interpretation of these differences between older men and women has been undertaken by the researchers.

In addition to, and related to gender, age, income, living arrangement, availability of children and functional ability have been investigated as factors influencing the type and amount of informal support provided. Cantor (1980) suggests that the need for assistance increases with age; a consequence of the increased probability of contracting one or more chronic conditions. However, age has not been found to be related to the size of an informal network (Cantor, 1975). Chappell et. al. (1986) suggest that age may be indirectly related to quality of relationships through declining health and activity levels. With increased age the concomitant losses of personal health, network members (due to disability and death) and income, may be partially responsible for the poor quality of relationships.

Stoller and Earl's (1983) findings reinforced the notion that the support network increases in size and scope as functional capacity declines. Conferring with Stoller and Earl (1983), Branch

and Jette (1983) found that for both older men and women, increased physical disability and age were significantly related to the amount of informal support used to adequately perform IADL tasks. They found informal support to be a mediating factor between age, living arrangement, perceived health and functional ability.

Branch and Jette (1983) also found that older people who lived alone appeared less likely than those living with others to use informal help in their daily routine tasks. Living with others, primarily an adult child, has been identified as an indicator of poor health and frailty, in addition to being the strongest predictor of amount of assistance received (Lang and Brody, 1983). Kivett and Learner (1982) review the factors contributing to the decision to live with another person and found functional limitation, health problems, widowhood, low income and loneliness to be major factors.

Lower income and education levels are associated with smaller and less diverse memberships in social networks (Antonucci, 1985; Babchuk, 1978-9). Cantor (1979) reports that while both the poor and middle class elderly in her study had extensive contact with family and friends, the content of the support exchanges were dissimilar. That is, the majority of assistance exchanged with the poor elderly was daily instrumental aid while their middle income counterparts received and provided, on the whole, gifts and money. Lower incomes and the number of geographically close living children are associated with informal support use in IADL tasks for women (Branch and Jette, 1983). Men, on the other hand, have higher informal support usage providing they have more children to whom they feel close (Branch and Jette, 1983). Poor rural persons who are geographically close to children are more involved with children both socially and in supportive exchanges (Scott and Roberto, 1985).

It is this informal support system that the elderly turn to first and most frequently (Cantor, 1980; Shanas, 1979a, 1979b). Cantor's (1980) hierarchical compensatory model of social support

and Shanas' (1979a) principal of substitution are similar and hold that informal assistance and care-giving occurs in serial order; the spouse, the adult children, siblings, other kin, friends, neighbours and finally formal organizations. Each take responsibility for the wellbeing and provision of assistance when the more immediate relationship is not available.

There are also gender differences in who provides the care for the elderly. Spouses are the primary source of support (Cantor and Little, 1985; Shanas, 1979a). Since older men are more likely than elderly women to have a surviving spouse capable of providing care, more men are cared for by a spouse. Women, few of which have the opportunity to name their spouse as care giver, tend to receive more assistance from children. Stoller and Earl (1983) report that reliance on other family members, other than spouse, tends to increase as the capacity of the older person declines. This finding must be interpreted in light of the higher probability of widowhood among the older frail elderly. Furthermore, with increasing age comes the likelihood that among those still married, the spouse may also have activity limitations inhibiting him/her from contributing to the successful completion of goals.

In the absence of a spouse, there are gender differences in the role of adult children as caregivers. In his study comparing the caregiving practices of adult sons and daughters, Horowitz (1985) notes that daughters accept the greater amount of responsibility for meeting the needs of the parent while sons act as primary caregiver only in the absence of an available female sibling. Sons are less likely to provide direct personal care than are daughters. As a result, sons report less time and task commitments as caregivers. No gender differences are found in the provision of financial assistance, decision making involvement or liaisoning with formal organizations. Horowitz (1985) also found no difference in the frequency of contact with parents by either sons or daughters. Since sons tend to involve their spouses in caregiving arrangements, women are substantially more involved in caregiving as daughters and as daughters-in-law. Brody (1981)

terms these 'women in the middle' because they have responsibilities to both parents and children that compete for their attention and often result in conflict over the priorities of their roles.

The caregiving practices of adult children may be explained by their connection to the recipient through the performance of social roles and may involve love, affection and obligation (Morris and Sherwood, 1984). Hess and Waring (1978) argue that there is a trend evolving in intergenerational relations away from obligatory concern toward a more voluntaristic involvement. Although it is debated which is most prominent in such relationships, there is the possibility that both voluntaristic and obligatory motives may operate simultaneously in any given support relationship. That is, an adult child may provide support to the parent because they want to (a voluntary action) do their duty as a child (a sense of obligation). Seelbach (1977) reports that older women have higher expectations for personal care from children than men and yet their expectations and needs appear to be met.

Despite the high reliance on children as primary caregivers, researchers have found little evidence that contact with family members is positively associated with self-reported wellbeing (Lee, 1979; Arling, 1976; Larson, 1978). However, social support analysts suggest the findings may be the result of inadequate conceptualization and operationalization of social support and not an indication of the unimportance of family networks. Other research shows that the relationships and interaction with siblings is not associated with morale (Dickinson and Martin Matthews, 1986). However, women are more likely to turn to a sibling in need.

The work of Lee (1979, 1980) and Chappell and Havens (1985) indicates that friends and neighbours of the elderly play a special role in their wellbeing and morale. Unlike family, contact with friends does have an impact on subjective evaluation of morale. This association exists perhaps because exchange is based on mutuality and reciprocity. This is not to imply that this component of the network is competitive towards the family. On the contrary, it may be a

supplementary means of helping "to strengthen the kinship network by relieving some of the burden from care-taking kin" (Lowenthal and Robinson, 1976: 440).

3.7.2 Formal Support System

The formal support system is comprised of programs and services of professional, government or volunteer agencies with mandates to meet the needs of elderly persons in the community from a medical and social service orientation. The intent of these programs and services is mainly to delay or prevent relocation to more supportive settings such as nursing homes or chronic care hospitals. In their study of the sources of daily routine support for non-institutionalized elderly, Stoller and Earl (1983) found the elderly willing to request formal assistance for such tasks as (in descending order) heavy chores, yardwork, routine chores, running errands, transportation, assistance with personal care and meal preparation.

Elderly women are reportedly the predominant users of formal support. According to the literature, those elderly who are most likely to use such services tend to be female, unmarried, older, living alone, urban dwellers, with lower incomes and transportation limitations (Chappell, 1985a; Krout, 1983). However, age seems to be acting as a confounding variable in these studies of formal support utilization. For example, a matched sample by age and sex predicting potential users found no differences by age, sex or marital status (Connidis, 1985). Dickinson and Martin Matthews (1986), controlling for a variety of socioeconomic variables, found no differences between men and women in terms of seeking formal assistance.

The way in which the informal and formal support systems interact with each other is the subject of much debate. To date, there are two competing hypothesis explaining their roles in relation to the other. The substitution hypothesis posits that the formal system replaces the informal or at least has a negative impact on its optimal operation. Alternatively, the complementary hypothesis, suggests that the formal system supplements the informal system. That is, it provides

the additional support necessary for meeting the needs of the elderly. This shared functioning pattern of support systems has not been investigated extensively. However, Chappell's (1985a, 1985b) focus on the interrelationship of the two systems lends support to the complementary hypothesis, that users of formal services also receive significant support from informal sources.

Social support is the exchange of resources intended to enhance the wellbeing of elderly persons in order that they may maintain an adequate level of functioning within the community. The general purpose of social support provision is the gratification of needs through the giving of emotional, tangible and informational assistance. Social support may occur on a daily basis or during crisis situations and it is provided by other individuals within either the informal or formal support systems. These individuals become involved when the need arises following a hierarchical ordering of relations to the care receiver, from the most to least intimate tie.

While gender differences in social support have yet to be thoroughly addressed, the investigation of sex differences has found that women have the most diverse supportive networks. The recent plethora of social support research, however, has solidified the notion that social support is a resource available to the individual, one that is important in later life adaptation.

3.8 Accessibility

Carp (1980) remarks that housing and environments are static concepts unless made dynamic through transportation. Transportation is a key factor in maintaining an older person's spatial accessibility to the goods, services and activities that enable the individual to remain independent (National Health and Welfare, 1982). Gaining access to the necessary components of one's geographic environment involves the assessment of the availability and characteristics of the transportation system, the location of goods and services, the travel habits and needs of the elderly, and the cost of such travel (McKelvey, 1979).

The importance of accessibility in transportation is evident in empirical research. There exists a strong and consistent relationship between access to transportation and life satisfaction, morale and loneliness (Fengler and Danigelis, 1982; Carp, 1980; Kivett and Scott, 1979). The relationship is stronger when private rather than public transportation is available (Carp, 1980), especially in rural areas (Kivett and Scott, 1979).

On a continuum of independence, the mode of transportation requiring the most independence is the operation of a private automobile. The car is the predominant means of travel for both work and leisure activities. Furthermore, it is most flexible in terms of accommodating changing patterns of personal travel habits (Schmitt, 1979). In Canada, Chappell et. al. (1986) reported that sixty percent of older people own their own car. Car ownership is higher among the rural elderly than their urban counterparts (Econometrics, 1981) and the possession of a car and driver's licence is considerably lower for women over 65 years of age in comparison to men of the same age (McGhee, 1983). As a result of not learning how to drive, many older women depend on their husbands for transportation needs.

With increasing age, older people may become unwilling or unable to drive their car due to perceptual, cognitive, physiological or financial constraints (Grant and Rice, 1983). This decrease in drivership, along with other problems of health and income, reduces mobility. Those without access to a car must rely on family or friends or public transportation systems. Grant and Rice (1983) investigated the distribution of modes of transportation among rural Saskatchewan elderly and found that 51 percent drove themselves, 17 percent rode with another household member and 33 percent rode with a friend or relative outside the home.

Reliance on family and friends for transportation makes the elderly dependent and restricted by their schedules. Fengler et. al. (1983) found that the presence of more relatives in the surrounding area of the elder's dwelling unit reduced the likelihood that transportation problems

were reported. Similarly, Kivett and Learner (1980) report that rural childless elderly are less likely than older rural parents to have available transportation options.

The issue of public transportation for the elderly can not be discussed in general terms because significant differences in the systems exist by geographic location. Therefore, the public transportation alternatives for the elderly must be addressed within the urban or rural context.

The rural elderly are considered the most disadvantaged in terms of accessibility to public transportation. Lee and Lassey (1980) suggest that rural elderly are less likely than their urban counterparts to have access to transportation. However, the degree of transportation problems among the rural elderly is highly variable. This fact in combination with the measurement inconsistencies of rural environments, creates obstacles in drawing conclusions about the overall extent of the rural transportation problem (Chappell et. al., 1986; McGhee, 1983). Nevertheless, in rural Saskatchewan, Grant and Rice (1983) calculate that approximately 18.5 percent of elderly individuals experienced transportation problems.[14]

Several problems related to public transportation are common in rural areas. Many small towns and villages do not have a public transportation system and may not be served by a commercial bus or train line. If commercial service is available it is often limited, for example, not providing round trip service within the same day (McKelvey, 1979). Private transportation in the form of taxis are often unavailable in smaller towns and urban taxi service may be restricted to within such narrow radius as to exclude nearby rural communities. The provision of public or private services in rural areas is hindered by the higher costs associated with the low density of demand, longer passenger trips, low vehicle utilization, and increased operating costs due to higher fuel prices (Chappell et. al., 1986; Grant and Rice, 1983; McKelvey, 1979).

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[14] This figure is specific to that region of Canada and cannot be used as an accurate estimate for rural southwestern Ontario. As discussed previously, regional variation in population densities and geographic distribution of rural and urban centres account for significant differences in the elderly populations (McPherson, 1983).

The transportation problems facing the urban elderly are quite different than those of their rural counterparts. When driving is no longer a viable transportation option, many urban elderly walk to their neighbourhood destinations. Walking, however, may not be feasible for numerous reasons such as health, mobility limitations, poor lighting, uneven sidewalks, rapid changing traffic lights, inclement weather, excessive distances and crime (McPherson, 1983; Golant, 1976). The suburbs, with their low density urban development, segregation of land uses and mass marketing strategies, have placed most services such as grocery stores beyond a reasonable walking distance for the majority of the elderly (Schmitt, 1979; Golant, 1976).

Although the availability of public transportation may not be problematic, the use of such a system has inherent obstacles for the elderly. For the most part, public transit fails to compensate for individual physical losses with age such as slower response rate and limited mobility (McPherson, 1983; National Health and Welfare, 1982). According to Schmitt (1979), several planning and construction modifications can reduce the barriers of public transportation. These changes would allow for easier access to the boarding area and vehicle. Additional considerations include sheltered seating for waiting, convenient seating on the vehicle and reasonably direct connections to non-work destinations.[15] Public transportation is usually economical since the majority of public systems provide senior discounts on ridership, but, when the accessible connections and drop off points are not provided the more expensive taxi service may be the only alternative. Frequent use of taxis is not a viable option for many urban elderly because it is a relatively expensive form of transportation (Schmitt, 1979).

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[15] Schmitt (1979) discusses the different travel patterns of the urban elderly compared to their younger counterparts. The urban elderly upon retirement alter their trip destinations and travel time. Unfortunately, public transportation systems do not account for their needs since schedules are often restricted during non-commuting hours and routes may not reach less popular, lower order retail or service facilities.

Based on these deficiencies in urban transportation for the elderly, additional research concentration is required on a number of important issues. Some of these issues include, vehicle and facility design, areal coverage of transit systems, average frequency or length of trips, the specific transportation demands of the elderly and assessments of the successful completion of their trips (Schmitt, 1979; Golant, 1976b). Moreover, it is important to know how often the elderly have to restrict the frequency and/or the locational context of their travel and compromise on their desired purchase in terms of price, selection and quality of goods due to transportation problems. Schmitt (1979) contends that due to these problems of accessibility, the elderly are most likely to follow the path of least resistance and accept the consequences.

The research on transportation problems of the urban and rural elderly has attempted to develop a profile of the transportation disadvantaged. To date, there is no consensus on the characteristics that indicate such status. Despite this, a general profile exists portraying the older woman with limited economic, social and physical resources as the most disadvantaged (McGhee, 1983). This profile rests on findings such as those of Kivett and Scott (1979) and Grant and Rice (1983). Kivett and Scott (1979) report that income inadequacy, lower educational level, being female and being widowed are important factors distinguishing non-drivers from drivers and those having transportation problems from those with no problems.

McGhee (1983) notes that elderly widows are especially susceptible to transportation problems and are more likely than men to be heavy users of rural transit services. In her study of the differences between the transportation dependent elderly and their independent counterparts, she found that the dependents tended to: not own a vehicle; have lower income; consider their income inadequate; experience poor health, greater activity limitation and lower mobility; be unmarried, and to live alone. McGhee's (1983) data suggest that the availability of social support, especially living with someone, may be an important factor in the mitigation of any transportation need. In

addition to McGhee's (1983) findings, Grant and Rice (1983) contribute several more factors that characterize the transportation disadvantaged. These include subjective indicators such as the increased tendency to report feeling lonely, unsatisfied with life, lacking a confident and experiencing poorer general health.

In sum, adequate transportation and accessibility to services and facilities are essential for the maintenance of independent community living. While most elderly own and operate private automobiles, the proportion of male drivers is far greater than that of female drivers. In the event that driving is no longer a viable option, the elderly have few alternatives. In both rural and urban settings, transportation assistance is usually available from family and friends. Rural areas tend to have inadequate public transportation systems linking them to more distant services and facilities. In contrast, the transportation obstacles experienced by the urban elderly are quite different and involve such factors as transit characteristics. Finally, although a transportation disadvantaged profile exists of poor older widowed women, little understanding of gender differences exists.

3.9 Perceived Support

The majority of the social support literature focuses on the receipt or provision of actual support, the quantity and types of support, and the size and frequency of contact with network members. This work overshadows any concentration on the quality of supportive relationships (Ward et. al., 1984). Although the most popular definitions emphasize this subjective component, the majority of social support research continues to ignore the investigation of perceptions of support.

The important distinction between actual support and the subjective support evaluation is that they are expected to have different effects on outcome variables such as health and wellbeing

(Krause, 1987; Schaefer et. al., 1981). Perceived support is distinguished from the more structural aspects of a network and supportive ties in that it focuses on the person's perception of the supportive value or quality of the social interactions (Cohen and Syme, 1985; Blazer, 1982; Schaefer et. al., 1981).

The subjective dimension of support is interpreted as the individual's evaluation of the adequacy of support (Blazer, 1982). Furthermore, it is argued that this evaluation may be the best predictor of health and wellbeing (Antonucci, 1985). This is an appropriate consideration given that Ward et. al. (1984) suggest that for an older person the number of contacts is less important to general wellbeing than the individual's perception of the adequacy of the frequency of contacts. Also, Ward et. al. (1984) suggest that whether children are nearby and seen regularly is less important than whether they are seen enough and whether the interaction with children is of the desired quality required by the older individual. These measures may reflect feelings of deprivation and isolation resulting from the perception of unsatisfactory levels of contact and perhaps support (Ward et. al., 1984). Since not all contact can be construed as support, it is important to separate the provision of support and the personal evaluation of the supportive exchange.

Although the value of such inquiry is recognized, there is no established standard for evaluating the parameters of perceived social support. There appears to be a variety of conceptualizations of perceived support in the literature. These include the underlying notions of the adequacy of the frequency of involvement with support system members (Ward et. al., 1984), feelings of closeness or belonging (Hall and Wellman, 1985) and the sense of security of knowing support is available when the need dictates (Andrews et. al., 1978).

The measurement of the adequacy of contact and support has involved whether children, neighbours and friends are seen as often as the elderly respondent would like.[16] Additional meas-

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[16] According to Antonucci (1985), the work of Kahn and Antonucci (1983) concerning network adequacy in comparing young old and old old individuals was contradictory to the generally accepted notion that older people should be more dissatisfied with their support levels due to

ures include whether the respondent considers there to be enough opportunity to share confidences and feelings and whether the respondent feels they have enough people and or places to turn to when the need arises. This latter measure is similar to perceived support conceptualized as security, that of knowing needs would be met if they appeared, rather than perceived sufficiency of involvement in or of the support system.

Perceived support, conceptualized as feelings of security, has been defined and measured as dependability (Blazer, 1982) and availability of support system members (Andrews et. al., 1978). The latter measure is usually operationalized by questioning if there is someone to whom the respondent could go to for help in a variety of different situations in which support was required (Schaefer et. al., 1981; Wellman, 1981; Andrews et. al., 1978).

The sense of security is considered an important aspect in maintaining adequate adaptation mechanisms. Gubrium (1973) suggests that older people experience feelings of 'precarious flexibility' questioning their ability to cope with problems that may arise. It is feeling that one has sufficient help available if needed that may alleviate or reduce the stress of such concerns. Krause (1987) assumes that this sense of security does not arise solely from the provision of support. Rather, it is based on the subjective evaluation of the adequacy of support that has been provided in the past and the satisfaction with that support.

Security has been identified as one social need (Ward et. al., 1984; Lawton, 1977). According to Thoits (1982), social support involves the gratification of social needs through interpersonal relationships. Schumaker and Brownell (1984) identify certain social support resources that result in an improved sense of security, including expressions of concern, caring and intimacy, and tangible assistance. Crisis intervention during illness or other stressful situations is a major form of support that outweighs the amount of direct assistance provided (Shanas, 1979a; Shanas

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the losses they incur as they age. However, they found that younger, not older respondents wished they had more network members, and that those members were more dependable thus expressing feelings of inadequacy and dissatisfaction with network of contact.

et. al., 1968). During crisis situations the elderly require immediate and reliable support. Knowing their need for help will be taken care of inevitably results in secure feelings and less apprehension about possible future problems.

Kohen (1983) identifies gender and marital status differences among the elderly in terms of sources of support during crisis. Married men are least likely to turn to their families whereas widowed men are most likely to seek family assistance. Interestingly, marital status did not exert any effect on older women's reliance on family in crisis.

In summary, social support research tends to overlook the qualitative aspect of the phenomenon. However, its importance lies in the fact that the perceptions of support may have distinct effects on health and wellbeing among the elderly. Perceptions of support typically include the perception of adequacy of the frequency of contact, feelings of closeness and a sense of security. It is this sense of security that taps a basic social need, that of knowing someone will provide assistance if a need arises. Given the relatively recent investigation of this aspect of perceived support, little information on gender differences exist. However, it is generally known that men turn to their spouses if married and to family if widowed. Conversely, women of all marital statuses, report expected reliance on family in crisis. It is noteworthy that both men and women rely on the informal support system. Finally, the sense of security may alleviate the stress of unanticipated events and enhance adaptation to the changes associated with aging.

3.10 Functional Ability

Katz (1983) suggests that a common definition of good health implies the absence of debilitating illness which significantly interferes with everyday functioning and lifestyle patterns. This notion is confirmed by the empirical research of Kovar (1977) who reports people tend to feel handicapped only when a chronic illness causes a restriction in their activity levels. While the

risk of succumbing to chronic illness increase with age (Adams, 1977; World Health Organization, 1974)[17], the large majority of older individuals continue to function reasonably well despite the physiological changes associated with disease processes. Data from the Framingham Disability Study of older individuals indicates that the elderly population is much less disabled than commonly thought (Branch and Jette, 1981; Jette and Branch, 1981).

Census statistics from Canada and the U.S.A. provide further verification for the level of functional ability of the elderly. While the Canada Health Survey found 86 percent of older Canadians reporting at least one chronic illness, the Canadian Disability Survey reports only 37.9 percent of older men and 39.2 percent of older women experience some restriction in activity on a regular or continuous basis due to illness (Health and Welfare Canada and Statistics Canada, 1981). These findings are consistent with American statistics which indicate approximately 40 percent of the non-institutionalized elderly have some degree of major limitation (United States Bureau of the Census, 1983).

The emphasis on functioning in later life represents a transition from the application of the medical model of health to a functional model (Fillenbaum, 1985). This functional model concentrates on the individual's level of independent functioning, taking into account the effects of disease and subsequent disability. The functional orientation to health makes a clear distinction between impairment and disability. According to the World Health Organization (1974), impairment is a physiological or psychological abnormality that does not interfere with normal life activities. Conversely, disability is the consequence of a pathological condition that results in at least some degree of limitation or handicap in the activities of everyday life (World Health Organization, 1974). Thus, an individual with a chronic illness may be impaired but not neces-

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[17] The literature on chronic illness identifies the most prevalent chronic conditions affecting functional health of older individuals as arthritis, sensory impairments (primarily hearing and vision), hypertension, heart condition and cardiovascular problems, i.e. stroke and arteriosclerosis (Statistics Canada, 1986a; Neugarten, 1982; Hickey, 1980; Harris, 1977).

sarily disabled.

The functional model of health also recognizes functional ability as a behavior (Shanas and Maddox, 1985; Lawton, 1980). Therefore, the ability to function is a behavioral outcome, in part determined by a variety of factors other than pathology. These factors include the subjective evaluations of health and attitudes towards aging, the expectation of functioning level by self and others[18], lifestyle characteristics and coping abilities (McPherson, 1983; Hickey, 1980). Kane and Kane (1981) also add that functional ability is affected by motivation and opportunity, especially among the more difficult routine tasks.

The tasks used to assess functional ability are known as the activities of daily living (ADL). These tasks are divided into two categories based on complexity and difficulty of performance. Those tasks that are crucial determinants of the most basic level of independence and health maintenance involve physical self-care activities such as dressing, bathing, toileting, transfer, feeding and mobility (Kane and Kane, 1981; Sherwood et. al., 1977; Katz et. al., 1963). These activities are scaled and used most frequently in institutional settings where the individuals tend to have lower functioning levels due to multiple chronic illnesses.

Branch and Jette's (1983) data confirm that a vast majority of the community elderly, eighty percent, are self-sufficient in performing basic ADL. In contrast, all but 18 percent of their sample required some form of assistance in the performance of more complex activites of daily living. These instrumental activities of daily living (IADL) tasks are used as measures of a person's ability to cope with his/her environment in terms of such adaptive tasks as shopping, cooking, housekeeping, laundry, use of transportation, managing money, dispensing and complying with medication regimens, and using the telephone.[19] Such tasks may have a broader impact and may

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[18] Hickey (1980) presents a functional adequacy model of health. This model emphasizes the personal and social meanings of health and considers functional adequacy to be the level at which functional ability meets the expectations of the individual and the society in terms of independence in performing daily routine tasks.

impact on social functioning.

The measurement of IADL performance owes its theoretical basis and practical relevance to the pioneering work of Lawton and Brody (1969). From their scale, several adaptations have been made to create more extensive measures of functioning. Three well-known multidimensional functional scales for the community elderly exist, including the Older American Resources and Services (OARS), the Multidimensional Functional Assessment Questionnaire (Pfeiffer, 1975) and the Philadelphia Geriatric Centre's Multilevel Assessment Instrument, PGS-MAI (Lawton et. al., 1982). Another potentially viable IADL measurement instrument is the Pilot Geriatric Arthritis Project Functional Status Measure, PGAP (Deniston and Jette, 1980). Each of these scales evaluates functioning along the dimensions of physical health, mental health, social and economic resources, ADL and IADL. The OARS questionnaire is most applicable to community based assessments where observation of IADL functioning is impractical for empirical research.

The measurement of functional status of the community elderly involves the evaluation of the extent to which they can care for themselves and the resources they have available to them. Such measurement results are important indicators of the need for service assistance and relocation to more supportive settings. This information is useful in the determination of health care and social service needs that are essential for policy and program development of the necessary services (Fillenbaum, 1985; Harel et. al., 1985; Maddox and Douglass, 1973; World Health Organization, 1959). Shanas and Maddox (1985: 701) note that it is the "things old persons can do or think they can do that are useful indicators of both how healthy they are and the service they shall seek."

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[19] The individual who needs a corrective device to perform a task or who requires the help of another person is assigned an intermediate position between independence and dependence. However, the ability to perform with a device is usually rated as a higher level of independence than the ability to perform with human help because people who depend on a device have more control over their own lives than those dependent on another person.

Among the non-institutionalized elderly, there are significant differences in functional abilities. Wan (1987) presents a profile of the functionally disabled elderly person as most likely to be an older white rural women, who lives with others, has lower education and perceives her health to be poor. There is a consistently strong association between functional ability and socioeconomic status. Palmore et. al. (1985) suggest that the advantage of higher socioeconomic status in old age is that those individuals can afford all the adaptive practices/devices that contribute to better functioning. These adaptive strategies include obtaining better shelter, nutrition, health care and the purchasing of devices that compensate for specific deficiencies in function. Finally, Shanas and Maddox (1985) suggest that old men and old-old individuals of both sexes tend to have more restricted functional ability than old women.

The finding that old women tend to have superior functional abilities has generated criticism on the inherent gender bias in the measurement of IADL functioning (Chappell et. al., 1986). The bias, in favour of women, lies in the operationalization of the functional ability measurement scales employed in studies. The IADL scales tend to over- emphasize those tasks associated with traditional female roles (Lawton, 1972). Lawton and Brody (1969: 185) report an eight point scale for women and a five point scale for men stating that the "sex linked content of three items is probably responsible for the fact that they did not scale for men: food preparation, laundry and housekeeping." Fillenbaum (1985) reports interesting and corresponding findings to those of Lawton and Brody. He found some differences in functional ability across tasks such as meal preparation, travelling, shopping and housework. While women were more independent in meal preparation, men scored higher levels of functioning for the three remaining tasks. Fillenbaum (1985) discusses the cultural norms in society as explaining the expected differences and the fact that men are more comfortable being 'out and about' and having more attainable standards of housework for the unanticipated differences. An associated criticism of the gender bias problem

is the limited response categories to questions of IADL task performance. They do not provide the response that the respondent does not perform the task for the reason that someone else in the household performs those tasks for the household. The problem lies in the interpretation of this response, because the category does not provide enough detail to conclude whether he/she is actually unable to perform the task or whether he/she would be capable if the opportunity presented itself.

Finally, IADL measures tend not to evaluate the costs of task performance in terms of energy expended or pain experienced. Many also overlook the situations and opportunities in association with each task to determine the obstacles or barriers to easy task completion. Kane and Kane (1981) present three scenarios to illustrate their criticism of the IADL measures. Three older individuals may score differently on the IADL task, laundry, because available facilities differ: one is in the main floor of a house, the second is in the basement of an apartment and the third is down the street at a public laundermat. These situations have clear implications for the adequate independent performance of laundry tasks.

In summary, functional health is defined as the absence of disabling illness that restricts the ability to perform routine tasks. More than half of Canada's elderly population can be considered functionally healthy, despite the fact that almost 90 percent experience at least one chronic illness. Functional health is considered a behavior, the outcome determined not only by pathology but by subjective and objective evaluations and coping abilities. The measurement of functional ability involves the assessment of task performance along various activities of daily living. Those tasks commonly associated with independent community living involve cooking, housework, shopping, banking, etc. and are called instrumental activities of daily living (IADL). The level of performance on these tasks provides an indication of the need for assistance in everyday routines, and can be used as guidelines for the development of policy and programs for health care and

social service delivery. Since functional ability of the community elderly as the focal point of study has not received substantial research attention, the differences in level of performance in IADL needs to be investigated further in order to verify the functionally disabled profile of the poor older rural widow.

3.11 Conclusion

In conclusion, this review of the literature concentrates on the specific variables employed in this study. Although these variables do not comprise the entire realm of social gerontological inquiry, they represent some of the most popular foci of empirical research on aging. For the most part, the understanding of each variable in an aging context has resulted in numerous distinct areas of specialization. As a result of this specialization, the body of literature in social gerontology has been criticized as being amorphous - unorganized. Such a characterization implies that there is no connection between these areas of focus. The person-environment paradigm has potential in addressing this criticism. The paradigm allows for the organization of the variables according to the causal ordering suggested in existing research. Thus, the paradigm provides a means through which the relationships between these foci of study can be examined, both conceptually and statistically, as they relate to a behavioral outcome. Moreover, the basic premise of the paradigm incorporates the important contexts operating on these associations, including that of gender.

Chapter IV

DATA AND METHODOLOGY

The goal of this exploratory study is to identify the competence and environmental press factors that influence the ability of older men and women to perform activities of daily living. More specifically, the study addresses the following questions:

1. What are the relationships between and among the personal competence and environmental press variables with respect to adaptive functional ability depicted in the two gender models?

2. To what extent do these variables, directly or indirectly, affect the adaptive functional ability of older men and women?

This chapter describes the data set used in the study, the operational definitions of the variables, as well as the statistical methods employed in the analysis.

4.1 The Waterloo Accommodation Survey.

The data used in this study is based on a cross-sectional survey, conducted during 1982/83, of 403 individuals aged 60 and over residing in the Regional Municipality of Waterloo.[1] The study was initiated by the Waterloo Region Senior Citizens' Needs Advisory Committee, which is responsible to the Social Resources Council on issues relevant to the elderly of the Region. The study fulfilled the need for a detailed profile of the elderly residents in the area for future planning purposes. The information collected included standard demographic and economic data, as well as detailed data regarding residential, social support, activity and functional ability characteristics. The questionnaire and pilot study were developed with support from a Health and Welfare

[1] The following discussion of the survey is adapted from Jackson and Forbes (1984).

feasibility grant. The funding for the survey was received from the Ontario Ministry of Community and Social Services.

The target population was all non-institutionalized individuals over age 60 in the Region. The institutionalized were defined as those residing in a nursing home or equivalent care facility for more than three months, or hospitalized with no expectation of returning to a community dwelling.

A disproportionate stratified random sampling design was employed with the sample stratified by age, gender and degree of urbanization. Jackson and Forbes (1984) state that the use of this design ensured adequate representation of the smaller population groups; namely, the old old and rural residents. Age was divided into six, five-year cohorts and rural was defined as those not residing in the urban centres of Cambridge, Kitchener or Waterloo. The 1981 School Support List for these centres provided the initial sampling frame. An additional random sample was taken from the Ontario Ministry of Revenue 1982 Assessment List to tap both the urban residents not represented in the first selection and the rural residents of the Region.

A letter of introduction was circulated to all individuals in the sample and those who expressed an interest in participating were contacted for an appointment. Those individuals who initially declined the interview due to health or language barrier reasons were asked to reconsider their involvement if proxy interviews and interpreters were arranged. In order to maximize representation from minority subgroups of the population, proxy interviews with a family member, interviews conducted in German or Portuguese or interviews translated into the respondent's language.

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[2] Babbie (1979) advises that an interview survey should achieve a completion rate of at least 80 to 85 percent. Marshall (1987a) comments that in surveys of the older population, completion rates of 40 to 50 percent and response rates of 60 to 65 percent could be expected.

The final response rate for the survey was 40 percent (42% urban, 34% rural).[2] Jackson and Forbes (1984) attribute this high non-response rate to the failure of individuals to reply to the introductory letter (37 percent of the sample). Usual follow-up procedures were not available to the primary investigators because the Ministry of Revenue stipulated that potential respondents were not to be contacted for an interview without initial consent.

Individuals who declined to participate (23 percent) indicated they were not interested, too busy or didn't want to be bothered. Other respondents based their refusals on negative feelings toward governments and surveys, or on beliefs that they had nothing to offer. According to McPherson (1983), these latter reasons are common in surveys involving older individuals.

4.2 The Variables: Operational Definitions.

The model presented in the introduction is comprised of three constructs: personal competence, environmental press and adaptive functional ability. Competence is represented by the three separate indicators of age, income and perceived health. Environmental press is discussed in terms of the physical and social environments, involving the variables of residential location, accessibility (physical component), living arrangement, actual and perceived social support respectively. The construct, adaptive functional ability is measured by functional levels of instrumental activities of daily living (IADL). The survey provides a multitude of items relevant to the concepts depicted in the model. However, those items chosen, represent the most efficacious measures, both substantively and statistically. The following section details the selection process and the operationalization of these variables.

4.3 Personal Competence Variables.

As previously discussed, competence is considered a multidimensional construct representing the individual's characteristics upon which structural constraints operate. Competence is defined as those personal attributes that are influenced by societal norms and values and are fundamental determinants of one's ability to perform everyday tasks, specifically, age, income and perceived health.

The respondents were asked to report their actual age in years, thus age is coded as a continuous variable with values of 60 years and over. The Accommodation Survey provides only one item for an objective measure of income, total monthly family income. Respondents were asked, "from the following range of incomes, would you please indicate where your total family monthly income falls (combined with spouse)?" The nine response categories ranged from zero (0) to $3200.00 and over (9), increasing in four hundred dollar increments.[3]

The association of perceived health and functional ability explored in this study is the reverse of the relationship purported in the social gerontological literature. However, its appropriateness as an indicator of competence is supported by the notion that perceived health represents not only physical condition but also a global outlook of general wellness (Wolinsky et. al., 1984; Maddox and Douglass, 1973; Palmore and Luikart, 1972). The subjective evaluation of health or perceived health is measured using a five point scale that required the respondents to rate their general health as either excellent (5), very good (4), good (3), fair (2) or poor (1).

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[3] In the descriptive analysis of income, the variables were recoded to the midpoint of each category in order to obtain estimates in actual dollar values. The recoded categories are: 199.75 (1); 599.50 (2); 999.50 (3); 1,399.50 (4); 1,799.50 (5); 2,199.50 (6); 2,599.50 (7); 2,999.50 (8); and 3,399.50 (9).

4.4 *Environmental Press Variables.*

The environmental press construct is comprised of five indicators representing presses within both the physical and the social environments. The physical presses are the geographical constraints operating on mobility within the manmade environment such as residential location and accessibility limitations. Social presses are the influences on behavior which occur within and across interactions with others in the social network.

4.4.1 Presses Within the Physical Environment.

Residential Location. The Accommodation Survey defined rural as the respondents not living within the city limits of Kitchener, Waterloo or Cambridge. Therefore, the rural category included respondents from the towns of Elmira, St. Jacobs and New Hamburg as well as the villages and farms in the townships of North Dumfries, Wilmot, Wellesley and Woolwich.[4] Residential location was originally defined as consisting of: (1) rural farm, (2) Cambridge, (3) Kitchener, (4) Waterloo and (5) other. The other category contained the towns of Elmira, St. Jacobs, and New Hamburg. However, as noted in the literature review, there are general characteristics which serve to differentiate urban populations and service infrastructures from the rural counterpart (Martin Matthews and Vanden Heuvel, 1986). Since the focus of this study is the understanding of factors influencing IADL, the basic urban and rural distinction provides sufficient detail. Thus, this variable was recoded as such: urban (0) and rural (1).

Accessibility. Lawton (1973) provides three additional criterion on which to evaluate the presses within the physical environment, namely safety, security and accessibility. Each as an environmental attribute and an attainable goal leads to person-environment fit or congruence. Safety encompasses the ability of the environment to minimize accidents and hazards and to

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[4] Rural is "conventionally employed to denote a delimited geographical area characterized by a population that is small, unconcentrated and relatively isolated from the influence of large metropolitan centres"(Miller and Luloff, 1981: 609). However, given the way this variable was measured in the survey, it could not be operationalized consistent with this definition.

afford assistance in need, while security is defined as the ability of the environment to provide reassurance that safety and other personal needs would be met.

According to Lawton (1973), accessibility is the ability of the environment to afford entry, transport and use of its resources. This latter concept was chosen for the study for several reasons.[5] Most importantly, accessibility is a necessary consideration in the examination of functional ability. Golant (1984b) supports this notion by rationalizing that an individual can not accomplish his/her IADL tasks within a community unless they are able to access the services or facilities that provide the means to do so. Furthermore, in terms of mobility within an environmental setting, the significance of either residential location or accessibility is lost unless the association between one's ability to get around and their urban or rural milieu is explored.

The concept of accessibility is measured by the item, "do you find that in general your activities are limited due to lack of transportation?" The item is classified into the four categories of nearly always, frequently, occasionally and never or hardly ever. The disproportionate distribution of responses (82% of the cases in the never or hardly ever category) required that accessibility be recoded as a dichotomous variable with the categories yes limited(0) and no, not limited(1). The recoding did not alter the large number of cases in one category but it did maximize the variability of the variable as much as possible.

4.4.2 Presses Within the Social Environment.

Throughout the literature it is suggested that the provision of assistance mediates certain stresses of old age such as chronic disease and concomitant limitations (Cohen et. al., 1985; Thoits, 1982; Snow and Gordon, 1980; Chappell, 1979). Since social support is an area of concentration in the Accommodation Survey, a number of items are available to measure presses

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[5] The data set does not provide adequate measures of the concepts safety and security, hence, they are omitted from the study model. However, one aspect of security, the reassurance that needs would be met, may be partially tapped in the perceived support variable.

within the social environment. The social press indicators chosen for the model are living arrangement, actual support received and perceived support.

Living Arrangement. The respondents were asked, "who normally lives here with you in your home" and "what is their relationship to you?". Although a maximum of six household members were identified, only the first member was used in the model on the assumption that the first individual reported is the closest primary relation to the respondent. This item was originally classified into thirteen relationships, which when amalgamated comprised the broader categories of spouse, children, grandchild, parents, other relatives and renter/boarder. It would have been preferable to have recoded the responses into three categories representing living alone, living with a non-family member and living with a family member. However, the non-family member category consisted of only 10 cases or 2.5 percent of the sample; an inadequate number for analysis.

Conceptually, it can be argued that a difference exists between living with a family member or non-family member in terms of the likelihood of support provided for IADL tasks. Conversely, the presence of someone else in the household, regardless of relationship, is likely to result in the provision of some degree of support. Thus, given the above noted deficiency in the measurement of this variable, the actual operationalization of living arrangement was recategorized as follows: living alone (0) and living with someone (1).

Social Support. The recent social support literature is critical of studies that do not account for both the objective and subjective aspects of support reported by the elderly (Chapman and Pancoast, 1984; Shumaker and Brownell, 1984; and Wellman, 1981). These two aspects of social support are distinguishable (Liang and Bollen, 1981) in that the subjective aspect of support represents a different yet significant consideration in the study of support (Berkman, 1985). The objective indicators of support are typically the frequency of contact, type of assistance provided

and availability of network members (Chappell et. al., 1986). Alternatively, the subjective evaluation of support usually denotes the adequacy of support in terms of the fulfillment of needs (Cantor, 1983; and Blazer, 1982), satisfaction with the frequency of contact (Ward et. al., 1984), and quality of interaction (Cohen and Syme, 1985). These two aspects of support are two intrinsically different dimensions of social support. Thus, they are used separately in the model employed in this study.

Actual Support. The survey provided fourteen items indicative of types of actual support. These items, each with identical response categories, involved assistance received from network members across various types of everyday tasks. The items were recoded into seven categories based on Cantor's (1980) hierarchical compensatory model that implies in ascending order the likelihood of support received. In general, the receipt of support intended to enhance IADL functioning would be more likely and more frequent, the more intimate the relationship of care-provider to care-receiver (Shanas, 1979a, 1979b). Thus, the recoded categories of self(6), spouse(5), family(4), kin(3), other(2), agency(1) and no one(0) provide a more meaningful classification of actual support along the informal-formal support system continuum.[6] The extremes of the continuum are distinguished by their interpretation within the context of this analysis. The category of 'no one' is considered an indication of a need for support across the tasks that are not satisfied. Self, represented by the not applicable response, is interpreted as self-reliance with respect to the tasks. This suggests that no social support is necessary for the task.

In order to establish the cohesiveness of the actual support scale, the fourteen items were factor analyzed. The initial analysis indicated some factor complexity. Specifically, the items of taking medication, using the telephone, doing yardwork and major repairs were ambiguous in that

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[6] The categories of actual support are comprised as follows: no one, meaning the older individual does not receive social support; agency, referring to professional help, voluntary service groups and community agencies; other, involving clergy, friends, neighbours, renters and boarders; kin, including other relatives; family, consisting of children, grandchildren, parents, and siblings; spouse; and self, meaning the older individual is self-reliant.

they loaded equally on more than one factor. Therefore, these items were removed from subsequent analysis. The final factor analysis showed the ten remaining items loading on two factors representing indoor and outdoor activities. Factor one was comprised of housework (heavy and light), laundry, cooking and mending. Banking, shopping, seeking financial/legal advice and going outside in good and bad weather loaded on the second factor. While the underlying dimensionality of the actual support variable was found to represent two factors, only one variable was created since the existing literature on the topic does not suggest differences in support provision across different physical settings. A Cronbach's alpha was calculated on the ten items included in the final factor analysis. A reliability coefficient of .8355 was obtained, indicating that the selected items scaled well together in terms of representing the overall construct of actual support.

In order to retain a maximum number of responses for the final analysis, it was decided[7] that an overall composite score of actual support would be calculated on a minimum of eight of the ten items. Thus, if a respondent answered only seven of the items in the overall scale, they were excluded from the final analysis and a score was not calculated for that particular respondent. If at least eight of the ten items were answered, then a score was calculated on the following basis: (1) each respondent's ranking on the formal/informal continuum (0 to 6) was summated across the number of items answered; (2) an average was calculated using their summary score divided by the number of applicable items.[8]

Perceived Support. A similar procedure was followed for the creation of the perceived support scale. This subjective measure of support was derived from a composite of seven items that proposed hypothetical circumstances to the respondents. The respondents were asked: "to whom

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[7] Since 99.5 percent of the cases responded to at least eight of the ten items in the scale, it was decided to set the criteria for inclusion at eight items.

[8] For example, if eight of the ten items were answered the rankings were added across the eight and divided by eight. Similarly, if all ten items were responded to, the overall average was based on ten.

would you most likely turn to in the event assistance was required." The hypothetical situations were: when nervous, upset or depressed; when out of food; when in need of personal care; when in need of financial assistance; when a visit to the doctor was necessary; when assistance was required in dealing with a government agency; and when a short term illness necessitated care. The response categories for each item were identical to those listed in the original actual support items. These categories were recoded as, no one(0), formal support system(1), informal support system(2) in order to maximize the variation observed across the items. The recoding did not affect the validity of the perceived support concept in that detail provided by the three categories was sufficient to determine assurance of support in crisis and intimacy of support relationship. This classification is a general application of the hierarchical compensatory model (Cantor, 1980).

The items of the perceived support scale were factor analyzed in a similar fashion to that undertaken in the creation of the actual support variable. It was found that the item 'when out of food', was ambiguous. Therefore, it was excluded from subsequent analyses. The final analysis suggested that perceived support was comprised of two underlying factors representing two types of aid, instrumental and emotional/financial. A Cronbach's alpha was calculated for the six items. A moderate alpha coefficient of .6358 was obtained. While a moderate alpha coefficient was reported, the scale was retained in the study on the basis of its substantive importance. In addition, previous research indicates that the items chosen for selection are representative of the perceived support construct (Shumaker and Brownell, 1984; and Lee and Ellithorpe, 1982).

Mean scores were calculated using the same format as applied to the actual support scale in order to maintain the consistency across the two scales. Since eighty-six percent of the cases had responded to at least five of the six items, five was used as the minimum inclusion criterion.

4.5 Adaptive Functional Ability.

The ability to perform IADL tasks independently, interdependently or dependently measures the abstract construct, adaptive functional ability. The Accommodation Survey collected data on 21 items associated with activities of daily living, each with the identical response categories of without help, with some help, completely unable to do this and never had to/always done by spouse. The category of without help, meaning independence in the context of the IADL functioning scale must be distinguished from that of self reliance, as operationalized in the actual support scale. In this case, independence implied the respondents' subjective interpretation of their level of functional ability. On the other hand, self-reliance, as a gradient of the scale, represented an objective measure of the need for and receipt of social support.

The first six items measure functioning in personal activities of daily living such as bathing, dressing, grooming and ambulating. However, few respondents reported any difficulty with these tasks. Thus, these items were excluded from the scale. This finding indicates a relatively functionally able sample, and suggested that the study should focus only on the instrumental ADL tasks introduced by Lawton and Brody (1969). Since the item 'read and write' did not correspond to the existing IADL scales of Lawton and Brody (1969), Katz (1983) or Fillenbaum (1985), it was also deleted from further analysis. The remaining fourteen IADL tasks were: go out of doors in good weather, go out of doors in bad weather, prepare a hot meal, do light housework, do heavy housework, do laundry, shop, seek legal/financial advice, bank/pay bills, shovel or do yardwork and do major household repairs.

The response category 'never had to', presented a conceptual problem in that it did not fit into the independent-dependent continuum of IADL functioning. More specifically, respondents who reported that they had never had to do a task could not be considered as not being able to accomplish it because, given the opportunity, they might have performed the task adequately. As

previously discussed, this problem represents the gender bias found in measures of functional ability (Chappell et. al., 1986). Thus, in this study those cases where the 'never had to' response was reported, a system missing value was assigned for the corresponding IADL task.

Factor analysis was again employed to determine the underlying factors in the IADL scale. As with the analysis of actual support, factor complexity involving medication, telephone use, shovel/yardwork and household repairs emerged. The subsequent factor analysis excluded these ambiguous items. The results showed the remaining ten items loading on the same two factors as in actual support (indoor and outdoor activities). An alpha coefficient of .9119 was obtained, indicating that the items scaled well together.

Finally, ninety-three percent of the cases responded to at least eight of the ten IADL items. Thus, the scale was calculated using the same methods employed in the creation of both the actual and perceived support scales. The IADL scale had scores ranging from one to three, representing a continuum of dependency. A low IADL score indicated independence while a high score denoted dependence in IADL functioning.

Although there was some indication of a problem in the measurement of the IADL items, the disproportionate distribution of the dependent variable (IADL) was consistent with those reported in other studies of functioning among the elderly (Statistics Canada, 1986; and U.S. Bureau of the Census, 1983).[9] This finding does not present a problem in terms of the overall analysis of IADL functioning. Previous discourse on the 'robustness' of regression techniques suggests that small variations in the measurement of dependent or independent variables does not produce any significant biases in the estimation of the regression coefficients, in the tests of significance or in the coefficient of determination (Pedhazur, 1982; Chatterjee and Price, 1979; Loether and McTavish, 1979; Labovitz, 1967).

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[9] Further detail regarding the dependent variable is presented in the section on methodological considerations.

4.6 Statistical Methods.

This study postulated that the ability to function independently is affected by several personal and environmental factors. It also hypothesized that these factors are different for men and women. Thus, this study generated two models for comparison which are differentiated on the basis of gender. The use of separate models for different subgroups of the sample is consistent with procedures used by Liang(1982) and Medley (1976), who argued such an approach improves the expository nature of the study models.

Path analysis is used in this study to estimate the person-environment transaction models. This method employs ordinary least square regression techniques. Path analysis involves a series of regressions performed on the endogenous variables producing path coefficients for each of the causal associations depicted in the model. The basic theorem of this method is that these zero-order correlations can be decomposed into direct and indirect causal effects and non-causal effects (Pedhazur, 1982; Alwin and Hauser, 1975). One of the assumptions underlying the application of path analysis is that "the relations among the variables in the model are linear, additive and causal. Consequently, curvilinear, multiplicative or interaction relations are excluded" (Pedhazur, 1982:582).

In general, there are two ways in which the goodness of fit of a path model may be assessed: the ordinary squared multiple correlation coefficient, R^2; and the generalized squared multiple correlation coefficient, R^2_m (Pedhazur, 1982). Both measures are interpreted as the proportion of variance explained and should be considered as complimentary to one another. The first is the R^2 associated with the regression of the dependent variable on all of the independent variables in the model (ie. the final regression equation). As such it does not incorporate a notion of the structure of the relationships depicted in the model. It does, however, provide a general indication of the adequacy of the variables in explaining adaptive functional ability. This is a useful measure in terms of comparing across models for women and men.

The second measure of goodness of fit, R^2_m, assesses the overall model and the assumed causal structure. It consists of the product of the squared residual paths for each of the endogenous variables which are subsequently subtracted from one. The result consists of a generalized proportion of variance for the complete model. The advantage of this measure is that it assesses the differential causal processes existing in both models.

4.7 Methodological Considerations.

Two methodological issues require further discussion, response bias and the distribution of the dependent variable. A possible source of response bias may be the sampling procedure employed in the survey. Marshall (1987a) comments that some non-response bias is inevitable in social surveys and that the likelihood of such bias is magnified in studies on aging due to refusals for health reasons. However, the sampling for the survey involved a random subsampling procedure that may have introduced an additional bias. The procedure was employed to reduce the number of cases in certain categories in which more consents to participate were received "than were needed in the sample"(Jackson and Forbes, 1984: 24). An alternative to this approach is the weighting of subgroups in the sample to compensate for the disproportionate number in certain subgroups. The advantage of this latter approach is that the response bias is acknowledged and interpretable in the analysis of the findings.

As previously mentioned, the dependent variable, IADL functioning, showed a severe skewness in the distribution of responses. The disproportionate distribution, 50 percent of the cases falling above 2.80 on the scale, meant little variation in the variable. However, such a skewed distribution does not imply non-normality of errors (Chatterjee and Price, 1979; Fox, 1984). An initial regression analysis was conducted in order to test the underlying assumptions. The diagnostics indicated a very slight non-normality problem in the non-normality plot (P-P)[10]. How-

[10] The normal probability plot (P-P) is a graph showing the cumulative distributions of the

ever, any transformation of the dependent variable (i.e., Y^2, Y^3, antilog) over-compensated and drastically increased the overall standard error of the model as well as the standard error of the estimates. Based on these findings, it was assumed that no serious violation of the regression assumptions had occurred. The consequences of such a distribution involved the predictability of the regression equation for the model (Pedhazur, 1982). In this case, the result was a small exaggeration of the coefficient of determination (R^2).

The low variation found in the IADL scale can be attributed to inadequate design of the items. More specifically, the response categories were too general to capture the finer variations in responses. To illustrate this point, a woman who was asked if she can shop without help responded yes because she was able to reach the store, acquire her items and return home. However, what the question did not determine were the costs involved in the trip such as the over-exertion due to carrying her bags that exhausted her energy and inhibited her from accomplishing any other tasks without help on that day.

These methodological issues were taken into account in the interpretation of the findings. One final issue that was considered in the discussion of the findings involves the differences between men and women over age 65. In reality, these differences are more pronounced among the old old cohorts of men and women (over age 75). Awareness of this fact during the interpretation was necessary since the investigation of all age groups simultaneously, may have resulted in a masking effect of the real differences. This effect may have acted to minimize some of the associations depicted in the models and thus minimized the differences across genders. Furthermore, comparisons of men and women in extreme old age are only complete when it is acknowledged that more women are alive to experience the losses in functional ability and adapt to those changes. This preponderance of older women has resulted in the labelling of many factors under

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observed versus expected distribution of residuals expected under the assumption of normality (Norusis, 1983).

investigation in this study as women's issues at the macro level. The results of the statistical analyses discussed above are reported in the following chapter.

Chapter V

DATA ANALYSIS

5.1 Introduction

The purpose of this study was to demonstrate the applicability of the person-environment paradigm to social gerontological inquiry. Specifically, this study utilized the paradigm as a conceptual framework to examine the factors influencing the behavior of functional ability. In order to further justify its utility, this study addressed several deficiencies in the use of the paradigm that are of particular interest to the sociology of aging. This study examined the definitional problems of environment by adopting a multidimensional approach that incorporates both the physical and social components. Second, the study examined the complex empirical associations between the variables that represent factors within the domains of personal competence, environmental press and adaptive functional ability. These associations are expressed in the ecological equation, B=f(P,E,PxE). Finally, the role of gender was investigated as a contextual factor that acts to structure the nature of the ecological equation and the associated conceptual model. In fulfilling these goals, the conceptual model was used to analyze: [1] the relationships between and among the personal competence and environmental press variables with respect to adaptive functional ability; and [2] the extent to which these factors directly and in transaction (indirectly) effect adaptive functional ability differently across gender.

In order to address these research questions, the focus of this chapter rests on the conceptual model presented in Chapter one. As a basis for understanding, this chapter presents a brief discussion of the descriptive characteristics of the older men and women in the sample. This profile

introduces the variables depicted in the model and provides an initial comparison of older men and women. The remainder of this chapter discusses the findings of the path analysis.

Path analysis is employed in this study because of its suitability to the investigation of the hypothesized associations depicted in the model. Furthermore, it allows for the examination of the direct effects of personal competence and environmental press factors as well as the transactions (i.e. indirect effects) between these variables on IADL functioning.[1] Path analysis, therefore, allows for the precise examination and determination of the processes encompassed in the ecological equation [B=f(P,E,PxE)]. Finally, in order to assess the impact of gender as a contextual factor influencing the P-E transaction on IADL, two gender models are estimated. These models are compared and contrasted in terms of the significant direct and indirect path coefficients present in each.

5.2 Descriptive Characteristics of the Sample

The personal competence and environmental press characteristics of both men and women are presented in Table 5.1. This table consists of the means and proportions of each variable in the model for both men and women. Table 5.2 displays the mean IADL scores and accompanying standard deviations for each of the variables in the model as differentiated by gender.

Referring to Table 5.1, considerable similarity between men and women is found across the personal competence factors of age and perceived health (Table 5.1). The mean ages for men and women exhibit no difference, with the average age for both being 75 years. Since the sample was stratified by age, such that equal numbers of men and women fell into each of the five year categories, this finding was anticipated. It is not chronological age alone that is notable but the dif-

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[1] Path analysis allows for the decomposition of the total effects into three individual components: direct effects, indirect effects and non-causal or spurious effects. Since the intention of this study was the breakdown and precise delineation of each of the components in the equation, the ensuing analysis focuses on the direct (P,E) and indirect (PxE) effects as opposed to the total effects.

TABLE 5.1: Means and Proportions of Personal Competence and Environmental Press Characteristics and Adaptive Functional Ability by Gender; Region of Waterloo Accommodation Survey, 1983.

CHARACTERISTICS	MEN	WOMEN
Personal Competence		
Age	75.45	75.30
Income	1159.94	903.43
Perceived Health.(1 - 5)	3.04	3.17
Environmental Press		
Residential Location (0 - 1)†	.75/(.25)	.77/(.23)
Living Arrangement (0 - 1) †**	.15/(.85)	.39/(.61)
Accessibility (0 - 1)† **	.10/(.90)	.24/(.76)
Actual Support (0 - 6) *	5.55	5.40
Perceived Support (0 - 2)	1.72	1.70
Adaptive Functional Ability		
IADL Functioning (1 - 3)	2.65	2.66
Number of Cases	202	201

* Significant difference between the means for men and women at the .05 level.
** Significant difference between the means for men and women at the .01 level.
† Values represent the distribution of the respondents across the dichotomy.

ferent life circumstances experienced at certain ages that distinguish men and women. Thus, for example, at age 75, the P-E transaction will differ across genders because of the dissimilar circumstances of men and women at that age.

The average incomes for the respondents in this sample varied substantially by gender. Although there is a large absolute difference between the income levels, the difference is not statistically significant. While men reported average incomes of $1160.00, the mean income for women was $903.00 per month; resulting in a mean difference of $257.00 a month. These findings are consistent with the literature which suggests that women have lower incomes in old age as compared to men (Gee and Kimball, 1987; National Council of Welfare, 1984). One of the implications of these findings is that they support the contention that the economic status of older women is a result of widowhood, lower lifetime earnings and lower pension benefits (McDaniel, 1986; Dulude, 1981, 1978; Corcoran and Duncan, 1979).

The mean perceived health scores suggest that men and women in this study tend to rate their health as good. While the literature indicates that self-reported health is measured in a variety of ways, the majority of studies reveal that older respondents also tend to evaluate their health as good (Jylha et. al., 1986; Ferraro, 1980; Fillenbaum, 1979). Women tend to rate their health as slightly better than men (women=3.174 versus men=3.035). Although these findings are consistent with Engle and Graney (1985-86), Ferraro (1980) and Fillenbaum (1978), evidence to the contrary exists in the gerontological literature (Dulude, 1987; LaRue et. al., 1979; Harris, 1978).

The comparison of environmental press factors of men and women demonstrate several contrasts. Approximately seventy-five percent of the sample resided in the urban centres of Cambridge, Kitchener and Waterloo. The relatively minimal differences in geographical distribution across genders results from the stratified sampling procedure, including stratification by urban/ rural residence (urban residents: men=75 percent; women=76 percent).

A considerable discrepancy between men and women is observed in the proportion of respondents living alone or with someone else. Significantly more women lived alone (men=15

percent; women=61 percent). Other gerontological literature has consistently found similar living arrangements for older men and women (Stone and Fletcher, 1987; National Council of Welfare, 1984; Abu-Laban, 1980). For men, living with someone, usually involves sharing a dwelling with a spouse. Conversely, women who co-reside with another person other than a spouse, are more likely to report that person to be a family member (children and siblings) (Lawton, 1981). These living arrangements for women are in part a consequence of widowhood; a life event experienced by more women in old age than their male counterparts (Martin Matthews, 1987; McDaniel 1986; Dulude 1978).

The accessibility findings presented in Table 5.1 demonstrate another substantial difference between men and women in this study. Compared to men, women seem to experience more transportation difficulties (men=10 percent; women=24 percent). This finding concurs with that of other gerontological literature, where the transportation disadvantaged are more likely to be women (McGhee, 1983). This status in old age is the cumulative result of a history of reliance on others for transportation needs, including spouse and family members (Chappell et. al., 1986; McGhee, 1983)

The mean actual support score as it appears in Table 5.1, indicates that men tend to be more self-reliant in terms of accomplishing daily activities.[2] On the other hand, women are more likely to receive assistance from their spouses for these everyday tasks. However, these scores are misleading and require interpretation within the context of the social support networks of men and women. That is, of those men that received support, the care provider is more likely to be their wives exclusively. In contrast, women receiving support tend to be assisted by a more diverse support group including spouse, family and friends (Rosenthal, 1987; Dickinson and Martin Matthews, 1986; Antonucci, 1985; Fleishman et. al., 1984; Powers and Bultena, 1976). In addition,

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[2] As noted in Chapter four, the difference between self-reliance and independence represents the objective and subjective natures of the social support and IADL functional ability scales.

because women have longer life expectancies and tend to marry older men, they are more likely to be widowed. In the absence of a spouse, women continue to receive support from family and friends. Thus, each of these observations is reflected in the mean actual support scores for men (5.546) and women (5.396). While the absolute difference between these scores is minimal, the difference is significant at the .05 level.

In terms of the perception of available support in crisis situations, no difference across gender is exhibited (men=1.72; women=1.70). Both men and women tend to anticipate that the majority of their emergency assistance originates from the informal support network. These findings are consistent with the work of Cape (1987), Schaefer et. al. (1981), Shanas (1979) and Andrews et. al. (1978).

Of the five environmental press variables, there are significant differences between men and women for living arrangement, accessibility and actual support. The gender differences were significant at the .01 level for living arrangement and accessibility; factors in which women show particular disadvantage compared to men. While only a small difference was observed in the mean scores for actual support received, the difference was significant at the .05 level.

Finally, the IADL scores for men and women indicate no difference in their levels of functional ability (men=2.65; women=2.66). While these scores do not support previous findings that women tend to report greater activity limitation than men, it is possible the discrepancy lies in contrasting operationalization of functioning. The mean IADL scores suggest that interdependence, or the receipt of some assistance is necessary in the performance of certain IADL tasks. However, the relatively high scores connote that the respondents in this sample display near independent functioning overall. This finding is consistent with the contention that the community elderly function independently despite chronic illness (Branch and Jette, 1983).

TABLE 5.2: Means and Standard Deviations of IADL Functioning Scores Broken Down by Gender and by Personal Competence and Environmental Press Variables.

	MEN			WOMEN		
	MEAN	S.D.	N	MEAN	S.D.	N
AGE*						
60 - 64	2.887	.194	20	2.921	.127	19
65 - 69	2.717	.463	34	2.883	.221	36
70 - 74	2.708	.412	32	2.783	.345	38
75 - 79	2.808	.267	29	2.655	.447	34
80 - 84	2.639	.457	30	2.539	.524	37
85 +	2.244	.596	31	2.244	.576	32
INCOME						
0 - 399	2.651	.382	9	2.528	.524	17
400 - 799	2.667	.474	50	2.574	.490	86
800 - 1199	2.611	.551	56	2.799	.366	40
1200 - 1599	2.772	.259	22	2.918	.159	17
1600 - 1999	2.520	.581	5	2.833	.153	3
2000 - 2399	2.833	.273	6	2.620	.687	5
2400 - 2799	2.950	.071	2	2.633	.404	3
2800 - 3199	2.500	.557	3	--	--	--
3200 +	2.720	.352	9	2.980	.045	5
RESIDENTIAL LOCATION						
Urban	2.665	.468	128	2.655	.475	151
Rural	2.620	.484	48	2.679	.446	47
PERCEIVED HEALTH						
Excellent	2.904	.193	20	2.908	.261	25
Very Good	2.679	.421	46	2.818	.303	58
Good	2.771	.329	57	2.727	.305	56
Fair	2.573	.498	35	2.500	.508	47
Poor	2.091	.678	18	1.702	.583	12
LIVING ARRANGEMENT						
Alone	2.760	.325	31	2.735	.332	76
With Someone	2.630	.496	145	2.614	.531	122
ACTUAL SUPPORT*						
Self	2.900	.134	124	2.917	.127	124
Spouse	2.123	.486	38	2.470	.333	47
Family	1.930	.390	10	1.808	.588	16
Kin	1.850	.451	4	1.818	.408	8
Other	--	--	--	1.300	--	1
Agency	--	--	--	--	--	--
No one	--	--	--	--	--	--
ACCESSIBILITY						
Limited	2.217	.588	17	2.488	.487	46
Not Limited	2.700	.435	159	2.728	.429	150
PERCEIVED SUPPORT*						
Informal	2.611	.507	121	2.602	.516	136
Formal	2.737	.380	28	2.827	.281	33
No one	--	--	--	--	--	--

* For this table only, the variable was recoded to illustrate the distribution of scores across the scale.

Table 5.2 presents additional detail for the comparison of men and women across the person and environmental factors. For both men and women at all but the highest age groups[3], the calculated IADL functioning scores illustrated fairly independent levels of ability. As the literature suggests, there is a gradual decrease in level of functioning along the independent-dependent continuum with increasing age (Chappell et. al., 1986). This gradual decline is more consistent for women. Furthermore, women score more independently in functional abilities. A notable decrease in IADL scores occurs between the ages of 75-79 for women and 80-84 for men. Functional levels over age 85, are low and equivalent for men and women. However, the standard deviations for the oldest age groups indicate a high degree of variability about the mean IADL functioning scores.

It is noteworthy that the IADL functioning scale consists of two dimensions, indoor and outdoor routine activities. Given this, it is possible that the gradual decline in IADL functioning levels may be interpreted as the result of, first, the need for assistance with outdoor activities. This observation is supported by the literature that suggests the individual's life and behavioral space narrows with increasing age due to increased susceptibility to environmental obstacles. The life space shrinks from having no boundary to the community, then the neighbourhood and eventually the dwelling (Regnier, 1975). As a consequence of reduced life space, the individual requires assistance in negotiating these outdoor settings in order to perform the IADL tasks. Second, it is not until very old age that the dwelling presents significant obstacles and threatens the performance of indoor IADL functioning.

The majority of men and women report incomes within the four lowest categories ranging from 0 to $1,599.00 dollars per month. The modal income category for men is $800-$1,199, as contrasted with $400-$799 per month for women. Within these four categories, women reporting

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[3] Age was recoded into six five year categories in order to illustrate the mean IADL functioning scores for men and women.

incomes in the two lowest ranges have mean IADL scores lower than those of men with comparable standard deviations. Conversely, in the following two categories of income, women's mean IADL scores are higher than those of men. Particularly noteworthy is the peak in IADL scores at almost 3 for women in the fourth category, 1,200-$1,599, where there is little variability about the mean score.

An increase in IADL scores is evident along ascending income categories for women. A similar pattern is not observed for men. This trend is discussed in the literature, suggesting that those in higher income groups are financially capable of purchasing the adaptive or augmentative tools to compensate for any limitation in functional ability (Palmore et. al., 1985). However, above $1,600 per month, IADL scores no longer seem to steadily increase along higher levels of income. These observations may be explained in part by the influence of age. That is, the true nature of the association between income and IADL is not captured since both are highly dependent on age. A more comprehensive picture of the associations between these variables is expected to emerge in the subsequent path analysis.

There is a high degree of similarity between the ratings of self- reported health for men and women. The range of mean IADL scores fall within the mid to upper end of the functional ability continuum, demonstrating scores between 2.0 and 3.0. The IADL scores for those respondents reporting excellent health denote almost total independence (IADL score=3.0). For the most part, a decline in IADL scores is observed along progressively poorer ratings of perceived health across gender. However, for women this relationship between IADL scores and perceived health ratings represents a more orderly and gradual decline.

A notable difference in the IADL scores across gender for the 'poor health' category is observed. Those women who report poor health have lower mean IADL scores than men. Within the remaining categories, women have slightly lower functional abilities than men. Given

these perceived health ratings, it is important to consider that at the same rating of health, women tend to report more chronic illness and disability than men (Cockerman et. al., 1983). This suggests that women are more optimistic in their subjective evaluations of health.

The mean IADL scores for men and women in terms of living arrangements are essentially identical and demonstrate considerable independence. As the literature indicates, individuals living alone tend to have higher levels of functional ability than those living with another person (men=2.76 vs 2.63 and women=2.74 vs 2.61) (Fengler et. al., 1983; Lawton 1981; Shanas, 1979; Soldo, 1978).[4]

There are interesting contrasts in the mean IADL scores for men and women with respect to accessibility limitations. Both men and women experiencing accessibility limitations have lower IADL scores than those who do not report being transportation disadvantaged. Among the transportation disadvantaged, women display higher levels of functioning than men indicating that accessibility problems may be less of an important factor in women's overall daily functioning (men=2.22; women=2.49). This finding is consistent with the literature that suggests women have been limited in transportation options throughout their lives. Therefore, they have adjusted to this obstacle in ways that do not to disrupt their lifestyles (Cape, 1987).

Regardless of residential setting, there is no significant difference in the mean IADL scores for men and women. Across the urban/rural dichotomy, the IADL scores are consistent at approximately 2.65 for both genders. This finding does not support the notion that rural inhabitants have lower health status than their urban counterparts (McPherson, 1983; Lee and Lassey, 1980; Youmans, 1977). However, it may be accounted for by the inadequate operationalization of the rural-urban dichotomy in the original survey, as discussed in Chapter four.

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[4] Living arrangement is defined as living alone or living with someone else. It should be noted that some ambiguity is involved in the latter category. As it has been operationalized in this study, living with someone else includes both spouse and other relatives.

According to the social support literature, both men and women receive substantial amounts of support from their most intimate informal sources. The mean IADL scores across the hierarchy of support sources indicate nearly all social support is received from the informal network. Table 5.2 indicates that most men and women are essentially self-reliant, meaning they report receiving no assistance from network members (N=124). As expected, these individuals score almost total independence in IADL functioning; with women having higher mean IADL scores (2.92) than those of men (2.89). The remainder of the sample report receiving some assistance from spouse and immediate family. The corresponding mean IADL scores tend to suggest interdependence as opposed to independence in IADL functioning (ranging from 1.8 to 2.4). The mean IADL scores tend to decrease across the progressively less intimate support sources, indicating that individuals with the least intimate support have the lowest functioning.

As Table 5.2 illustrates, most individuals rely on informal sources of support in crisis and have relatively independent IADL functioning levels. These mean IADL scores are similar for men and women. The mean IADL scores for those individuals expecting to turn to formal sources in emergencies tend to be higher than those who rely on family and friends. Moreover, women tend to have higher functioning levels than men (men=2.74 versus women=2.83).

In summary, the descriptive statistics demonstrate both similarities and differences between the men and women in this sample. A comparison of mean scores of each variable by gender reveals a considerable resemblance across age, residential location, perceived support expectations and IADL functioning scores. Interesting contrasts between men and women are observed in the remaining variables of income, perceived health, living arrangement, actual support received and accessibility. These findings highlight the disadvantaged position of women compared to men in terms of lower income, living alone and transportation limitations. In addition, women tend to subjectively evaluate their health as better than men, indicating a more optimistic

view of general health. Finally, in terms of social support both men and women rely on their informal networks, although, the informal networks of women are more diverse than those of men.

Further descriptive detail of the sample is gleaned from an analysis of mean IADL functioning scores across the various categories of each variable. Differences in the mean IADL scores for men and women are exhibited at varying levels of age, income, and perceived health, and presence of transportation limitation. The mean IADL scores for both men and women decreased from age 60 to 85 and over. For women, this decreasing trend across age groups was more consistent. Their scores are higher than those of men below age 74 but lower between 75 and 84. Men and women over 85 scored similar low levels of functional ability indicating some degree of interdependence on someone in order to successfully complete the majority of tasks. Women's mean IADL scores are lower than men's up to an income of $800.00 dollars per month. Beyond that level to $1,600.00 dollars they display higher functional ability. Also for women, with the range of 0 to $1,600.00 per month, an increase in income parallels an increase in IADL functioning. A pattern is not discernible beyond this level and is not evident for men at all. With regard to perception of health, women repeatedly display lower IADL scores at each rating of health. Finally, women reporting transportation difficulties have higher mean IADL scores than their male counterparts experiencing similar obstacles to mobility.

The mean IADL scores for men and women are almost identical across the categories of living arrangement, residential location, actual support and perceived support. As expected, IADL scores are higher for those individuals living alone. Levels of functional ability tend to decrease across the sources of supportive assistance from almost total independence of the self-reliant individuals to interdependence of those receiving support from kin. This pattern is similar for men and women. Again, in terms of sources of emergency support, no difference between men and

women is notable. While most respondents expect to rely on informal sources, those who report an anticipated reliance on formal sources have higher levels of IADL functioning.

The comparison of the personal competence, environmental press and adaptive functional ability indicators for men and women reveals findings that are consistent with the literature. While these similarities and differences provide a detailed description of the sample, they do not address the effects of the varied experiences and circumstances on the person-environment transaction as it relates to functional ability. In order to investigate these dynamics, path analysis is employed.[5]

Path analysis is a statistical method designed to analyze the patterns of direct and indirect effects operating within a set of variables which are hypothesized to be causally related. The model analyzed in this study is presented in Chapter one as a conceptual model that represents the B=f(P,E,PxE) framework. Two identical models are estimated, one for older men and a second for older women. The results of the separate path analyses are illustrated in Figures 5.1 through 5.4, and summarized in Tables 5.3 and 5.4. The path analysis addresses two specific questions: 1) What direct effects exist between P and/or E factors and IADL? and 2) What indirect effects exist signifying the P-E transactions as related to IADL functioning? Finally, since differences between the models are expected, this analysis focuses on gender as an important distinguishing factor in the P-E transaction operating on IADL functioning.

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[5] An additional analysis was conducted in order to determine whether or not the inclusion of interaction terms was warranted. However, because of the high degree of multicollinearity produced by the inclusion of interactions, the presentation and interpretation of the results were omitted from the present discussion.

5.3 Path Analysis: Gender Differences in P-E Factors on IADL

The results of the path analysis are divided into two complimentary subsections. In the first section, the models for men and women are compared and contrasted using the unstandardized path coefficients.[6] This section emphasizes the direct effects within the models on IADL and subsequently on each of the endogenous variables (Figures 5.1 and 5.2). The second section, includes a discussion of the relative importance of each direct, indirect and total effect using the standardized coefficients depicted in the models (Figures 5.3 and 5.4).

The adequacy of the model in estimating functional ability is evaluated by the coefficient of determination adjusted for attenuation (R^2). As indicated by the R^2 reported for each of the models, the model is well specified with 79 percent of the variance in IADL functioning explained in the women's model and 74 percent explained for men (Figure 5.1 and 5.2). The difference in the variance explained between the men's and women's model (5 percent) is expected given that many of the variables are better indicators of and are more relevant to the life circumstances of women in old age. Specifically, income, living arrangement and accessibility have been identified as more problematic for older women than men. As a consequence, they have often been discussed as women's issues. Perhaps another reason for the different fits of the models involves the contention that women are more willing respondents to personal and subjective queries (Heller and Mansbach, 1984).

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[6] In path analysis, the path coefficient is equivalent to the standardized regression coefficient (i.e. the beta-weight). However, path analytic models may also be described using the unstandardized regression coefficient (i.e. path regression coefficient). Since this study investigates differences in the P-E transaction by gender, for such comparative purposes only the path regression coefficient can be used. Additional information concerning the relative magnitude of each of the effects within each model can be obtained from the path coefficients. However, cross-model comparisons of these path coefficients is inappropriate, only the differences in the importance of variables in the models may be assessed using the path coefficients (Pedhazur, 1982).

FIGURE 5.1: Unstandardized Partial Regression Coefficients for the Person-Environment Transaction Model: Men.

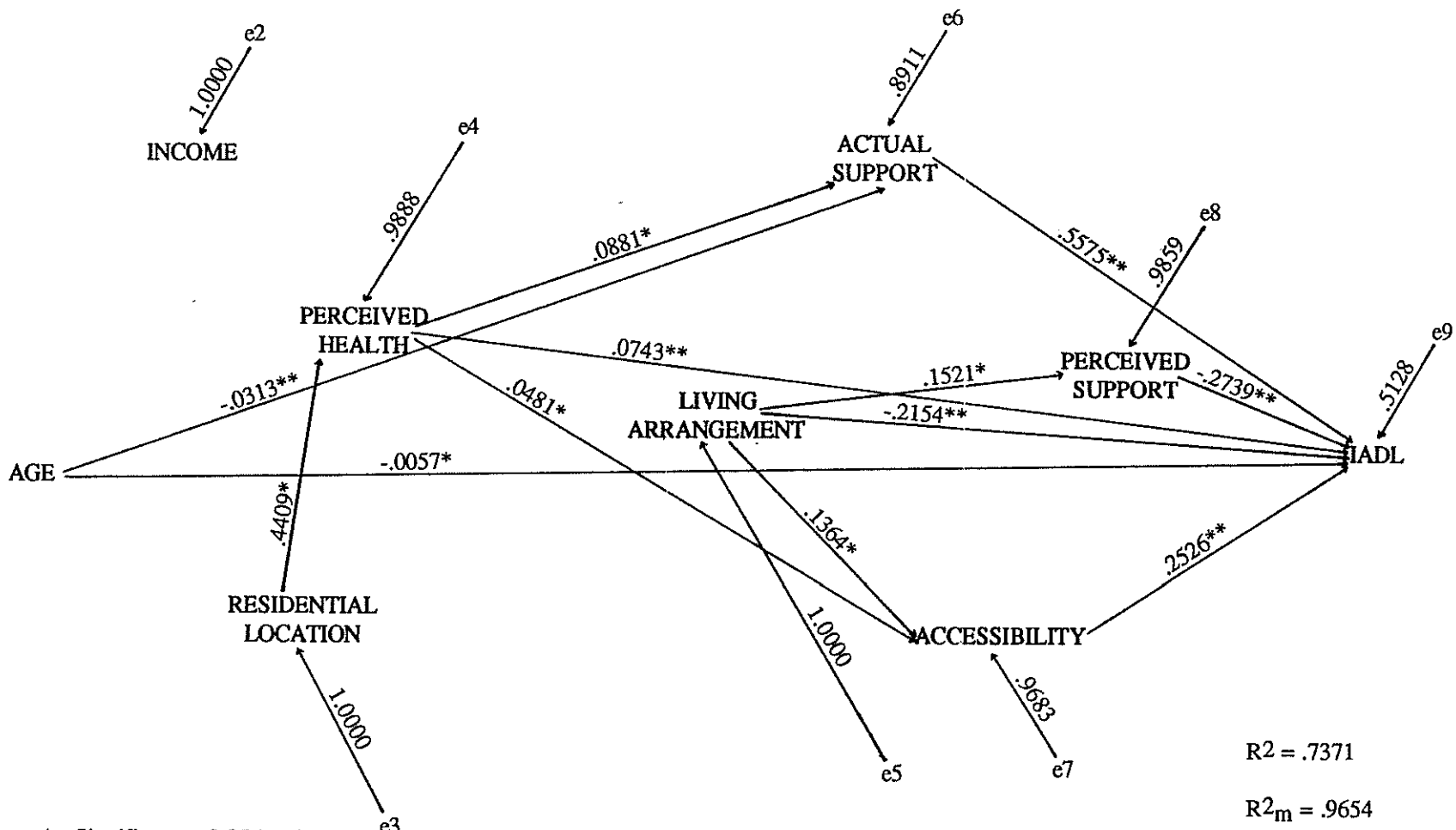
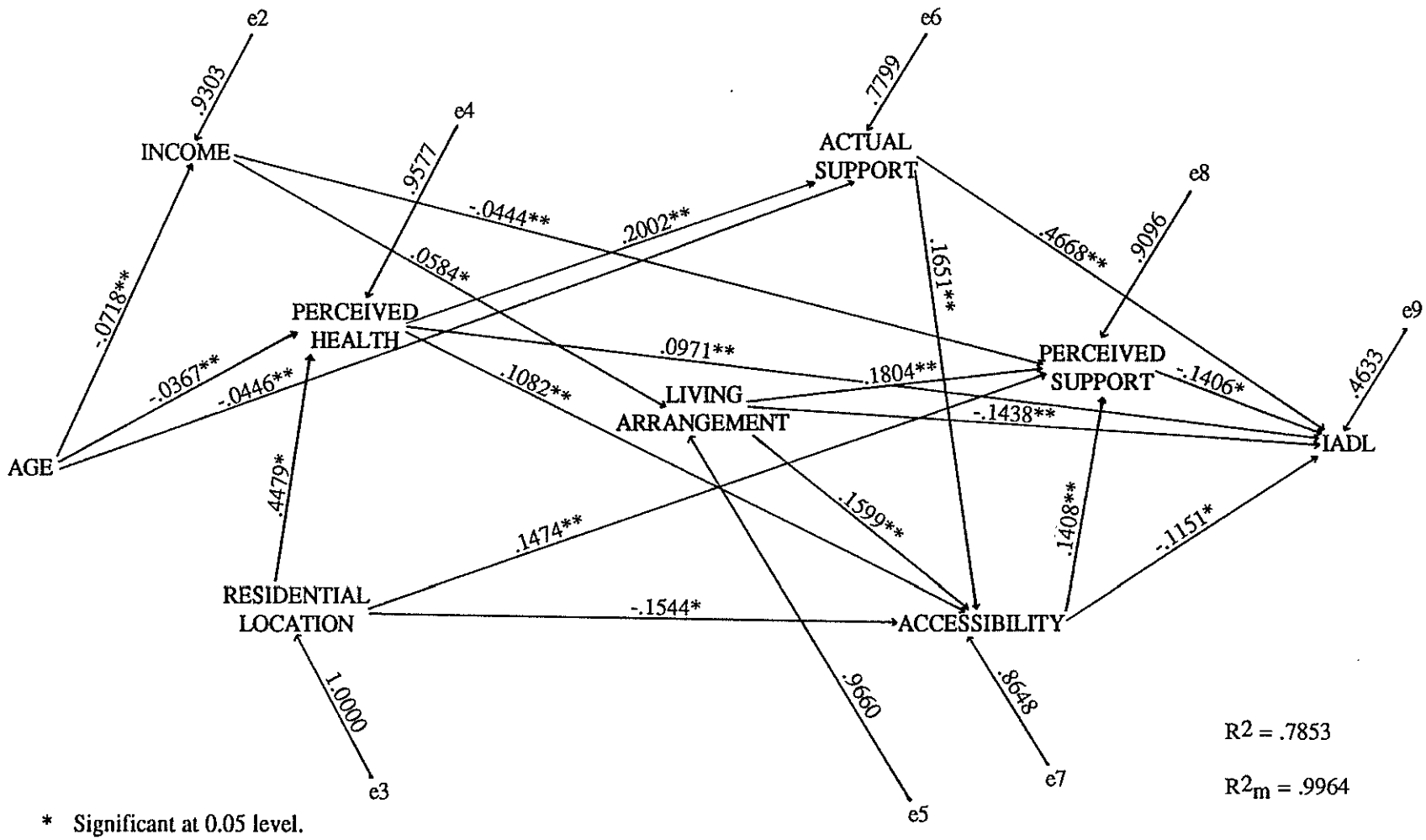


FIGURE 5.2: Unstandardized Partial Regression Coefficients for the Person-Environment Transaction Model: Women.



As previously discussed, the goodness of fit of the model may also be assessed using the generalized squared multiple correlation coefficient (Pedhazur, 1982). The R^2_m calculations suggest that 99.64 and 96.54 percent of the proportion of variance is explained within the model for women and men respectively. These results confirm that the model is well specified in terms of explaining adaptive functional ability. The results also indicate that residential location in both models and living arrangement and income in the model for men have no real explanatory power within the context of the overall conceptual model. That is, those variables contribute little to the overall proportion of variance explained in IADL functioning.

5.3.1 Comparison of P-E Models by Gender

Upon initial examination, the most striking observation is the larger number of significant paths noted in the model for women as compared to the model for men. While there is a similar number of paths linking the endogenous and dependent variables directly, the distinguishing feature is the discrepancy in direct paths among the independent variables. In both models, direct paths from residential location and income to IADL are absent, as is age on IADL for women.

Environmental Press Factors Effecting IADL.

The direct effect of perceived support on IADL is twice as strong for men as for women, with both effects being significant at the .05 level or higher (men=-.2739, alpha=.01; women=-.1406, alpha=.05). This negative relationship represents an unexpected finding and suggests that those individuals who anticipate informal assistance in crisis situations are likely to report their functional ability as slightly more dependent.[7] Thus, perhaps the expectation of relying on family may indicate some degree of dependency and this may be manifested in the report-

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[7] The lower extremes of both the perceived support and IADL scales are poorly represented in this sample. Thus, the relationship between these variables must be interpreted with the formal/informal sources of support and high adaptive functioning scores ranging from complete to limited independence not total dependence.

ing of IADL functioning. It should be noted that the reverse holds true, where those who expect to receive help from formal sources are likely to be more functionally independent. Given the hypothesized situations (assistance with finances, care during illness, keeping a doctor's appointment, feeling nervous, and dealing with a government agency) a more independent person may tend to seek solutions to the emergencies themselves by dealing with the appropriate agencies.

One of the most interesting findings in the comparison of the two models involves the relationship between accessibility and IADL. Again, the direct effect of accessibility on IADL in the model for men is two times that in the women's model. However, more importantly, the direction of the effect is different for men and women (men=.2526, alpha=.01; women=-.1151, alpha=.05). While men who report limitations in mobility tend to have lower IADL functioning, women with similar transportation disadvantages exhibit higher functional ability. This disparity in the direction of the coefficients between men and women may be partially explained by their differential adaptive responses to mobility limitations throughout life. Since women have always been transportation disadvantaged (Cape, 1987) they have devised strategies to overcome the obstacles and maintain independent functioning. That is, while women report accessibility problems in reaching the necessary destinations for the completion of tasks, this does not interfere in their evaluation of functional ability. On the other hand, men have always been more mobile than women and thus have not been presented with the opportunity to develop the same coping mechanisms. Thus, when men experience difficulties in accessing the facilities or resources necessary for task fulfillment, their subjective evaluations of IADL functioning are lower.

The relationship between the second social support variable, actual support received, and IADL is in the hypothesized direction. The effect of actual support on IADL for both men and women is substantial as illustrated by the coefficients (men=.5575, alpha=.01; women=.4668, alpha=.01). These coefficients suggest that for every unit change in actual support, a concomitant

change in IADL functioning of .558 for men and .467 for women on the independence-dependence scale is observed. This implies that the impact of such a change in the need for and receipt of support from self-reliance (6) to spouse (5) for example, is larger in terms of its influence on the subjective evaluations of IADL functioning for men as compared to women. Thus, for women, a change in support arrangements has a lesser impact on IADL functioning reports. However, these findings must be considered within the context of the different social support networks of men and women and the changes that are likely to occur in those networks in old age.

Throughout their lives men and women develop support networks that differ in terms of number and type of members (Powers and Bultena, 1976). That is, women characteristically have more diverse social support networks than men (Rosenthal, 1987; Chappell et. al., 1986; Dickinson et. al., 1986; Fleishman et. al., 1984). The implications of these differences are that any change in supportive arrangements are likely to be more disruptive to the lifestyles and functioning of men because they have fewer support sources to rely on initially (Antonucci, 1985; Miron, 1981). For example, widowhood results in a change in available support for both men and women. However, it is argued that because women have more people from which they receive support than just a spouse, as is the case for men, they have existing social resources available which they can mobilize in order to maintain independence in the community.

Living arrangement is the final social environmental press variable considered in the model. The relationship between living arrangement and IADL is negative, indicating that those who live alone tend to have higher IADL scores than those who live with others. As previously noted, more women than men are likely to live alone as a consequence of widowhood. Conversely, more men live with their spouses. That is, for women living with someone, there is a propensity for that person to be someone other than a spouse, most frequently an adult daughter. In light of these differences the coefficient for the relationship between living arrangement and IADL func-

tioning can be interpreted in terms of the impact of change. A change in living arrangement for men has a greater impact in terms of independence in IADL functioning. There are two scenarios that are suggested by this relationship.[8] The first concentrates on the negative direction of the relationship, while the second emphasizes the differences in magnitude of the coefficients for men and women (men=-.2154, alpha=.01; women=-.1438, alpha=.01).

The first scenario involves the impact on independence of a change from living alone to living with someone. Given that most elderly at one point are married, a change to living alone implies experiencing widowhood. For those widowed individuals such a change in living arrangement usually involves a move to a more supportive setting. This change is often interpreted as a loss of independence that may be reflected in the subjective evaluations of IADL functioning. Furthermore, living with someone, usually a daughter, often promotes dependency in IADL because the elderly person is no longer totally responsible for the operation of the household.

The second scenario involves a change from living with someone to living alone. This change is often instigated by widowhood. The impact of such a change on IADL functioning is greater for men than women because it may involve the acquisition of new household skills in what traditionally have been considered women's tasks. Furthermore, the impact is exacerbated by the measurement of IADL functioning. That is, since most measures of IADL have a gender bias against men, it makes intuitive sense that such a difference would be observed.

Personal Competence Factors Effecting IADL.

The relationship between perceived health and IADL is similar for both men and women. The small magnitude of the effect of perceived health on IADL is unexpected given the suggested influence of self-reported health on functioning indicated in the literature. However, the relationship is in the anticipated direction (men=.0743, alpha=.01; women=.0971, alpha=.01). This sug-

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[8] For a more detailed discussion of these scenarios see: Stone and Fletcher (1987), Martin Matthews (1987, 1980), Chappell et. al. (1986); and Fengler and Danigelis (1982).

gests that the higher the perceived health rating the higher the IADL functioning. Since perceived health is an accurate indicator of physical wellbeing (Ferraro, 1980; Fillenbaum, 1979; Maddox and Douglass, 1973; Palmore and Luikart, 1972), if an individual's health status is excellent, it makes intuitive sense that their level of functioning is highly independent. Concomitantly, perceived health is also an indicator of 'global wellbeing' (Wolinsky et. al., 1984). This means that those with a more positive self-assessment of health may be expected to report functioning at higher levels across IADL tasks (Linn and Linn, 1984; Stolee et. al., 1982). Each of these aspects of perceived health is reflected in the coefficients between perceived health and IADL functioning.

The path between age and IADL for men is negligible but significant and in the direction indicated by the literature (men=.0057, alpha=.05). The same path is not observed, however, in the women's model. As the literature suggests, IADL functioning tends to decrease with advancing age (Chappell et. al., 1986). This effect is small because deterioration in functional ability as a consequence of age related chronic disease is a gradual process with only a few exceptions. Examples of chronic disease episodes resulting in rapid deterioration in IADL capabilities include cardiovascular or cerebrovascular accidents.

5.3.2 Effects on Environmental Press Variables

Additional direct paths are observed in each of the models depicting the relationships among the independent P-E variables. Moving away from the dependent variable, the direct effects operating on each of the endogenous variables are discussed in succession.

Perceived Support: Women who report transportation problems tend to expect emergency assistance from formal sources (women=.1408, alpha=.01). Conversely, those women who do not experience transportation problems are likely to rely more on informal sources. The differences between these two groups of women may be the availability of family from which transpor-

tation assistance and emergency help can be received. In addition, the magnitude of the coefficient for the relationship between accessibility and perceived support indicates that whether or not a transportation problem is experienced has a minimal impact on who women turn to in emergency situations. Finally, a similar path for men is not observed. Since men tend not to have transportation problems, the issue of accessibility has no effect on their expected sources of emergency aid.

Residential location is also not a factor in determining the sources of aid for men. However, rural women appear to rely more heavily on informal sources than their urban counterparts for help in dealing with crisis situations (women-.1474, alpha=.01). This is expected given that rural areas tend not to have the same level of formal sources available to the residents as those in urban areas. In addition, Cape (1987) suggests that rural families, in terms of providing assistance to their elderly relations, are short on daily support but long on emergency aid. Thus, rural women can expect informal emergency aid when these situations arise.

Living arrangement has a direct effect on perceived support in both models. However, it represents the only effect on perceived support for men (men=.1521, alpha=.05; women=.1841, alpha=.01). This relationship is in the hypothesized direction whereby living with someone is associated with the expectation of receiving assistance in need from the most intimate informal source.

The relationship between income and perceived support is consistent with that found in the literature (Palmore et. al., 1985; Cantor, 1979). Women with higher incomes tend to rely on formal, paid support sources when in need, while lower income women rely heavily on informal family sources for anticipated assistance because they can not afford the alternatives (women=-.2286, alpha=.01). This finding does not hold for men as indicated by the absence of a direct path between income and perceived support in the men's model.

Accessibility: Living arrangement and perceived health are factors effecting accessibility for both men and women. Living arrangement has a small direct effect on accessibility, which is slightly greater for women than for men (men=.1364, alpha=.05; women=.1599, alpha=.01). This relationship is consistent with the hypothesis that those who live alone are more likely to experience a transportation problem (McKelvey, 1979). Conversely, those living with someone tend to experience fewer transportation problems. This is a particularly important factor for women. As previously discussed, more women are likely to live alone than men. They are, therefore, also more likely to experience more transportation problems than their male counterparts (Cape, 1987).

The effect of perceived health on accessibility is in the anticipated direction and is twice as large for women than for men (men=.0481, alpha=.05; women=.1082, alpha=.01). This suggests that those with higher levels of perceived health are less likely to experience transportation limitations. That is, since women at each level of perceived health experience lower functioning than men (Cockerman et. al., 1983), the combined effects of this functional difference and fewer available transportation options result in more problems with transportation.

Both actual support and residential location are significant factors affecting women's accessibility; neither of which are observed in the model for men. The effect of residential location on accessibility is small and the direction is unexpected (women=-.1544, alpha=.05). This finding indicates that urban women are more likely to report transportation difficulties than their rural counterparts. It is noteworthy that while the literature suggests rural areas have less accessible transportation networks, rural inhabitants tend to meet their transportation needs by utilizing family and friend as drivers (Fengler et. al., 1984; Kivett and Learner, 1980). In contrast, urban women are more likely to rely heavily on public transportation. Consequently, these women are likely to experience more problems with accessible transportation due to the considerable number of obstacles for the elderly inherent in many public systems.

The relationship between actual support provided and accessibility is present only in the model for women. It is noted that the path between these two variables is relatively small, although in the hypothesized direction (women=.1651, alpha=.01). The coefficient for the relationship suggests that those women who are self-reliant are most likely to report having no transportation problem. Conversely, those women receiving a greater amount of support from progressively less intimate support sources tend to report limitations in transportation mobility. This finding makes intuitive sense in that when the older person is no longer totally self-reliant, their risk of encountering such a problem increases. This risk is minimized when other types of support are provided by spouses and families because families are likely to extend their supportive arrangements to include the satisfaction of transportation needs. This supportive transportation assistance is likely to be successful in alleviating any problem because the support sources have vested interests in the wellbeing of the elderly, they tend to be more flexible in terms of schedules and are available without prior arrangements. On the other hand, formal transportation assistance is less likely to accommodate such needs due to limited resources and schedules.

Actual Support: The relationship between perceived health and actual support is twice as strong for women as for men (men=.0881, alpha=.05; women=.2002, alpha=.01). In general, those people who evaluate their health to be excellent or very good are most likely to be self-reliant. Conversely, those indicating progressively lower health reports, due to more chronic illness, are likely to need and receive support from sources along the informal-formal continuum. Individuals with poor self-reported health tend to have lower actual support scores indicating that they receive support from informal and formal support sources. This is a consequence of the receipt of additional assistance from formal sources required to augment the careproviding resources of the primary informal caregivers. Such a supportive arrangement connotes the complimentary argument of informal-formal support sharing (Chappell et. al., 1985a and 1985b).

The difference between the coefficients in the men's and women's models suggest that a change in health reports has a dissimilar impact on care arrangements of men and women. Men who are no longer in excellent health, are likely to be married and receiving assistance from their spouses. Regardless of declines in their health, they will most likely continue to be cared for by their wives. Conversely, women often do not have spouses to fulfill caregiving roles and thus the impact of declining health on their care arrangements is significant and likely to involve a more diverse group of support sources within the informal network.

The relationship between age and actual support is in the hypothesized direction and the magnitudes of the coefficients are similar for men and women (men=-.0313, alpha=.01; women=-.0446, alpha=.01). This relationship indicates that as age increases the individual becomes less self-reliant and tends to receive support from less intimate sources. While the coefficients are small, they lend support to the hierarchical compensatory model which suggests that with increasing age the likelihood of receiving assistance from a spouse decreases. The decreased likelihood of spousal assistance is due to the probability of widowhood and the lower caring capacity of the spouse. Again, the differences in the social support networks of men and women have implications for the sources of support provided to the elderly as they age.

The small coefficient for the path between age and actual support may be due to the fact that changes in caregiving practices are very gradual. As research has shown, most care remains within the marital relationship (primarily for men) or the family network. In this study, due to the broad operationalization of family (one which encompasses several stages of the hierarchical compensatory model), minimal change in the sources of support is observed.

Living Arrangements: Of all the possible direct effects on living arrangement, income was found to be a factor in the women's model alone. Women with higher income levels are more likely to share a dwelling with another person (women=.0584, alpha=.05). If this person is a

spouse, it makes intuitive sense that the total family income (based on two incomes) would exceed that of women living alone. As discussed in the literature review, a decrease in income and a change in living arrangement are often consequences of widowhood. The probability of experiencing this life event and the related changes is greater for women than for men.

Perceived Health: As indicated in Table 5.3, the relationship between residential location and perceived health is moderate in magnitude and is highly similar across gender (men=.4409, alpha=.05; women=.4479, alpha=.05). This would suggest that rural inhabitants tend to report higher levels of perceived health than their urban counterparts. Moreover, these findings are consistent with the conclusions of urban/rural comparison studies which indicate that rural people score higher on subjective indicators than their objective conditions would suggest (Lee and Lassey, 1980). In addition, with regard to these subjective indicators, rural inhabitants tend to report better evaluations than those individuals living in urban centres.

The relationship between age and perceived health, although small, is in the direction indicated by the literature. This effect is present in the model for women only (women=-.0367, alpha=.01). The relationship suggests that as age increases perception of health decreases. There is evidence in the literature supporting and contradicting this finding. The supporting argument suggests that with increases in age the perception of health declines due to the increased likelihood of more chronic illness and concomitant disability (Chappell et. al., 1986). To the contrary, it is postulated that with increased age, perception of health increases as adaptations are made to age related physical changes. Furthermore, as age increases, older individuals tend to report more positive evaluations of health. Possibly, this occurs as a result of an adjustment in their perceptions of health as a response to aging processes and societal expectations of health in old age (Cockerman et. al., 1983; Ferraro, 1980; Shanas et. al., 1968; Shanas, 1962).

Income: A path linking age and income is observed in the women's model only. The small coefficient (women=-.0367, alpha=.01) indicates that as age increases, income decreases. This relationship is supported by a growing body of literature that views income (poverty) in old age as a women's issue (McDaniel, 1986; National Council of Welfare, 1984; Dulude, 1978). Collectively, a number of factors are in part responsible for reducing the level of income available to women as they age. Women tend to enter old age with fewer savings and lower pensions. Their disadvantaged economic status is increased because of the likelihood of widowhood and the consequent loss of the additional household income contributed by the spouse (Martin Matthews, 1987 and 1980).

5.3.3 Direct and Indirect Path Coefficients: The Relative Magnitudes by Gender.

Given the significant direct effects previously noted, additional understanding of the process resulting in functional ability, both substantively and statistically is derived from an investigation of the direct and corresponding indirect effects. Using this more holistic approach, the personal and environmental factors are assessed for their relative contribution to the determination of IADL functioning (Figures 5.3 and 5.4). In contrast to the previous section, the direct and indirect effects are discussed in chronological order working towards IADL so that the indirect effects are presented clearly as they involve the consecutive endogenous variables (Tables 5.3 and 5.4)[9].

Of some importance is the difference in the number of paths and the relative magnitudes of these paths, between the two models as indicated by the standardized coefficients. For example, the direct effect of actual support on IADL has the largest impact relative to the other variables in each of the models (Men=.7121, alpha=.01; Women=.7325, alpha=.01). In contrast, each model displays different paths representing the effect of least relative importance. While age demon-

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[9] The detailed decomposition of effects on which Tables 5.3 and 5.4 are based, is presented in Appendix one.

FIGURE 5.3: Standardized Partial Regression Coefficients for the Person-Environment Transaction Model: Men.

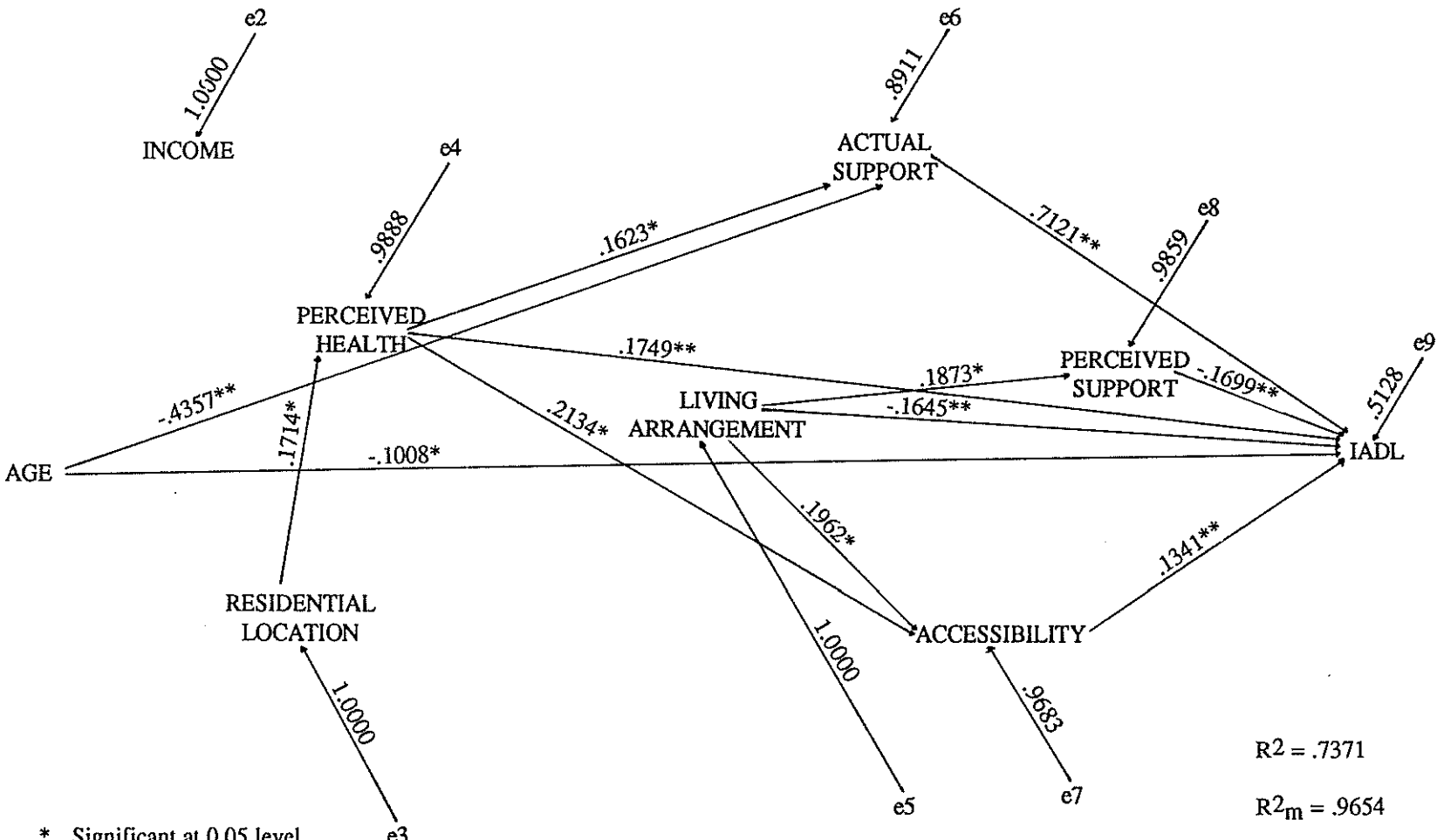

FIGURE 5.4: Standardized Partial Regression Coefficients for the Person-Environment Transaction Model: Women.

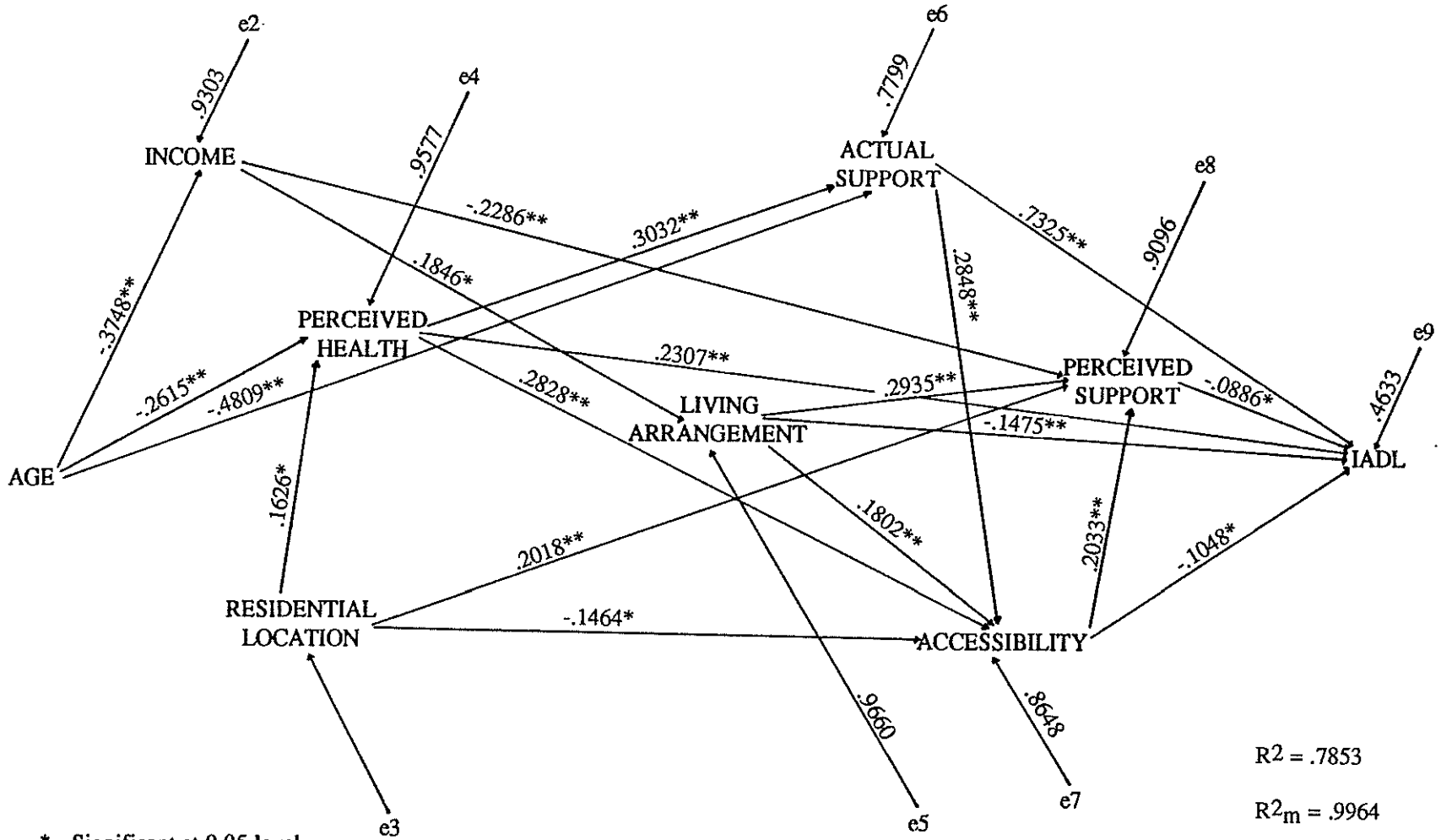

TABLE 5.4: DECOMPOSITION OF THE BIVARIATE CORRELATIONS BETWEEN THE VARIABLES INCLUDED IN THE MODEL OF ADAPTIVE ABILITY FOR WOMEN.

BIVARIATE RELATIONSHIP OF CONCERN:	CAUSAL COMPONENTS			NONCAUSAL COMPONENTS	TOTAL COVARIANCE
	DIRECT EFFECTS	INDIRECT EFFECTS	TOTAL EFFECTS		
AGE ON:					
Income	.0000	.0000	.0000	.0000	------
Residential Location	.0000	.0000	.0000	.0000	------
Perceived Health	-.2615	.0000	-.2615	.0000	-.2615
Living Arrangement	.0000	-.0692	-.0692	.0000	-.0692
Actual Support	-.4809	-.0793	-.5602	.0000	-.5602
Accessibility	.0000	-.2459	-.2459	.0000	-.2459
Perceived Support	.0000	.0154	.0154	.0000	.0154
IADL	.0000	-.4361	-.4361	.0000	-.4361
INCOME ON:					
Residential Location	.0000	.0000	.0000	.0000	------
Perceived Health	.0000	.0000	.0000	.0980	.0980
Living Arrangement	.1846	.0000	.1846	.0000	.1846
Actual Support	.0000	.0000	.0000	.2099	.2099
Accessibility	.0000	.0333	.0333	.0875	.1208
Perceived Support	-.2286	.0609	-.1677	.0178	-.1499
IADL	.0000	-.0159	-.0159	.1657	.1499
RESIDENTIAL LOCATION ON:					
Perceived Health	.1626	.0000	.1626	.0000	.1626
Living Arrangement	.0000	.0000	.0000	.0000	------
Actual Support	.0000	.0493	.0493	.0000	.0493
Accessibility	-.1464	.0600	-.0864	.0000	-.0864
Perceived Support	.2018	-.0176	.1842	.0000	.1842
IADL	.0000	.0664	.0664	.0000	.0664
PERCEIVED HEALTH ON:					
Living Arrangement	.0000	.0000	.0000	.0181	.0181
Actual Support	.3032	.0000	.3032	.1258	.4290
Accessibility	.2828	.0864	.3692	.0153	.3845
Perceived Support	.0000	.0751	.0751	.0188	.0939
IADL	.2307	.1768	.4075	.0862	.4937
LIVING ARRANGEMENT ON:					
Actual Support	.0000	.0000	.0000	.0388	.0388
Accessibility	.1802	.0000	.1802	.0162	.1964
Perceived Support	.2935	.0366	.3301	-.0389	.2912
IADL	-.1475	-.0481	-.1956	.0343	-.1613
ACTUAL SUPPORT ON:					
Accessibility	.2848	.0000	.2848	.1211	.4059
Perceived Support	.0000	.0579	.0579	-.0021	.0558
IADL	.7325	-.0349	.6976	.0807	.7783
ACCESSIBILITY ON:					
Perceived Support	.2033	.0000	.2033	.0126	.2159
IADL	-.1048	-.0180	-.1228	.3559	.2331
PERCEIVED SUPPORT ON:					
IADL	-.0886	.0000	-.0886	-.0030	-.0916

TABLE 5.3: DECOMPOSITION OF THE BIVARIATE CORRELATIONS BETWEEN THE VARIABLES INCLUDED IN THE MODEL OF ADAPTIVE ABILITY FOR MEN.

BIVARIATE RELATIONSHIP OF CONCERN:	CAUSAL COMPONENTS			NONCAUSAL COMPONENTS	TOTAL COVARIANCE
	DIRECT EFFECTS	INDIRECT EFFECTS	TOTAL EFFECTS		
AGE ON:					
Income	.0000	.0000	.0000	.0000	-----
Residential Location	.0000	.0000	.0000	.0000	-----
Perceived Health	.0000	.0000	.0000	.0000	-----
Living Arrangement	.0000	.0000	.0000	.0000	-----
Actual Support	-.4357	.0000	-.4357	.0000	-.4357
Accessibility	.0000	.0000	.0000	.0000	-----
Perceived Support	.0000	.0000	.0000	.0000	-----
IADL	-.1008	-.3103	-.4111	.0000	-.4111
INCOME ON:					
Residential Location	.0000	.0000	.0000	.0000	-----
Perceived Health	.0000	.0000	.0000	.0000	-----
Living Arrangement	.0000	.0000	.0000	.0000	-----
Actual Support	.0000	.0000	.0000	.0000	-----
Accessibility	.0000	.0000	.0000	.0000	-----
Perceived Support	.0000	.0000	.0000	.0000	-----
IADL	.0000	.0000	.0000	.0000	-----
RESIDENTIAL LOCATION ON:					
Perceived Health	.1714	.0000	.1714	.0000	.1714
Living Arrangement	.0000	.0000	.0000	.0000	-----
Actual Support	.0000	.0278	.0278	.0000	.0278
Accessibility	.0000	.0366	.0366	.0000	.0366
Perceived Support	.0000	.0000	.0000	.0000	-----
IADL	.0000	.0547	.0547	.0000	.0547
PERCEIVED HEALTH ON:					
Living Arrangement	.0000	.0000	.0000	.0000	-----
Actual Support	.1623	.0000	.1623	.0000	.1623
Accessibility	.2134	.0000	.2134	.0000	.2134
Perceived Support	.0000	.0000	.0000	.0000	-----
IADL	.1749	.1442	.3191	.0000	.3191
LIVING ARRANGEMENT ON:					
Actual Support	.0000	.0000	.0000	.0000	-----
Accessibility	.1962	.0000	.1962	.0000	.1962
Perceived Support	.1873	.0000	.1873	.0000	.1873
IADL	-.1645	-.0055	-.1700	.0000	-.1700
ACTUAL SUPPORT ON:					
Accessibility	.0000	.0000	.0000	.0346	.0346
Perceived Support	.0000	.0000	.0000	.0000	-----
IADL	.7121	.0000	.7121	.0769	.7890
ACCESSIBILITY ON:					
Perceived Support	.0000	.0000	.0000	.0368	.0368
IADL	.1341	.0000	.1341	.0235	.1576
PERCEIVED SUPPORT ON:					
IADL	-.1699	.0000	-.1699	-.0259	-.1958

strates the lowest coefficient for men (Beta=-.1008, alpha=.05), the second support variable, perceived support, contributes the smallest effect in the women's model (Beta=-.0886, alpha=.05). In addition, a number of effects are present in the women's model that are not observed in the model for men. A comparison of the relative magnitudes of the standardized coefficients for each of the variables presented in both models suggests that the indicators have a greater impact in terms of IADL functioning for women as opposed to men.

Age: A direct relationship between age and IADL does not exist in the women's model and its effect in the men's model is minimal. These findings are unexpected given that the literature suggests a definite relationship between increasing age and chronic illness and functional deterioration (Chappell et. al., 1986). In order to understand this anomaly, the interrelationship of age with the other variables in the model was examined using the indirect effects of age as the focus.

It appears that the role of age in influencing IADL represents a different process for men and women. That is, in the men's model, in addition to the small direct effect, only one indirect effect of age on IADL is present. Conversely, the women's model illustrates no direct effect, yet, has a number of indirect effects on IADL. Thus, the effect of age on IADL functioning is a more complex phenomenon for women as indicated by the larger number of indirect effects. As indicated in Table 5.4, the total effect of age on IADL functioning for women is comprised solely of indirect effects (-.4361). For men, however, the total effect (-.4111) consists of both direct (-.1008) and indirect (-.3103) effects.

The most noteworthy indirect effects in terms of relative influence are those of age on IADL as mediated through actual support. The direct effect of age on actual support in both models is substantial, second only to the direct effect of actual support on IADL (men=-.4357, alpha=.01; women=-.4809, alpha=.01). The respective magnitudes of these directs effects account for the uniquely large indirect effects of age on IADL via actual support. Moreover, the same explana-

tion applies for subsequent indirect effects involving the age-actual support-IADL combination illustrated in the women's model.

The relative effect of age on IADL via actual support in each of the respective models is similar (men=-.3103; women=-.3523).[10] This suggests that an increase in age may involve a gradual change in the need for assistance as well as a change in the sources of support within the social support network. Specifically, with increasing age, support is often received from someone other than a spouse, or an immediate family member, exclusively resulting in a more dependent level of functioning. As discussed above, changes in supportive arrangements due to increasing age may be instigated by the lower caring capacity of an aging spouse or the heavier care burden of the care receiver. These findings are consistent with previous research and compliment the comparative discussion of the observed unstandardized path coefficients in the models for men and women.

As Figure 5.4 and Table 5.4 indicate, there is a substantial number of indirect effects involving age on IADL for women. The effect of age on IADL is negotiated through the three primary or pivotal factors of income, perceived health and actual support. Furthermore, all the second and third order indirect effects of age on IADL in the women's model are channelled through these primary factors and are in turn directed through living arrangement, accessibility and perceived support.[11] Therefore, at some point, each of the variables in the women's model acts as an intermediary in the effect of age on IADL (see Appendix 1).

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[10] Note the indirect effect of age on IADL through actual support is triple the magnitude of the direct effect of age on IADL in the men's model.

[11] The second and third order indirect effects become very difficult to interpret due to their attendant substantive ambiguity and statistical complexity and are rather insignificant given their magnitude within the context of the overall model for women (Pedhazur, 1982; Alwin and Hauser, 1975).

Unlike the two other pivotal factors observed in the women's model, income does not exhibit a direct effect on IADL. Although income is a pivotal factor in the relationship between age and IADL, it is involved in higher order indirect effects. While these higher order effects are substantively sound, they represent extremely small coefficients, which contribute little to the understanding of the age and IADL relationship.

The direct effect of age on perceived health represents a relatively moderate path in the women's model. However, despite the size of this direct effect (Beta=-.2615, alpha=.01), and the effect of perceived health on IADL (Beta=.2307, alpha=.01), indirect effects calculated beyond this point are less important due to their small magnitudes. The indirect effect of age on IADL via perceived health is small, relative to the other coefficients in the model (Beta=-.0603). Given the findings in the literature, a larger indirect effect of age on IADL through perceived health was expected. Despite the magnitude of the indirect effect, the negative relationship is intuitively sound and suggests that increasing age results in reports of lower perceived health and less independent levels of functioning. This observation is an expansion of the previously discussed relationships of age and perceived health and their independent effects on IADL. That is, it allows for a more realistic and comprehensive assessment of the effects of age and health on IADL.

A similar pattern is observed within the age and actual support relationship. While this direct effect is a critical path within the women's model, any indirect paths building on the combination of age and actual support acts to diminish the overall effect of age on IADL. That is, the second and third order indirect effects produced by the subsequent entering of other variables into the relationship serves to lessen the effect of age and actual support on IADL.

As previously noted, the second and third order indirect effects of age on IADL incorporate both the pivotal factors of income, perceived health and actual support and other mediating variables of living arrangement, accessibility and perceived support. Most of these more complex

indirect effects have extremely small magnitudes in relation to other paths in the women's model. Since the majority of these paths are consistent with the hypothesized direction of age on IADL and their impact in the model is negligible, they do not warrant further attention. However, there is one exception involving the mediating effect of accessibility. In the model for women, all of the indirect effects on IADL which pass through accessibility display the opposite direction than that which was anticipated.[12] That is, accessibility acts to change those relationships. The relationship of age on IADL functioning via the mediator of accessibility demonstrates a positive effect. This represents a paradox suggesting that with increasing age, functional ability improves.

Further analysis of the accessibility variable and the corresponding literature provides the basis for an explanation of this paradox. Generally, women tend to experience transportation limitations throughout the lifecycle. This is particularly true of those cohorts of women in old age today. Such restrictions and transportation dependency represent the obstacles these women have learned to cope with over time. Men, on the other hand, experience greater mobility at all stages of adult life. As men and women enter old age they experience different levels of mobility within the community. With increasing age, mobility levels and transportation options change for both men and women.[13] However, the initial impact of these changes on the lifestyles and functioning of each may be different given that women have previously developed coping mechanisms in which to deal with transportation problems. Conversely, men must learn to adapt to such changes in mobility status at the time in which those changes take place.

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[12] It is interesting to note that while accessibility operates as a mediating variable in certain paths in the men's model, it does not interfere in the same way that it does in the women's model. The indirect effects involving accessibility for men follow the anticipated direction.

[13] The operationalization of the accessibility variable does not distinguish between the degrees of the transportation problem. Therefore, the impact of the problem on functioning with increasing age may not be entirely captured.

In terms of the effect of accessibility on functional ability it appears that transportation limitations are less a causal factor in determining IADL than obstacles operating simultaneously with functioning to influence the level of independence in task accomplishment. Furthermore, since transportation problems are an everyday reality for women, they may tend to disregard the limitation as a factor in their reports of everyday functioning. Thus, women do not allow such limitations to inhibit their IADL functioning, reporting higher IADL than the accessibility limitations reports would indicate.

In addition to the indirect effects of age on IADL discussed above, there is a plethora of paths from other variables to IADL in the women's model. While some of these lower order indirect effects are incorporated in the age and IADL relationship, they were not discussed above because of their relatively small magnitudes.

Income: Direct and indirect effects of income on other variables observed in the women's model are absent in the model for men. Moreover, the total effect of income on IADL in the women's model consists entirely of indirect effects (-.0159).

As shown in Figure 5.4, income is positively associated with living arrangement (Beta=.1846) and negatively associated with perceived support (Beta=-.2286). Therefore, women with higher incomes are likely to cohabitate with others and tend to rely on formal support sources in emergency situations. The indirect effect of income on IADL via perceived support is relatively weak (Beta=.0203). This indicates that those with higher incomes who rely on the emergency assistance of formal agencies tend to have higher functional abilities. This finding is consistent with the literature and earlier discussions involving these variables.

The remaining indirect effects of income on IADL are mediated by living arrangement and some combination of accessibility and perceived support. These paths demonstrate a different relationship between income and IADL. The relationship indicated by the indirect effect of

income on IADL via living arrangement and perceived support is such that those women with higher incomes who tend to live with someone else and rely on informal sources in crisis are likely to function less independently.

Residential Location: A direct path between residential location and IADL is not existent in either model. Therefore, the total effect of residential location on IADL may be attributed to indirect effects (Men=.0547; Women=.0664). The indirect effects of residential location on IADL are initially mediated through perceived health for men and perceived health, accessibility and perceived support for women. The relative importance of the second and third order indirect effects is minimal within each of the models. Although the majority do not warrant further discussion, the effects involving accessibility demonstrate a disparity in the residential location and IADL relationships by gender. This occurrence is explained by the unexpected effect of accessibility on IADL. This was previously interpreted as the differential coping mechanisms employed by women to maintain functional ability despite their transportation disadvantaged status.

Perceived Health: Within each model, the relative importance of the direct effect of perceived health on IADL is similar. As previously discussed, higher levels of perceived health are associated with more independent levels of functioning. The women's model exhibits a greater number of indirect effects of perceived health on IADL as compared to the model for men. This difference exists because only first order indirect effects of perceived health on IADL via actual support and accessibility separately are observed in the men's model. In contrast, the women's model demonstrates first, second and third order effects involving actual support, accessibility and perceived support. As illustrated in Tables 5.3 and 5.4, the majority of these paths in both models are not particularly strong and have been interpreted within the context of previous discussions.

Of interest, however, is the indirect effect of perceived health on IADL through actual support. The magnitude of this relationship almost equals that of the direct effect of perceived health on IADL for both men and women (men=.1156; women=.2221). While a direct effect of perceived health on IADL is expected and the magnitude of the effect anticipated, the indirect effect as mediated by actual support represents an unanticipated finding. Unanticipated, not because it is present but because of the observed magnitude and relative importance in the models for both men and women. Rather than the indirect effects being an extension of the direct effect, their magnitudes suggest that they both complement each other particularly in terms of providing distinct interpretations of the processes involved. This means that the perception of health, in terms of the evaluation of general wellbeing and actual physical condition, directly influences the reporting of functional ability levels. Furthermore, the perception of health is associated with the provision of support, based on perceived or actual need, resulting in reports of particular levels of functioning. This contrast exemplifies the bond between the person and the environment. Not only does a personal competence factor determine the behavioral outcome independently but, simultaneously the interaction of a personal and environmental press factor operate to influence the same behavior.

Living Arrangement: As with perceived health, the direct effect of living arrangement on IADL is similar in terms of its relative importance in the respective models for men and women. The relationship suggests that those living alone tend to report higher levels of functioning. The first-order indirect effects of living arrangement on IADL encompass accessibility and perceived support in both models. Only one second order indirect effect involving both mediating factors is observed for women. Referring to Tables 5.3 and 5.4, the total effect of living arrangement on IADL is comprised of direct and indirect effects for both men and women. In comparison to the direct effects, the magnitudes of the indirect effects are negligible and contribute little to the understanding of P-E transactions.

Actual Support: As previously noted, the direct effect of actual support on IADL represents the path of greatest relative importance in both models. While no indirect effects of actual support on IADL are observed in the men's model, first and second order paths are featured in the model for women. These indirect effects involve accessibility and perceived support, both of which exhibit particularly small coefficients. Again the interference of accessibility on the overall effect is observed.

In the women's model alone the difference in the direction of the direct (.7325) and indirect effects (-.0349) serves to diminish the magnitude of the total effect (.6976).

Accessibility: The direct effect of accessibility on IADL has received considerable attention and discussion in this section. While the relative importance of this path within each model is not substantial, it is the different direction of the relationship between the men's and women's models that is of most importance. As Table 5.3 and 5.4 demonstrate, the total effect for the men's model is composed of the direct effect of accessibility on IADL (.1341), whereas for women, the total effect (-.1228) consists of both direct (-.1048) and indirect (-.0180) effects. There is only one indirect effect of accessibility on IADL via perceived support in the women's model.

Perceived Support: The total effect of perceived support on IADL consists of a direct effects only in both models (Men=-.0886; Women=-.1699).

5.4 Summary of The Path Analysis

In summary, the findings of the path analysis demonstrate several interesting similarities and differences between genders in the P-E transactions related to IADL functioning. In addition, a number of hypothesized associations are not observed in the models. The most notable paths are highlighted in the following discussion of the results of the preceding analysis.

In general, the person-environment model provides a good fit to the data for both men and women. However, as indicated by the proportion of variance explained, the P-E paradigm provides a better fit for the women's model as compared to the model for men. Since several of the variables have particular relevance in the lives of older women, this difference in the proportion of variance explained(i.e. R^2) across the models is not unexpected. It is interesting to note that while the men's model contains fewer significant paths than the women's, of the paths present, the magnitude of the coefficients leading to IADL are larger in the model for men. This suggests that while the P-E paradigm is equally applicable to the study of IADL functioning for both older men and women, the process by which the personal competence and environmental factors transact differs across gender.

Briefly, a comparison of the direct effects on IADL reveals similarities in terms of the path coefficients present in both models. While the literature suggests that income levels may influence IADL functioning, a path is not observed between the two variables in either model. In addition, the residential location of the respondents was expected to influence their level of independence. Although a direct path between residential location and IADL functioning is absent in both models, the influence of physical setting is observed through the mediating factors of accessibility and social support variables. The direct effect of age on IADL was considered an important path within the model. However, while its influence as a direct effect was minimal or nonexistent in the case of the women's model, the indirect effects demonstrate a complex association with IADL. The extent of these transactions between age and other variables in the model is more pronounced for women than for men. For women, the effect of age on IADL is mediated by the primary variables of income, perceived health and actual support.

The direct effects of other personal competence and environmental press factors on IADL observed in the models include perceived health, living arrangement, actual support received,

accessibility and perceived support. In general, these effects are greater in the model for men as compared to women. For the most part, these paths suggest that reporting more positive subjective health evaluations, living alone, being self-reliant and/or receiving minimal support from spouse or closest family, having no transportation problems and relying on formal assistance in crisis are associated with higher levels of independence in IADL functioning.

One notable difference between the models is the direction of the path of accessibility on IADL. The women's model exhibits a negative relationship indicating that those with transportation problems tend to evaluate their functioning as relatively independent. This relationship may be explained by the life long transportation disadvantaged status of women and the consequent development of adaptive means of maintaining independence despite accessibility limitations.

A number of outstanding differences are demonstrated across the models in terms of the remaining paths. As previously indicated, there are considerably more paths in the model for women as compared to men. Those hypothesized paths that are not observed in either model or are absent in the model for men, are identified and possible reasons for their absence are discussed.

The direct effects on perceived support include accessibility, residential location and income for women only and living arrangement for both men and women. The coefficients associated with these paths are small (ranging from .0444 to .1804) and each is the hypothesized direction. In both models, paths from age, perceived health and actual support are not observed. Of these paths, the absence of the coefficient between actual and perceived support is worthy of comment. The literature suggests that the receipt of supportive assistance, if judged satisfactory, leads to a sense of security in knowing that needs will be met in a crisis. While this observation is not supported in this study, it is important to acknowledge that the majority of respondents reported having someone to turn to in emergency situations.

More paths leading to accessibility are observed in the model for women as compared to the men's model. While actual support, living arrangement, perceived health and residential location are directly associated with accessibility for women, only the living arrangement and perceived health coefficients are present for men. While significant, the magnitudes of the coefficients are relatively small for both men and women. Comparing across the models, however, it is observed that the coefficients between these variables are somewhat larger and more significant in the model for women. Only the residential location and accessibility relationship is opposite to that hypothesized in the literature. The direction of this path suggests that rural women tend to have fewer accessibility problems than their urban counterparts. This relationship is not observed for men, perhaps because men tend to be drivers and very mobile in either setting. They are therefore, less likely to experience a transportation problem as a consequence. Neither age nor income are directly related to accessibility and are absent in both models. It was hypothesized that those in the lower income brackets and older age groups would most likely experience transportation difficulties. These hypothesized relationships are borne out in the indirect effects on accessibility.

In the models for men and women, perceived health and age exhibit direct effects on actual support. These paths are consistent with the direction hypothesized and are stronger for women than men. In particular, the perceived health and actual support relationship in the women's model is twice that of men. This indicates that not only is health a more salient issue in women's receipt of support, but that they are also likely to get that support from a more diverse support network. The direct effects of living arrangement, residential location and income on actual support are not present in either model. While it was hypothesized that living with someone in a rural environment and having lower incomes was associated with informal support received, the absence of these paths may be due to the large number of respondents reporting a high degree of

self-reliance. It may also be due in part to the ambiguous coding of living arrangement and problematic operationalization of the rural-urban dichotomy in the original survey.

The direct effect of income on living arrangement is the only path leading to this environmental press variable in the model for women. The path is very small and suggests that those with higher incomes are likely to be living with someone. There are no direct effects on living arrangement in the model for men indicating that few factors affect that aspect of men's lives. Since men tend to be married it is common sense that they most often cohabitate with their spouse over the lifecycle.

The effects of perceived health, residential location and age on living arrangement are not observed in the women's model. While the literature suggests that increasing age is associated with living with someone, the absence of the path may be due to the previously noted ambiguity in the operationalization of living arrangement. A distinction between living with a spouse and living with someone else may be necessary in order to fully capture the relationship between the two variables. These hypothesized effects are evident in the indirect effects on living arrangement.

Of the three possible direct effects on perceived health, only residential location is associated in the men's model, while age and residential location exhibit a direct effect in the model for women. As indicated in the literature, rural inhabitants tend to score better on subjective indicators of wellbeing than their urban counterparts. Age and perceived health may only appear in the women's model because women's health is a more salient factor in their lives. Women are socialized to and may have more opportunities to be aware of their health and bodies. This difference between men and women is liable to continue into old age when one's health deteriorates with increasing age due to more chronic illness. The literature suggests that income influences optimism in subjective evaluations of health. However, this hypothesized relationship is not

observed in either model. Perhaps a measure of income adequacy, insofaras the objective level of income meets needs, may provide a more accurate indicator of perceived health.

Neither of the personal competence variables of income or age is associated with residential location in both models. The absence of these paths is not problemmatic in that residential location is a contextual factor in the model. That is, whether individuals live in urban or rural settings has implications for the other variables and associations in the models.

Finally, the direct effect of age on income is observed only in the model for women. This indicates that the implications of growing older in terms of financial status are greater for women than men. Although the coefficient is small, the path suggests that with increasing age, income levels tends to be lower.

In terms of the relative importance of each path within the respective models, actual support and IADL represent the largest effects in both the models. For men, age and IADL represents the smallest path, while in the model for women, perceived support on IADL exhibits the path of least relative importance. Both the smallest and largest relative effects involve associations with the dependent variable.

The remainder of the direct paths within the models range in magnitude from .1048 to .3748 for women and .1341 to .2134 for men. These coefficients demonstrate a wider range in the magnitude of the paths in the women's model. This observation may be due to the greater number of paths that are observed in the model for women as compared to the model for men.

A consequence of the different number of direct paths within the two models is the difference in the number of indirect paths. The most notable indirect effects in terms of relative magnitude, involve the path of age and IADL via actual support. This relationship is observed in both models and implies that with increasing age, actual support is received and IADL functioning is lower. This suggests that with increasing age there is a higher degree of dependence in routine

tasks. The second notable indirect effect based on size of the coefficient, is the effect of perceived health on IADL as mediated through actual support. This relationship suggests that higher self-reported health ratings are associated with self-reliance or minimal support from intimate support sources and relative independence in IADL functioning.

The majority of indirect effects involve the age and IADL relationship in the model for women. Within this model, three variables act as pivotal factors in all of the indirect effects. These factors include actual support, perceived health and income. In addition, all the second and third order indirect effects of age on IADL are channelled first through these factors and in turn directed through living arrangement, accessibility and perceived support. While the majority of these paths are small, relative to those discussed above, they are substantively sound. Finally, the difference in the number of indirect effects involving age and IADL demonstrates that this relationship is more complex for women than for men.

An interesting contrast between the models involves the role of accessibility in the model for women. It is observed that the direction of the relationships on IADL involving accessibility are changed. The indirect effect of actual support on perceived support via accessibility is recurrent throughout the present analysis. It has proven to be an essential element in the environmental processes operating within the women's model as well as a dynamic factor influenced by and mediating the effects of personal competence factors on IADL.

In conclusion, the findings of the path analysis suggest that the person-environment paradigm has utility in enhancing the understanding of the social processes associated with adaptive functional ability. The paradigm also indicates that different person-environment processes may exist for men and women in terms of their maintenance of independence in community functioning. Further analysis of the two models is required, however, before it can be concluded which differences between men and women are generalizable to the population of those over age 65. The implications of this study for the sociology of aging are discussed in the following chapter.

Chapter VI

CONCLUSION: THE P-E PARADIGM AND IADL FUNCTIONING.

This study contends that the application of the person-environment transactions paradigm to social gerontological phenomenon contributes to the understanding of the processes involved in growing older. In doing so, the study develops conceptual and empirical notions that to date have been insufficiently examined in aging and environment research. The first notion includes the utility of addressing the environment as a multidimensional construct incorporating both physical and social characteristics. Second, by superimposing the ecological equation of B=f(P,E,PxE) on the social gerontological variables, the study addresses the need for further understanding of the causal relationships between these variables. The study examines the direct effects of personal competence and environmental press variables on the behavioral outcome of adaptive functional ability. Also, it investigates the effect of transactions between and among these variables as they act to influence functional ability. Finally, the study incorporates the concept of gender as a contextual factor that structures and defines the direct and transactional (indirect) processes operating on functional ability.

The environment encompassing the individual provides both resources and obstacles for the adapting older individual. The social environment, involving the supportive network of the individual, contains resources that can be mobilized when assistance is required to maintain reasonable independence in functioning. In most social gerontological research, this aspect of the environment is considered. To the contrary, the physical environment is often overlooked. The importance of the physical environment in the study of adaptive functional ability is that it pro-

vides a geographical or spatial context that inevitably structures or influences the P-E direct effects and transactions as they relate to IADL functioning. As the models demonstrate, the presses within each aspect of the environment play an important role in the adaptive processes resulting in functional ability.

The processes denoted in the ecological equation are manifest in the models for men and women. Such a holistic approach to the study of the interrelationships of common social gerontological variables enhances the understanding of the process involved in growing old and maintaining independence within the community. This approach is also beneficial in demonstrating the different experiences and adaptive strategies characteristic of men and women in their successful performance of routine tasks.

The study verifies that gender is an important contextual factor influencing behavior of older men and women. This observation suggests that future research can not be content with an investigation of the aging process per se. Rather, as this study indicates, the process of maintaining independence while growing old is complex and different for various subgroups of the elderly population. The sociology of aging would benefit from research that examines the variables that contextualize these processes such as age, marital status and residential location.

This study also illustrates that the degree of chronic illness is not the sole determinant of functional ability. The study suggests that there are other factors that contribute to the subjective evaluation of independence in functioning. Furthermore, these other factors may help explain why individuals with similar chronic disease profiles have different levels of functional ability. The P-E paradigm as applied to this dilemma, indicates that the variations in behavior may be due to personal competence factors or environmental presses and/or a combination of these factors. As previously mentioned, these variations in the processes influencing behavior are different for men and women. The study indicates that the processes are more complex for women than for

men. That is, the women's model exhibits more transaction between and among the P-E factors, in addition to the direct effects on functional ability. This observation suggests that the different realities of older men and women are essential components in any investigation of behavior in old age.

Certain limitations in this study suggest a number of considerations for future research on adaptive functional ability. Additional proposals for further study are discussed under the domains of adaptive functional ability, personal competence and environmental press.

6.1 Adaptive Functional Ability

Studies of older individuals, often encounter response bias. That is, those who participate in the study are the most likely to consent to an interview. The result of this bias is a sample of the healthier, better educated individuals in the elderly population. Such a bias is evident in this study, since a high proportion of the respondents are relatively independent in IADL functioning. In order to tap finer distinctions in the level of independence among these individuals, future research may consider the creation of a more detailed set of response categories along the independent-dependent continuum. These categories may include the use of assistive devices, the experience of pain or exhaustion during task performance, and the available opportunities associated with each task.

Additional refinements to the IADL functioning scales for community elderly might include separate measures for indoor and outdoor tasks. Since levels of independence tend to vary between the two settings with increasing age, differences in levels of independence may be demonstrated that otherwise would have been obscured in combined measurement tools. Furthermore, such a distinction in tasks may indicate different direct and indirect processes operating on IADL functioning.

6.2 Personal Competence Variables

This study suggests that the age and IADL functioning relationship is important and complex. This complexity indicates that age is a contextual variable that has implications for the person-environment processes operating on functional ability. Given this, differences in the P-E processes across age and gender seem likely. An investigation of this hypothesis may be a possible by estimating at least four separate models including old women, old-old women, old men and old-old men. However, in order to perform statistical procedures on each subgroup, a large sample size would be required.

While the study does not enhance the understanding of gender differences in self-reported health ratings, it does suggest that the role of perceived health in the P-E process varies by gender. Perceived health has more prominence and importance in the model for women than men. This observation suggests that the perceived health evaluations of women are associated with many other factors in their lives. This observation is consistent with the literature that suggests women have been socialized to consider health a salient characteristic.

Future research using perceived health as a personal competence factor should consider the underlying dimensions of the variable. That is, the two different dimensions of physical condition or subjective evaluation of general wellbeing may play dissimilar roles within the P-E process as it relates to IADL.

6.3 Environmental Press Factors

This study did not include marital status as a variable within the conceptual model because a portion of its effect was assumed to be captured by the living arrangement category, 'living with others'. While the implications of marital status were incorporated into the interpretations of the findings, the influence of this variable on the processes requires further investigation. The P-E

processes may vary between married and non-married men and women. This variation would be evident in a comparison of four models organized on the conceptual factors of age and marital status.

Given the importance of the social support variables in the models, additional consideration of the objective and subjective aspects of support may enhance the understanding of functional ability. A variety of social support indicators are available. These include the frequency of contact, the size and density of the support network, and the frequency of support provided. While these measure the objective dimension of social support, the indicators of satisfaction with the frequency of contact or with type and amount of support provided represent the subjective aspect. A comparison of these various indicators may result in the identification of those most influential on the P-E process and on functional ability.

As discussed throughout the study, the original operationalization of the urban-rural dichotomy may have effected the influence of residential location on the P-E process. Future research should pay particular attention to the boundaries of rural settings in order to exclude those small towns that have a considerable urban influence.

Finally, the study highlights the effect of transportation on functional ability. However, the role of transportation in the ability to remain functionally independent has not received sufficient empirical investigation. For example, the various causes of transportation problems may exhibit different effects on IADL functioning and may involve different adaptive strategies. Hence, transportation research involving functional ability should consider chronic limitations/ disabilities, income and physical barriers as potential causes of accessibility difficulties.

6.4 Conclusion

This study demonstrates the utility of the person-environment paradigm for the sociology of aging. The paradigm provides a framework for which the processes influencing one behaviour, functional ability, can be interpreted. Most importantly, the study shows that the P-E processes are in part determined by gender. In doing so, this study verifies that the life courses of men and women do indeed present dissimilar opportunities and obstacles in old age and that these experiences influence their adaptive functional abilities.

Appendix A

THE DECOMPOSITION OF BIVARIATE CORRELATIONS BETWEEN THE VARIABLES.

Table A.1: Detailed Calculations for the Decomposition of the Bivariate Correlations Between the Variables in the Model.

			Women	Men
r_{12}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000
r_{13}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000
r_{14}	Direct Effects:	$p_{41}r_{11}$	-.2615	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000
r_{15}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{52}p_{21}r_{11}$	-.0692	.0000
	Noncausal Component:		.0000	.0000
r_{16}	Direct Effects:	$p_{61}r_{11}$	-.4809	-.4357
	Indirect Effects:	$p_{64}p_{41}r_{11}$	-.0793	.0000
	Noncausal Component:		.0000	.0000
r_{17}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{74}p_{41}r_{11}$	-.0740	.0000
		$p_{75}p_{52}p_{21}r_{11}$	-.0125	.0000
		$p_{76}p_{61}r_{11}$	-.1370	.0000
		$p_{76}p_{64}p_{41}r_{11}$	-.0226	.0000
	Noncausal Component:		.0000	.0000
r_{18}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{82}p_{21}r_{11}$	.0857	.0000
		$p_{85}p_{52}p_{21}r_{11}$	-.0203	.0000
		$p_{87}p_{74}p_{41}r_{11}$	-.0150	.0000
		$p_{87}p_{75}p_{52}p_{21}r_{11}$	-.0025	.0000
		$p_{87}p_{76}p_{61}r_{11}$	-.0278	.0000
		$p_{87}p_{76}p_{64}p_{41}r_{11}$	-.0046	.0000
	Noncausal Component:		.0000	.0000
r_{19}	Direct Effects:	$p_{91}r_{11}$	.0000	-.1008
	Indirect Effects:	$p_{94}p_{41}r_{11}$	-.0603	.0000
		$p_{95}p_{52}p_{21}r_{11}$	.0102	.0000
		$p_{96}p_{61}r_{11}$	-.3523	-.3103
		$p_{96}p_{64}p_{41}r_{11}$	-.0581	.0000
		$p_{97}p_{74}p_{41}r_{11}$	.0078	.0000
		$p_{97}p_{75}p_{52}p_{21}r_{11}$	.0013	.0000
		$p_{97}p_{76}p_{61}r_{11}$	.0144	.0000
		$p_{97}p_{76}p_{64}p_{41}r_{11}$	.0024	.0000
		$p_{98}p_{82}p_{21}r_{11}$	-.0076	.0000
		$p_{98}p_{85}p_{52}p_{21}r_{11}$	.0018	.0000
		$p_{98}p_{87}p_{74}p_{41}r_{11}$	.0013	.0000
		$p_{98}p_{87}p_{75}p_{52}p_{21}r_{11}$	.0002	.0000
		$p_{98}p_{87}p_{76}p_{61}r_{11}$	.0025	.0000
		$p_{98}p_{87}p_{76}p_{64}p_{41}r_{11}$	.0004	.0000
	Noncausal Component:		.0000	.0000
r_{23}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000

Table A.1: continued...

			WOMEN	MEN
r_{24}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{41}p_{21}r_{11}$	.0980	.0000
r_{25}	Direct Effects:	$p_{52}r_{22}$	.1846	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000
r_{26}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{64}p_{41}p_{21}r_{11}$	.0297	.0000
		$p_{61}p_{21}r_{11}$	.1802	.0000
r_{27}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{75}p_{52}r_{22}$	.0333	.0000
	Noncausal Component:	$p_{74}p_{41}p_{21}r_{11}$	.0277	.0000
		$p_{76}p_{64}p_{41}p_{21}r_{11}$	.0085	.0000
		$p_{76}p_{61}p_{21}r_{11}$	.0513	.0000
r_{28}	Direct Effects:	$p_{82}r_{22}$	-.2286	.0000
	Indirect Effects:	$p_{85}p_{52}r_{22}$	.0542	.0000
		$p_{87}p_{75}p_{52}r_{22}$	.0068	.0000
	Noncausal Component:	$p_{87}p_{74}p_{41}p_{21}r_{11}$	.0056	.0000
		$p_{87}p_{76}p_{64}p_{41}p_{21}r_{11}$	.0017	.0000
		$p_{87}p_{76}p_{61}p_{21}r_{11}$	.0104	.0000
r_{29}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{95}p_{52}r_{22}$	-.0272	.0000
		$p_{97}p_{75}p_{52}r_{22}$	-.0035	.0000
		$p_{98}p_{82}r_{22}$	.0203	.0000
		$p_{98}p_{85}p_{52}r_{22}$	-.0048	.0000
		$p_{98}p_{87}p_{75}p_{52}r_{22}$	-.0006	.0000
	Noncausal Component:	$p_{94}p_{41}p_{21}r_{11}$	.0226	.0000
		$p_{96}p_{64}p_{41}p_{21}r_{11}$	.0218	.0000
		$p_{96}p_{61}p_{21}r_{11}$	.1320	.0000
		$p_{97}p_{74}p_{41}p_{21}r_{11}$	-.0029	.0000
		$p_{97}p_{76}p_{61}p_{21}r_{11}$	-.0054	.0000
		$p_{98}p_{87}p_{74}p_{41}p_{21}r_{11}$	-.0005	.0000
		$p_{98}p_{87}p_{76}p_{64}p_{41}p_{21}r_{11}$	-.0002	.0000
		$p_{98}p_{87}p_{76}p_{61}p_{21}r_{11}$	-.0009	.0000
r_{34}	Direct Effects:	$p_{43}r_{33}$	.1626	.1714
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000
r_{35}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:		.0000	.0000
r_{36}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{64}p_{43}r_{33}$	.0493	.0278
	Noncausal Component:		.0000	.0000
r_{37}	Direct Effects:	$p_{73}r_{33}$	-.1464	.0000
	Indirect Effects:	$p_{74}p_{43}r_{33}$	.0459	.0366
		$p_{76}p_{64}p_{43}r_{33}$	.0140	.0000
	Noncausal Component:		.0000	.0000

Table A.1: continued...

			WOMEN	MEN
r_{38}	Direct Effects:	$p_{83}r_{33}$	.2018	.0000
	Indirect Effects:	$p_{87}p_{73}r_{33}$	-.0298	.0000
		$p_{87}p_{74}p_{43}r_{33}$	.0094	.0000
		$p_{87}p_{76}p_{64}p_{43}r_{33}$	.0029	.0000
	Noncausal Component:		.0000	.0000
r_{39}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{94}p_{43}r_{33}$	.0375	.0299
		$p_{96}p_{64}p_{43}r_{33}$	.0361	.0198
		$p_{97}p_{73}r_{33}$	.0153	.0000
		$p_{97}p_{74}p_{43}r_{33}$	-.0048	.0049
		$p_{97}p_{76}p_{64}p_{43}r_{33}$	-.0015	.0000
		$p_{98}p_{83}r_{33}$	-.0179	.0000
		$p_{98}p_{87}p_{73}r_{33}$	.0026	.0000
		$p_{98}p_{87}p_{74}p_{43}r_{33}$	-.0008	.0000
		$p_{98}p_{87}p_{76}p_{64}p_{43}r_{33}$	-.0003	.0000
	Noncausal Component:		.0000	.0000
r_{45}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{52}p_{41}p_{21}r_{11}$	.0181	.0000
r_{46}	Direct Effects:	$p_{64}r_{44}$	.3032	.1623
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{61}p_{41}r_{11}$	.1258	.0000
r_{47}	Direct Effects:	$p_{74}r_{44}$	.2828	.2134
	Indirect Effects:	$p_{76}p_{64}r_{44}$	.0864	.0000
	Noncausal Component:	$p_{75}p_{52}p_{41}p_{21}r_{11}$	.0033	.0000
		$p_{76}p_{61}p_{41}r_{11}$	.0358	.0000
		$p_{73}p_{43}r_{33}$	-.0238	.0000
r_{48}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{87}p_{74}r_{44}$	.0575	.0000
		$p_{87}p_{76}p_{64}r_{44}$	.0176	.0000
	Noncausal Component:	$p_{85}p_{52}p_{41}p_{21}r_{11}$	.0053	.0000
		$p_{87}p_{75}p_{52}p_{41}p_{21}r_{11}$	.0007	.0000
		$p_{87}p_{76}p_{61}p_{41}r_{11}$	.0073	.0000
		$p_{87}p_{73}p_{43}r_{33}$	-.0048	.0000
		$p_{82}p_{41}p_{21}r_{11}$	-.0224	.0000
		$p_{83}p_{43}r_{33}$	.0328	.0000
r_{49}	Direct Effects:	$p_{94}r_{44}$	.2307	.1749
	Indirect Effects:	$p_{96}p_{64}r_{44}$	.2221	.1156
		$p_{97}p_{74}r_{44}$	-.0296	.0286
		$p_{97}p_{76}p_{64}r_{44}$	-.0091	.0000
		$p_{98}p_{87}p_{74}r_{44}$	-.0051	.0000
		$p_{98}p_{87}p_{76}p_{64}r_{44}$	-.0016	.0000
	Noncausal Component:	$p_{95}p_{52}p_{41}p_{21}r_{11}$	-.0027	.0000
		$p_{96}p_{61}p_{41}r_{11}$	.0921	.0000
		$p_{97}p_{75}p_{52}p_{41}p_{21}r_{11}$	-.0003	.0000
		$p_{97}p_{76}p_{61}p_{41}r_{11}$	-.0038	.0000
		$p_{97}p_{73}p_{43}r_{33}$	.0025	.0000
		$p_{98}p_{85}p_{52}p_{41}p_{21}r_{11}$	-.0005	.0000
		$p_{98}p_{87}p_{75}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000

Table A.1: continued...

			WOMEN	MEN
r_{49}	Noncausal Component	$p_{98}p_{87}p_{76}p_{61}p_{41}r_{11}$	-.0007	.0000
		$p_{98}p_{87}p_{73}p_{43}r_{33}$	.0004	.0000
		$p_{98}p_{82}p_{41}p_{21}r_{11}$	.0019	.0000
		$p_{98}p_{83}p_{43}r_{33}$	-.0029	.0000
r_{56}	Direct Effects:		.0000	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{61}p_{52}p_{21}r_{11}$	.0333	.0000
		$p_{64}p_{52}p_{41}p_{21}r_{11}$	.0055	.0000
r_{57}	Direct Effects:	$p_{75}r_{55}$	.1802	.1962
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{76}p_{61}p_{52}p_{21}r_{11}$	.0095	.0000
		$p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0016	.0000
		$p_{74}p_{52}p_{41}p_{21}r_{11}$	.0051	.0000
r_{58}	Direct Effects:	$p_{85}r_{55}$	.2935	.1873
	Indirect Effects:	$p_{87}p_{75}r_{55}$	.0366	.0000
	Noncausal Component:	$p_{87}p_{76}p_{61}p_{52}p_{21}r_{11}$	.0019	.0000
		$p_{87}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0003	.0000
		$p_{87}p_{74}p_{52}p_{41}p_{21}r_{11}$	.0010	.0000
		$p_{82}p_{52}r_{22}$	-.0422	.0000
r_{59}	Direct Effects:	$p_{95}r_{55}$	-.1475	-.1645
	Indirect Effects:	$p_{97}p_{75}r_{55}$	-.0189	.0263
		$p_{98}p_{85}r_{55}$	-.0260	-.0318
		$p_{98}p_{87}p_{75}r_{55}$	-.0033	.0000
	Noncausal Component:	$p_{96}p_{61}p_{52}p_{21}r_{11}$	.0244	.0000
		$p_{96}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0040	.0000
		$p_{97}p_{76}p_{61}p_{52}p_{21}r_{11}$	-.0010	.0000
		$p_{97}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0002	.0000
		$p_{97}p_{74}p_{52}p_{41}p_{21}r_{11}$	-.0005	.0000
		$p_{98}p_{87}p_{76}p_{61}p_{52}p_{21}r_{11}$	-.0002	.0000
		$p_{98}p_{87}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0000	.0000
		$p_{98}p_{87}p_{74}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000
		$p_{98}p_{82}p_{52}r_{22}$	.0037	.0000
		$p_{94}p_{52}p_{41}p_{21}r_{11}$	.0042	.0000
r_{67}	Direct Effects:	$p_{76}r_{66}$	.2848	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{73}p_{64}p_{43}r_{33}$	-.0072	.0000
		$p_{74}p_{64}r_{44}$	.0858	.0346
		$p_{74}p_{61}p_{41}r_{11}$	.0356	.0000
		$p_{75}p_{61}p_{52}p_{21}r_{11}$	.0059	.0000
		$p_{75}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0010	.0000
r_{68}	Direct Effects:		.0000	.0000
	Indirect Effects:	$p_{87}p_{76}r_{66}$	.0579	.0000

Table A.1: continued...

			WOMEN	MEN
r_{68}	Noncausal Component:	$p_{87}p_{73}p_{64}p_{43}r_{33}$	-.0015	.0000
		$p_{87}p_{74}p_{64}r_{44}$	.0174	.0000
		$p_{87}p_{74}p_{61}p_{41}r_{11}$	.0072	.0000
		$p_{87}p_{75}p_{61}p_{52}p_{21}r_{11}$	.0012	.0000
		$p_{87}p_{75}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0002	.0000
		$p_{82}p_{64}p_{41}p_{21}r_{11}$	-.0068	.0000
		$p_{82}p_{61}p_{21}r_{11}$	-.0412	.0000
		$p_{83}p_{64}p_{43}r_{33}$	.0099	.0000
		$p_{85}p_{61}p_{52}p_{21}r_{11}$	.0098	.0000
		$p_{85}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0016	.0000
r_{69}	Direct Effects:	$p_{96}r_{66}$	.7325	.7121
	Indirect Effects:	$p_{97}p_{76}r_{66}$	-.0299	.0000
		$p_{98}p_{87}p_{76}r_{66}$	-.0051	.0000
	Noncausal Component:	$p_{97}p_{73}p_{64}p_{43}r_{33}$	.0008	.0000
		$p_{97}p_{74}p_{64}r_{44}$	-.0090	.0046
		$p_{97}p_{74}p_{61}p_{41}r_{11}$	-.0037	.0000
		$p_{97}p_{75}p_{61}p_{52}p_{21}r_{11}$	-.0006	.0000
		$p_{97}p_{75}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000
		$p_{98}p_{87}p_{73}p_{64}p_{43}r_{33}$	.0001	.0000
		$p_{98}p_{87}p_{74}p_{64}r_{44}$	-.0015	.0000
		$p_{98}p_{87}p_{74}p_{61}p_{41}r_{11}$	-.0006	.0000
		$p_{98}p_{87}p_{75}p_{61}p_{52}p_{21}r_{11}$	-.0001	.0000
		$p_{98}p_{87}p_{75}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0000	.0000
		$p_{98}p_{82}p_{64}p_{41}p_{21}r_{11}$	.0006	.0000
		$p_{98}p_{82}p_{61}p_{21}r_{11}$	.0037	.0000
		$p_{98}p_{83}p_{64}p_{43}r_{33}$	-.0009	.0000
		$p_{98}p_{85}p_{61}p_{52}p_{21}r_{11}$	-.0009	.0000
		$p_{98}p_{85}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000
		$p_{91}p_{61}r_{11}$	.0000	.0439
		$p_{94}p_{64}r_{44}$	.0699	.0284
		$p_{94}p_{61}p_{41}r_{11}$	.0290	.0000
		$p_{95}p_{61}p_{52}p_{21}r_{11}$	-.0049	.0000
		$p_{95}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0008	.0000
r_{78}	Direct Effects:	$p_{87}r_{77}$	.2033	.0000
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{82}p_{74}p_{41}p_{21}r_{11}$	-.0063	.0000
		$p_{82}p_{75}p_{52}r_{22}$	-.0076	.0000
		$p_{82}p_{76}p_{64}p_{41}p_{21}r_{11}$	-.0019	.0000
		$p_{82}p_{76}p_{61}p_{21}r_{11}$	-.0117	.0000
		$p_{83}p_{73}r_{33}$	-.0295	.0000
		$p_{83}p_{74}p_{43}r_{33}$	.0093	.0000
		$p_{83}p_{76}p_{64}p_{43}r_{33}$	.0028	.0000
		$p_{85}p_{75}r_{55}$	.0529	.0368
		$p_{85}p_{76}p_{61}p_{52}p_{21}r_{11}$	.0028	.0000
		$p_{85}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0005	.0000
		$p_{85}p_{74}p_{52}p_{41}p_{21}r_{11}$	.0015	.0000
r_{79}	Direct Effects:	$p_{97}r_{77}$	-.1048	.1341
	Indirect Effects:	$p_{98}p_{87}r_{77}$	-.0180	.0000

Table A.1: continued...

			WOMEN	MEN
r_{79}	Noncausal Component:	$p_{98}p_{82}p_{74}p_{41}p_{21}r_{11}$	.0006	.0000
		$p_{98}p_{82}p_{75}p_{52}r_{22}$	.0007	.0000
		$p_{98}p_{82}p_{76}p_{64}p_{41}p_{21}r_{11}$	.0002	.0000
		$p_{98}p_{82}p_{76}p_{61}p_{21}r_{11}$	.0010	.0000
		$p_{98}p_{83}p_{73}r_{33}$	.0026	.0000
		$p_{98}p_{83}p_{74}p_{43}r_{33}$	-.0008	.0000
		$p_{98}p_{83}p_{76}p_{64}p_{43}r_{33}$	-.0003	.0000
		$p_{98}p_{85}p_{75}r_{55}$	-.0047	-.0062
		$p_{98}p_{85}p_{76}p_{61}p_{52}p_{21}r_{11}$	-.0003	.0000
		$p_{98}p_{85}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0000	.0000
		$p_{98}p_{85}p_{74}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000
		$p_{94}p_{74}r_{44}$	.0652	.0373
		$p_{94}p_{75}p_{52}p_{41}p_{21}r_{11}$	.0008	.0000
		$p_{94}p_{76}p_{64}r_{44}$	.0199	.0000
		$p_{94}p_{76}p_{61}p_{41}r_{11}$	.0083	.0000
		$p_{94}p_{73}p_{43}r_{33}$	-.0055	.0000
		$p_{95}p_{75}r_{55}$	-.0266	-.0323
		$p_{95}p_{76}p_{61}p_{52}p_{21}r_{11}$	-.0014	.0000
		$p_{95}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0002	.0000
		$p_{95}p_{74}p_{52}p_{41}p_{21}r_{11}$	-.0008	.0000
		$p_{96}p_{76}r_{66}$	.2086	.0000
		$p_{96}p_{73}p_{64}p_{43}r_{33}$	-.0053	.0000
		$p_{96}p_{74}p_{64}r_{44}$	.0628	.0247
		$p_{96}p_{74}p_{61}p_{41}r_{11}$	.0261	.0000
		$p_{96}p_{75}p_{61}p_{52}p_{21}r_{11}$	.0044	.0000
		$p_{96}p_{75}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0007	.0000
r_{89}	Direct Effects:	$p_{98}r_{88}$	-.0886	-.1699
	Indirect Effects:		.0000	.0000
	Noncausal Component:	$p_{94}p_{85}p_{52}p_{41}p_{21}r_{11}$	.0012	.0000
		$p_{94}p_{87}p_{74}r_{44}$	.0133	.0000
		$p_{94}p_{87}p_{75}p_{52}p_{41}p_{21}r_{11}$	.0002	.0000
		$p_{94}p_{87}p_{76}p_{64}r_{44}$	.0041	.0000
		$p_{94}p_{87}p_{76}p_{61}p_{41}r_{11}$	.0017	.0000
		$p_{94}p_{87}p_{73}p_{43}r_{33}$	-.0011	.0000
		$p_{94}p_{82}p_{41}p_{21}r_{11}$	-.0052	.0000
		$p_{94}p_{83}p_{43}r_{33}$	.0076	.0000
		$p_{95}p_{85}r_{55}$	-.0433	-.0308
		$p_{95}p_{87}p_{75}r_{55}$	-.0054	.0000
		$p_{95}p_{87}p_{76}p_{61}p_{52}p_{21}r_{11}$	-.0003	.0000
		$p_{95}p_{87}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000
		$p_{95}p_{87}p_{74}p_{52}p_{41}p_{21}r_{11}$	-.0002	.0000
		$p_{95}p_{82}p_{52}r_{22}$	-.0062	.0000
		$p_{96}p_{87}p_{76}r_{66}$	.0424	.0000
		$p_{96}p_{87}p_{73}p_{64}p_{43}r_{33}$	-.0011	.0000
		$p_{96}p_{87}p_{74}p_{64}r_{44}$	.0128	.0000
		$p_{96}p_{87}p_{74}p_{61}p_{41}r_{11}$	.0053	.0000
		$p_{96}p_{87}p_{75}p_{61}p_{52}p_{21}r_{11}$	.0009	.0000
		$p_{96}p_{87}p_{75}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0002	.0000
		$p_{96}p_{82}p_{64}p_{41}p_{21}r_{11}$	-.0049	.0000
		$p_{96}p_{82}p_{61}p_{21}r_{11}$	-.0302	.0000
		$p_{96}p_{83}p_{64}p_{43}r_{33}$	.0073	.0000

Table A.1: continued...

			WOMEN	MEN
r_{89}	Noncausal Component:	$p_{96}p_{85}p_{61}p_{52}p_{21}r_{11}$	.0072	.0000
		$p_{96}p_{85}p_{64}p_{52}p_{41}p_{21}r_{11}$	.0012	.0000
		$p_{97}p_{87}r_{77}$	-.0213	.0000
		$p_{97}p_{82}p_{74}p_{41}p_{21}r_{11}$	.0007	.0000
		$p_{97}p_{82}p_{75}p_{52}r_{22}$	.0008	.0000
		$p_{97}p_{82}p_{76}p_{64}p_{41}p_{21}r_{11}$	.0002	.0000
		$p_{97}p_{82}p_{76}p_{61}p_{21}r_{11}$	.0012	.0000
		$p_{97}p_{83}p_{73}r_{33}$	.0031	.0000
		$p_{97}p_{83}p_{74}p_{43}r_{33}$	-.0010	.0000
		$p_{97}p_{83}p_{76}p_{64}p_{43}r_{33}$	-.0003	.0000
		$p_{97}p_{85}p_{75}r_{55}$	-.0055	.0049
		$p_{97}p_{85}p_{76}p_{61}p_{52}p_{21}r_{11}$	-.0003	.0000
		$p_{97}p_{85}p_{76}p_{64}p_{52}p_{41}p_{21}r_{11}$	-.0001	.0000
		$p_{97}p_{85}p_{74}p_{52}p_{41}p_{21}r_{11}$	-.0002	.0000

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