The relationship between self-concept and locus of control and patterns of eating, exercise, and social participation in older adults

Alice G. Bonds
University of the Pacific

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THE RELATIONSHIP BETWEEN SELF-CONCEPT AND LOCUS OF CONTROL AND PATTERNS OF EATING, EXERCISE, AND SOCIAL PARTICIPATION IN OLDER ADULTS

A Dissertation
Presented to
the Faculty of the Graduate School
University of the Pacific

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Alice G. Bonds
May 1980
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This dissertation, written and submitted by

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Dated April 28, 1980
THE RELATIONSHIP BETWEEN SELF-CONCEPT AND LOCUS OF
CONTROL AND PATTERNS OF EATING, EXERCISE, AND
SOCIAL PARTICIPATION IN OLDER ADULTS

Abstract of the Dissertation

Purpose: Social scientists are increasingly engaged in trying to understand why among older adults may be vulnerable to the stresses which often accompany aging. One approach is to try to discover how behavior may suggest that psychological coping capacities are beginning to be threatened. This investigation was designed to extend knowledge of the relationships between two personality constructs, self-concept and locus of control, and three aspects of everyday behavior in older adults. The study question was: Is there a relationship between self-concept and locus of control and patterns of eating, exercise, and social participation in older adults living in the community. Fourteen personal characteristics were also included in the examination of relationships. Four hypotheses and two exploratory questions guided the investigation.

Procedures: A volunteer sample of sixty-nine women and thirty-one men, who ranged in age from 65 to 86 and who lived outside congregate care facilities, participated in this study. Three instruments were used to collect the data. The Total T score from the Tennessee Self-Concept Scale was used as the overall estimate of self-esteem. Locus of control was measured by the Internal/External Control scale. Information about personal characteristics and about eating, exercise, and social participation patterns was collected by means of the Interview Schedule developed by the investigator.

One-way analysis of variance, Pearson Product-Moment Correlation, and Chi Square were used to analyze the data.

Findings:

1. Of the four null hypotheses, only one was rejected. High self-concept and internal locus of control were significantly related in this sample.

2. High self-concept was not related to any of the seven identified eating patterns, to any of the four types of exercise examined, or to organizational participation. The only form of informal social interaction associated with high self-concept was telephoning friends.

3. Internal locus of control was significantly related to the number of hours of recreational exercise per week, to participation in organizations, to telephoning neighbors, and to visiting, inviting, or telephoning friends. There was no relationship with eating patterns.

4. When the association between personal characteristics and scores on the personality scales were tested, high self-concept was found to be significantly related to living alone, being older, and having excellent self-rated health and excellent self-rated appetite. Internal locus of control was related to being younger, to non-minority status, having assets in excess of $5,000, having a car and driver's license, having only one or two chronic health problems, having excellent self-rated physical mobility, excellent self-rated health, and excellent self-rated appetite.
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Chapter 1

THE PROBLEM AND DEFINITION OF TERMS USED

Introduction

The United States is experiencing a revolution in aging. In 1975 there were 22.4 million individuals 65 years of age and older in this country compared to 19.8 million just five years earlier. The population 65 and over has grown faster than the rest of the population; the 75+ group, for example, increased by 37.1 percent between 1960 and 1970.

This unprecedented state of affairs confronts the nation with providing a variety of education, health and social services for a group which has been able to command little attention previously. According to George L. Maddox, head of Duke University's Center for the Study of Aging and Human Development, the nation faces "an emerging mismatch between our institutional arrangements in this country and that demographic fact - a mismatch we have not


yet begun to come to terms with.\textsuperscript{3} To develop adequate programs requires greater knowledge of the processes and problems of aging and the way in which these should shape the provision of services. Biologists and social scientists continuously advance new theories related to aging, but to date there is no unified theory available to guide efforts to provide social intervention. To understand the nature of aging, Kuypers and Bengston propose the Social-Breakdown Syndrome.\textsuperscript{4} It is adapted from a theory first used to explain the development of mental disorders and is summarized as follows:

An individual's sense of self, his ability to mediate between self and society, and his orientation to personal mastery are functions of the kinds of social labeling and valuing that he experiences in aging. Further, we argue that the elderly are likely to be susceptible to, and dependent on, social labeling because of the nature of social reorganization in late life. That is, certain social conditions in the normal courses of aging-role loss, vague or inappropriate normative information, and lack of reference groups — deprive the individual of feedback concerning who he is, what roles and behavior he can perform and in general, what value he is to his social world. This feedback vacuum creates a vulnerability to, and dependence on, stereotyped negative messages to elderly as useless and obsolete. Eventual consequences to this social labeling as incompetent are the internalization of the negative self-view and the loss of psychological equipment to cope with the environment.


This theory suggests, then, that an older person's self-concept and whether or not he feels he has some control over his own life are among the critical determinants of his behavior and thus his ability to cope with his environment. According to this view, self-concept and locus of control would be important in understanding behavior of older adults. For purposes of the study "older adults" are those 65 or over. This dividing line was selected because of its association in our society with retirement and eligibility for full Social Security benefits.\(^5\)

Other researchers in the field of aging concur in the role of self-concept and locus of control in trying to understand patterns of adjustment in old age, and there is evidence which finds that internality is associated with adjustment, satisfaction, positive self-concept and maintenance of activity.\(^6\)

In his review of research on self-concept and age, Peters pointed out the need for research which correlates


attitudinal responses with behavioral measures since much research to that point drew inferences about behavior from subjective adjustment scales. In everyday life, can relationships between personality attributes and the ways older people choose to order their behavior be demonstrated?

The Problem

Statement of the Problem

This associative-descriptive study was designed to explore three aspects of the lifestyle of the elderly, namely, patterns of eating, exercise, and social participation and some of the factors which influence these behaviors. The question to be studied was stated as follows: Is there a relationship between self-concept and locus of control and patterns of eating, exercise, and social participation in older adults living in the community? The following personal characteristics of the sample were included in the examination of factors: age, sex, minority status, years in school, marital status, living situation, ownership of an automobile, possession of a valid driver's license, annual income, assets, self-rated health, number of chronic health problems, physical mobility, and self-rated appetite.

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Objectives of the Study

The following objectives were formulated for this study:

1. To identify the patterns of eating, exercise, and social participation of a sample of older adults living in the community.
2. To determine the locus of control and self-concept of individuals in the sample.
3. To investigate the relationship of locus of control to self-concept for this sample of older people.
4. To investigate the relationship between self-concept and locus of control to patterns of eating, exercise, and social participation.
5. To examine relationships between personal characteristics of the study participants and their scores on self-concept and locus of control measures.
6. To examine the relationship between personal characteristics of members of the sample and their eating, exercise, and social participation patterns.

To meet these objectives the following hypotheses were tested:

1. Self-concept will be associated with living situation and locus of control will be associated with living situation.
2. Internal locus of control will be associated with high self-concept.

3. Older adults with high self-concept will exhibit more consistent eating patterns, will exercise more, and will participate more frequently in activities outside the home than those with low self-concept.

4. Older adults with an internal locus of control will exhibit more consistent eating patterns, will exercise more and will participate more frequently in activities outside the home.

In addition, the study investigated the following questions:

1. Is there a relationship between the personal characteristics of the older individual and his eating, exercise, and social participation patterns?

2. Is there a relationship between the personal characteristics of the older individuals in the sample and self-concept and locus of control?

Significance of the Study

This study seeks to answer questions which may have significance for the following reasons:

1. If personality attributes of low self-concept and a sense of powerlessness are related to
behavior patterns which suggest lack of concern and care for the self, this knowledge will be of use to those working with older people whose goal is to prevent the kind of personal decline which too often ends in institutionalization.

2. Eating is an instrumental activity. While gerontologists have considerable information about the common nutritional deficiencies of older people, other aspects of eating behavior such as how frequently, at what hours, and with whom older people eat have been given less attention. This information could be useful to several professional groups working to improve the quality of life of older people.

3. It is generally agreed that physical aging brings reduced strength and energy which means that as people grow older they are less inclined to indulge in strenuous physical exertion. In addition, society may hold stereotypes of aging which have impeded efforts to find ways to encourage older people to continue to participate in physical activities, i.e., activities which could be conducive to maintenance of physical and mental health. Knowing more about what older
people are actually doing for exercise and what they might like to do will contribute additional information to a developing knowledge area.

4. Research findings on social participation of the elderly are often contradictory. Linking personality dimensions to social participation may add to the recent efforts which recognize that personality differences may help explain the apparent contradictions.

Description of the Study

Three instruments were used to gather data to meet the objectives proposed for this study. An Interview Schedule was developed to obtain information related to the personal characteristics of the study participants and to their eating, exercise, and social participation habits. (See Appendix A.) The Rotter Internal-External Control Scale and the Tennessee Self-Concept Scale were used to measure the personality variables selected for study.

These three instruments were administered to a sample of 100 men and women 65 years of age and older. Respondents for the study were recruited (1) through students enrolled in classes in the Human Services in two colleges in Sacramento, California, (2) through six senior organizations also in Sacramento, (3) through acquaintances, and (4) through study participants who referred
their friends. Men and women living in any type of board and care facility were not included as subjects because they are usually not free to make the kinds of choices about their living habits which this study tried to examine.

Assumptions and Limitations

Assumptions

From the beginning of the study assumptions were necessary. They included the following:

1. The research cited in the literature review which links the personality dimensions, self-concept and locus-of-control, to individual behavior is assumed to be sufficiently valid to provide the base for additional investigation.

2. Personality variables are not the only determinants of behavior. Personal characteristics such as age, income, health, and education also influence individual behavior.

3. The personality scales used accurately assess the selected personality dimensions in older individuals.

4. It is assumed that participants in the study responded to the Interview Questionnaire and to the personality scales as honestly as possible.
Limitations

The following limitations are relevant to this study:

1. Those inherent in gathering data from a volunteer rather than a randomly selected sample.

2. Those inherent in administering standardized personality scales in a way which makes allowances for possible communication problems resulting from sensory impairments of older subjects rather than as may have been prescribed by the test manuals.

3. Those inherent in the structure and scope of the Interview Schedule from which patterns of eating, exercise, and social participation were derived.

Definitions of Terms Used

Throughout the study the following definitions of terms have been used:

1. Eating Pattern: The configuration of meals and snacks which make up the daily intake of food of the study participants. A meal is made up of several foods eaten at the same time, while a snack is a portion of food eaten between meals to appease the appetite
Seven eating patterns were identified for use in this study.

a. Consistent pattern of three meals per day with no skipping of meals and no snacks.
b. Consistent pattern of two meals per day with no skipping of meals and no snacks.
c. Consistent pattern of one meal per day with no skipping of meals and no snacks.
d. Consistent pattern of three meals per day with occasional skipping of meals and including snacks.
e. Consistent pattern of two meals per day with occasional skipping of meals and including snacks.
f. Consistent pattern of one meal per day with occasional skipping of meals and including snacks.
g. Inconsistent eating behavior. No regularity in number of meals eaten per day. Skips meals four or more times per week. Substitutes snacks for meals four or more times per week.

2. Exercise Pattern: Configuration of physical activities requiring bodily exertion which

\[8\] Definition developed in consultation with Professor M. J. Kenny, Professor of Home Economics, California State University, Sacramento.
contribute to the maintenance or improvement of health and strength.⁹ For the purposes of this study, exercise was measured by summing (1) the total number of hours per week spent working in the house and yard, (2) the total number of hours per week spent walking, and (3) the total number of hours each week spent participating in selected recreational activities which require physical exertion.

3. **Interview Schedule:** The eight-page instrument designed to collect personal data and information about eating, exercise, and social participation from study participants.¹⁰

4. **Living Situation:** The family structure in which the respondent lived.¹¹

5. **Locus of Control:** Locus of control was defined as the subject's score on The Rotter Internal-External Control Scale. Rotter has defined locus of control in the following way:¹²

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¹⁰ Appendix A contains a copy of the Interview Schedule.


When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fact, as under the control of powerful others, or as unpredictable because of the great complexity of forces surrounding him...we have labeled this belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control.

Internal locus of control will be defined as the scores in the lowest third of the range while externals will be the top one-third of the scores.

6. **Older Adults:** Men and women 65 years of age or older living outside of congregate care facilities who volunteered to participate in the study.

7. **Personal Characteristics:** This term was defined as the variables from the Personal Data Section of the Interview Questionnaire: age, sex, education, marital status, living situation, financial status, health status, minority status, and transportation status.

8. **Self-concept:** The Total P Score, which reflects overall level of self-esteem, on the *Tennessee Self Concept Scale*, Counseling
Form, Computer Scored Edition. High Self Concept will be defined as the scores in the top one-third of the range, and low self concept will be the scores in the bottom third of the range.

9. Social Participation: Social participation was defined as having two components: organizational activity and social activity. Organizational activity was the sum of the number of meetings of formal voluntary associations such as churches, clubs and unions attended in a month. Social activity was the sum of the number of times in a typical week the respondent visited with neighbors, friends, or relatives in person or on the telephone, or had guests for dinner, cards, TV, et cetera.

Summary

The first chapter of this research report has (1) given an introduction to the theory on aging which suggested the focus of the study, (2) stated the problem, (3) suggested the significance of the study, (4) provided a brief description of the study, (5) stated the

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14 Ibid., p. 188.
assumptions and limitations, and (6) defined the relevant terms.

Four additional chapters comprise the remainder of the dissertation. Chapter 2 reviews the literature related to the study. Chapter 3 describes the research design and method used to collect the data. In Chapter 4 the findings of the study are presented and discussed. Chapter 5 concludes the study and consists of conclusions based on the data, recommendations for further study and a general summary of the study.
Chapter 2

REVIEW OF THE RELATED LITERATURE

This review of literature and research is divided into three parts. The first section reviews the findings related to the studies of the personality dimensions of self-concept and locus of control expectations in research with older adults. The second part examines results of the research on eating patterns, exercise patterns, and social participation patterns of men and women in their later years. Finally, the third section reviews the two standardized personality scales used in the study.

Personality Dimensions

Personality characteristics are widely recognized as powerful determinants of individual behavior. In this first section of the review, the literature on two aspects of personality in older adults, self-concept and locus of control, is presented. Self-concept is considered first. Research bearing upon self-concept and age, life circumstances, personal adjustment, and research using the Tennessee Self-Concept Scale is included. Literature and research pertaining to locus of control follows and incorporates a discussion of theoretical antecedents of the concept and research which relates locus of control to age, life
satisfaction, personal adjustment, and the influence of situational constraints.

**Self-Concept**

Central to this study is the construct self-concept. The self-concept, seen as the primary directional factor in personality and thus closely related to level of adjustment, is increasingly being studied as it relates to aging. Self-concept and self-perceptions of aged persons are viewed as responses to cultural and social definitions of age, changes in social environment, and psychological changes which occur with age.¹ It is regarded as an important variable in research on situations as perceived by the individual.² Further, according to Lowenthal, measuring of self-concept or self-image generally yields meaningful results in studies across the adult life course.³

In the literature on aging, self-concept often is used interchangeably with identity, self-esteem and ego strength. Before turning to a consideration of the studies

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on aging and self-concept, it seems useful to review the meaning of the construct as it is commonly defined. 4

Attributes of the self-concept. A recent reexamination of the concept by Epstein summarizes the characteristics which have been attributed to it. 5

1. It is a subsystem of internally consistent, hierarchically organized concepts contained within a broader conceptual system.

2. It contains different empirical selves, such as a body self, a spiritual self, and a social self.

3. It is a dynamic organization that changes with experience. It appears to seek out change and exhibits a tendency to assimilate increasing amounts of information, thereby manifesting something like a growth principle. As Hilgard (1949) noted, it is characterized more aptly as integrative than integrated.

4. It develops out of experience, particularly out of social interaction with significant others.

5. It is essential for the functioning of the individual that the organization of the self-concept be maintained. When the organization

4 Lowenthal, p. 119.

of the self-concept is threatened, the individual experiences anxiety, and attempts to defend himself against the threat. If the defense is unsuccessful, stress mounts and is followed ultimately by total disorganization.

6. There is a basic need for self-esteem which relates to all aspects of the self-system, and, in comparison to which, almost all other needs are subordinate.

7. The self-concept has at least two basic functions. First, it organizes the data of experience, particularly experience involving social interactions, into predictable sequences of action and reaction. Second, the self-concept facilitates attempts to fulfill needs while avoiding disapproval and anxiety.

In his 1971 review of the literature on aging and self-concept, Peters found that the available evidence suggested that as the person gets older his self-concept changes. He concluded that much of the literature indicated that these changes tended toward less positive self-views. It was frequently noted that the most well-adjusted among the aged were those who denied the fact that they were aging or old.

Not all gerontologists agree with Peters'
conclusions. As the following review of research on chronological age and self-concept indicates, findings are divided.

**Early studies (1953-1969).** In their 1953 study Lehner and Gunderson utilized a draw-a-person test to study self-image. They found that men tended to draw larger figures the older they got up to about thirty and then to draw smaller pictures. Women drew larger pictures to about age forty, and then they drew smaller pictures. Since the assumption is that in such pictures individuals project their self-image, it was inferred that these trends reflected trends in self-evaluation and that the picture was drawn larger until the individual sensed that he was past the prime of life.

In 1954 Tuckman and Lorge investigated classification of self as "young," "middle aged," or "old" in groups ranging in age from under twenty to eighty and over. Almost all persons under thirty classified themselves as young. The turning point to middle age was between forty and forty-four. Only in those over eighty did the majority

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classify themselves as old, and even then only 53 percent
did so. This would seem to be an example of the denial of
old age to which Peters referred.

Mason's 1954 research, "Some Correlates of Self-
Judgments of the Aged," was one of the most important of
the early studies on self-concept and aging.⁹ The major
concern of the study was the comparison of environmental
variables to aspects of self-concept. Two groups of aged
individuals, sixty indigent institutionalized subjects
above fifty-five years, were compared with an independent
group of thirty subjects of middle class status and sixty
years of age or over. A third group of thirty young adults
was also studied to allow comparison in self-concept for
two different age groups. Among the findings was the fact
that the aged institutionalized group viewed its self-worth
in more negative fashion than did the aged independent
group. This group, in turn, viewed its self-worth in more
negative fashion than did the group of young adults. De-
spite marked differences in living conditions, no difference
was found in the aged groups' negative attitudes toward
present state of happiness and present ability to contri-
bute. Therefore, old age was seen as related to some nega-
tive feelings of self-worth.

Although the two aged groups were found to be more

⁹Evelyn Mason, "Some Correlates of Self-Judgments
of the Aged," Journal of Gerontology, IX (July, 1954),
324-337.
negative in their view of self-worth than a group of young adults, significantly greater inter-individual variability occurred in their reports of their positive-to-negative attitudes. Mason concluded, therefore, the degree to which an individual succumbs to the effects of old age varies markedly.

A pair of studies published in the early sixties illustrate the contradictory findings further. A study of old people in Elmira, New York found that the majority did not have a negative view of themselves and did not accept stereotypic views of aging. Those who accepted a negative view were found to be less active and more maladjusted.\(^{10}\)

On the other hand, Kogan and Wallach in 1961 found that young subjects rated the concepts "myself" and the "ideal person" as more favorable than did old subjects, as measured by a semantic differential technique. The investigators viewed this as evidence of a decline in the favorability of the self-concept in old age.\(^{11}\)

The results of research by Preston and Gudiksen suggest that the relationship between age and self-concept


\(^{11}\) Ibid.
is not a simple one. These researchers administered two inventories to 242 Ss over sixty-five years of age who had been recruited from six sources: two affluent retirement homes, one for more modest incomes, from two recreation centers, and from an outpatient clinic of the county hospital. One inventory contained 110 true-false statements referring to past accomplishments, present conditions and future possibilities. The other was an Interpersonal Adjective Check List to which respondents were asked to indicate whether the items were true for himself and then "for most people my age."

Socio-economic status was a critical variable differentiating positive and negative responses. Indigent older people endorsed significantly more negative and fewer positive statements than did middle or upper class respondents. The authors concluded also that very positive self-reporting, reflected in significantly high scores, seemed to be a manifestation of denial among the Ss while very negative self-reporting seemed to be a manifestation of depression.

Later studies. Studies by Aldredge, Hess and


13Gwendolyn Aldredge, "The Self-Concept of Elderly Women" (unpublished PhD dissertation, Florida State University, 1973), Dissertation Abstracts, Volume 34, No. 4, 618-B.
Bradshaw,\textsuperscript{14} and Bloom,\textsuperscript{15} all published in the seventies, found an increase in positiveness of self-concept with age.

In the Hess and Bradshaw research, 172 Ss, categorized into groups of high school upperclassmen, college undergraduates, thirty-nine individuals ages thirty-five to fifty, who were considered middle-aged, and twenty respondents between fifty-five and sixty-five, who were considered late middle age, were administered Gough's Adjective Check List to measure both self and ideal self. Results disclosed a trend for an increase in positiveness of self and ideal with increasing age and found that the late middle age group had significantly more positive scores than the two youngest age groups. There were no consistent differences in sex, education, or income across groups that would account for the results. There was a significant and positive correlation between self ratio and expressed satisfaction with life and between self ratio and how a person ranks himself on achieving his life's goals. To account for the fact that the oldest group had the most positive self and ideal ratios, the authors speculated that the group's fairly high educational level and income were contributory. They also felt the results indicated that the

\textsuperscript{14}Anne L. Hess and H. L. Bradshaw, "Positiveness of Self-Concept and Ideal Self as a Function of Age," \textit{Journal of Genetic Psychology}, CXVII (September, 1970), 57-67.

decline in self-feelings, when obtained, were due to factors other than age alone, although this may be a significant variable.

Aldredge studied 195 rural women sixty-one years of age and older. She found that reaching age sixty was not considered "old" by the sample, and neither did it negatively influence self-acceptance. Loss of spouse did not influence self-concept; but in this sample, women having more than a high school education achieved higher self-concept scores.

In his study of "Age and the Self-Concept" Bloom used eighty-three white male surgical patients ages 20-69 to test the hypothesis that self-acceptance decreases and self-rejection increases as individuals grow older. He found that correlations between self-acceptance, self-rejection and age were not significant. There was a significant curvilinear relationship between chronological age and self-acceptance, but the relationship between chronological age and self-rejection was not significant. Bloom suggested that the reason self-rejection did not increase with age was that with the recognition that he is aging the individual may begin to incorporate some of the positive stereotypes of aging into his self-concept. While Bloom believed this increase might be a sign of defensiveness, it might also be viewed as an attempt by older persons to defend the self against the external threat of aging and, therefore, serves an adjustive function.
age and self-attitudes, but they did so in relation to selected concommitant life situations.

As part of a large study designed to verify hypotheses about the relationship between self-derogation (negative self-attitude in its most extreme form) and certain indices of psychosocial adjustment, a random sample of five hundred adults in Harris County, Texas was interviewed in 1966. Sixty-five of the Ss were sixty years of age or above. Kaplan and Pokorny examined this data to investigate the relationship of negative self-attitudes to aging in the presence or absence of four conditions. The measure of self-derogation was based on a factor analysis of responses of the five hundred subjects to a ten item scale adapted from items reported in Rosenberg's study of adolescent self-image.

Examination of the relationship between self-derogation and age for the study group as a whole revealed no significant relationship between aging and self-derogation. Data further revealed that in four of the conditions studied self-derogation decreased with age. These conditions were (1) where the subjects reported no recent life experiences which requires behavioral adaptations, (2) where the subjects reported no disparity between current and "hoped for" standard of living, (3) where the subject reported no childhood fear of being left alone, and (4) where the subject's household composition consisted solely of the subject and spouse. The authors thought the
findings were not inconsistent with increased use of denial or a continuing need to expand one's horizons in old age, but it seemed more likely to them that the data favored the proposition that aging involves a voluntary withdrawal from many life activities and is perceived as a desirable stage in life.

In a later study based on the same data, Kaplan investigated the relationships of what he termed "contemporary life space characteristics" and self-derogation for the different age groups. The life space characteristics were spouse's education, recency of in-migration into the county, number of children, organizational memberships, relative importance of religion, life achievement relative to siblings, working wives, and children thirteen to nineteen present in the home. Among the respondents aged sixty or over, none of the variables were related to self-derogation scores at a statistically significant level. For each of the other age groups, a different combination of variables was observed to be associated with high self-derogation scores. These findings lend further support to the notion that life circumstances more than chronological age as such must be taken into consideration in understanding aging and self-attitudes.

In an attempt to develop further understanding of the personal meaning of self-concept, Back correlated two measures of self-image, an adaptation of the semantic differential, and the Who-Are-You test, with social history
questions which included sex, age, working status, and family situation which included separation from children. The data used had been collected from 502 interviews which formed the first wave of a panel study on adaptation and aging of persons forty-five to seventy being conducted at the Duke University Center for the Study of Aging and Human Development.

Through the semantic differential, Back measured the contrast between what a person really feels about himself and the image that he presents to others. For women the largest divergence between self and appearance of self occurred in the two oldest groups studied, those sixty to sixty-four and those sixty-five and over. Among men the sequence was almost regular, increasing with age, the only exception being in the fifty to fifty-four group. Back stated this sequence would indicate that the discrepancy is not due to an intrinsic effect of aging but to events in the life cycle which change the position of a person in the world.

In examining the relationship between self-image and social characteristics, Back made the following observations. Women, freed from family obligations, tend to shift self-image to their own abilities and feelings, possibly feeling they can now be accepted for what they are. Men are involved in the work role more personally, and difficulties with this role through aging may make life more difficult for them. Separation from children may
aggravate this discrepancy, making them more dependent on the work role. Hence, the increase in self-image discrepancy in working men separated from children, while for women the discrepancy decreases with age and separation from children.

**Self-concept and personal adjustment.** Given the definition of self-concept, it might be expected that a positive self-concept would be associated with "good" personal adjustment. While few studies have addressed this global, value-laden construct, three did demonstrate the expected relation. An investigation of "Personality and Patterns of Aging" by Neugarten, Havinghurst and Tobin, provided substantial reinforcement to the common-sense expectation that personal competency, including higher feelings of self-regard, is a component of successful adaptation in older adults.²⁰

In their research on adjustment to retirement Reichard, Livson, and Petersen found positive self-concept characteristic of the well-adjusted, mature men who moved easily into retirement.²¹

Relatively free of neurotic conflict, they were


able to accept themselves realistically and to find genuine satisfaction in activities and personal relationships. Feeling their lives had been rewarding, they were able to grow old without regret for the past or loss in the present. They took old age for granted and made the best of it.

Britton undertook the problem of determining the dimensions underlying several measures which purported to measure adjustment in older adults.\(^22\) One hundred forty-five subjects, fifty-nine men and eighty-six women from a rural village in Pennsylvania, participated in the project. Median age of the sample was seventy-two years. Seven measures of adjustment were chosen to provide data for subsequent factor analysis. The first measure was the Chicago Attitude Inventory,\(^23\) which attempts to measure individual satisfaction with life and how well the individual is meeting social expectations. The Chicago Activity Inventory\(^24\) which asks questions concerning social participation was the second scale. Third was Judge's Adjustment Scale\(^25\) in which three judges rate interview material in the areas

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\(^24\) Ibid.

\(^25\) Ruth Cavan, "Cavan Adjustment Scale" or "Judge's Adjustment Scale" used by R. J. Havighurst and Ruth Albrecht, *Older People* (New York: Longmans Green, 1953).
of personal contacts, specialized contacts, attitudes of emotional security, feeling of importance, happiness and contentment and a summary rating. Satisfaction with interpersonal relations were assessed with an adaptation of the Guilford-Zimmerman Temperament Survey. The fifth procedure used three pictures which included an older person from the Thematic Apperception Test. A sixth procedure was the Opinion Conformity Scale, developed by the investigators, to examine the degree of conformity of behavior expected of older people in that particular village. The final measure was one devised to obtain "peer group" evaluations of older persons and their ability to function appropriately and effectively in the life of the community.

By factor analysis of the correlational matrices developed from the scores, the investigators found three underlying dimensions from the seven measures. The first was an activity factor. (The researchers' earlier study of the social norms of this particular community placed value upon activity in the life of the older person.) The second factor seemed to be a sociability factor, the capacity for and enjoyment of social involvement. Finally, the third dimension was described as a composure-serenity-integrity factor which they likened to a positive self-concept. This

27 H. A. Murray Thematic Apperception Test Manual
last factor suggested a sense of satisfaction with oneself and one's accomplishments even in the absence of present ability or interest to be overtly active or socially involved.

Research using the Tennessee Self-Concept Scale.
The last group of studies to be reviewed in this section are those which used the **Tennessee Self-Concept Scale** (TSCS) in research with older adults.

Knox, reporting on work by W. Thompson, has this to say about the TSCS and older people.²⁸

The TSCS profiles for older adults beyond age sixty were substantially more variable than the norm group. The typical pattern is of above-average self-esteem, a less adequate view of the physical self, but relatively high views of social self, moral-ethical self, self-satisfaction, and certainly of self-description. However, these profiles also reflect low self-criticism and high defensiveness in self-report. It appears that part of the increase in self-esteem for older adults reflects the trend toward an increasingly rigid, sharply differentiated, and decisive self-orientation.

Work by Murphy and Foley supports some of these conclusions.²⁹ The **Tennessee Self-Concept Scale** was administered to fifty-four men and women aged sixty-five to ninety. Other variables included IQ, SES, health,

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activity, and life satisfaction. This sample scored significantly higher on total positive self-concept than the younger normative sample, but the investigators stated it was unwarranted to accept these scores at face value because the elderly also scored significantly higher on scales for defensiveness, conflict and confusion and significantly lower on personality integration. They also found that response bias proved to be a better predictor of positive self-concept than the individual variables. The next best predictors of positive self-concept were health, IQ, and life satisfaction.

Schwab, Clemmons and Morder evaluated 124 general medical patients with the TSCS.30 Eighteen percent of the sample was sixty-five years of age or older. No correlations were found between total self-concept score and demographic characteristics of age, sex, race, education, income, and religion. A significantly greater percent of married patients had high self-concept scores, however. There was also no correlation to be found with type of illness, duration, mode of onset, familiarity with the illness or the patients' or doctors' rating of the severity of the illness.

Findings of the study included: (1) patients with low self-concept scores felt that their illness had exerted

adverse effects on their social life and accomplishments; (2) patients with high self-concept held a distinctly more favorable outlook for their illness than patients with lower scores; and (3) patients with low self-concept had greater anxiety in general than those with high scores as well as more anxiety about their illness and their doctor.

In "Self-Concept and Altruism in Old Age," Trimakas and Nicolay used the Tennessee Self-Concept Scale in a quite different way.31

One hundred and sixty-two female tenants of a low-income senior housing project were administered the TSCS. The sample's Total Positive Score was 380.89, considerably higher than the mean of the normative sample. The subjects were then placed in an experimental situation in which altruism was defined as the subject's choice to contribute money to the entertainment fund of the building in which she lived. The experiment included three conditions of social influence as well as trying to measure self-concept and altruism per se. While the results of the study showed that older people had higher self-concept scores than the normative sample representing the general population, the present study found more defensiveness particularly in old people with high self-concept. Moreover, old people with high self-concept appeared to be better adjusted than those

with low self-concept. Adjustment contributes to self-
identity, satisfaction and, consequently, raises self-concept.
The researchers commented that while it was difficult to
reconcile the presence of defensiveness and adjustment, one
explanation might be to consider defensiveness a positive
reaction. With decrease in life strength, with disengage-
ment and with threat of death, a higher degree of defen-
siveness could facilitate better adjustment.

Investigations by Anderson, 32 Grant, 33 and Cran-
dall 34 were concerned primarily with self-concept, age, and
certain personal factors which might be related.

Anderson administered the TSCS and a personal data
sheet to 159 men and women over the age of sixty who were
members of eight senior centers in two urban counties in
Florida. The TSCS scores used in this study were the Total
Positive, Self-Criticism, Physical Self, Moral-Ethical
Self, Personal Self, Family Self, and Social Self.

Physical Self score was the consistently low score

32 Christine E. Anderson, "A Descriptive Study of
the Self Concepts of Selected Urban Ceriatric Populations"
(Unpublished Ed.D. dissertation, Florida Atlantic Universi-
ty, 1976), Dissertation Abstracts, Volume 37, No. 8, 4812A.

33 Carmen Hill Grant, "Age Differences in Self-
Concept from Early Adulthood Through Old Age," Proceedings
77th Annual Convention of the American Psychological Associa-

34 Richard C. Crandall, "An Exploratory Study of the
Self-Concept of Male Members of Selected Senior Centers in
Southeastern Michigan" (Unpublished Ph.D. dissertation,
University of Michigan, 1975), Dissertation Abstracts, Vol-
ume 36, No. 2, 1824A.
for the Senior Centers, and Moral-Ethical Self was the consistently high score. Total Positive and Self-Criticism were in a balanced relationship. As one increased, the other decreased. Of the eleven personal factors investigated, six had some significant relationship to one or more self-concept scores. These factors were senior center, sex, birthplace, educational level, ethnic group, and religious preference. No significant relationship to self-concept was found for marital status, age, number of children, income and former occupation.

Grant (1969) employed the Tennessee Self-Concept Scale (TSCS) as one of four instruments used in her study of "Age Differences in Self-Concept from Early Adulthood Through Old Age." Five hundred volunteers were divided into five age groupings - twenties, thirties, forties, et cetera - to allow age group comparisons. The researcher thought the results clearly indicated that self-concept is a multidimensional trait and that people's feelings about themselves do change, and to some extent as a function of the maturing process. The pattern of change is a complex one which, in part, may be a function of socioeconomic status, age and social roles. The most general finding was that the feelings which a person reports about himself tend to become more positive with age. This result seems consistent with the view that aging involves a voluntary withdrawal and is perceived by many as a desirable stage in life. However, the possibility that the increase shown in
the reported self-concept with age is the result of an increase in the tendency toward denial rather than any increase in actual positive feelings about the self was also suggested by factor analyses done by the author. Sex differences in the findings suggest that men react to aging somewhat differently than do women. Specifically, men across all age levels tend more than women toward denial and preservation of positive self-images.

The final study to be cited in this section is an investigation by Crandall which also used the Tennessee Self-Concept Scale with older adult subjects. In "An Exploratory Study of the Self-Concept of Male Members of Selected Senior Centers in Southeastern Michigan," Crandall administered the TSCS and a personal data form to sixty-six white males aged fifty-five to eighty-six. A phenomenological framework was adopted which stated that, contrary to the existing literature, differences in level of self-concept were not expected to occur because of variances in health, income, age, marital status, et cetera. The major conclusion was that the self-concept, defined as one's subjective image of self, and the perceptual framework derived therefrom was, in the case of the subjects of this study, so unique to the perceiving individual as to nullify any uniformity of impact which might have been imposed by the variables selected for investigation. Age per se did not seem to depress the self-concept of the subjects. If there was any trend in the data, it was in a
positive direction. All self-concept scores increased with increasing age, although the increase was not statistically significant. Two other findings were that those with the least formal education attained higher self-concept scores than those with the highest education, and respondents with the lowest income level had a mean considerably higher than the score of those whose income was in the middle range and only slightly lower than those with an income in excess of $10,000.

Summary. To summarize the research in this area, it can be said that there is agreement that self-concept changes with age, but the findings on the direction of that change are contradictory. Some research indicates a more negative self-image with age while other investigators report a more positive self-concept. Evidence is accumulating to suggest life circumstances rather than chronological age account for the variability in self-feelings. Education, income, health, satisfaction with life achievements, and resources to match aspirations are among the variables which have been found to be associated with positive self feelings in old age. Some researchers suggest that voluntary withdrawal from the competitive social interaction around them, denial of aging, or increased defensiveness in personality structure enable old people to maintain positive self-feelings. Although findings on sex differences are mixed, men may use denial more than women
to maintain a positive self-image.

More will be said about these divided findings at the conclusion of the next section.

Locus of Control

Internal versus external control of reinforcement (often referred to as locus of control) is a personality construct developed within the social learning theory framework of Julian Rotter and his associates, which was introduced into the psychological literature in the early 1960s.\(^\text{35}\) Internal-external control of reinforcement describes the degree to which an individual believes that reinforcements are contingent upon his own behavior. Internal control refers to individuals who believe that reinforcements are contingent upon their own behavior, capacities or attributes. External control refers to individuals who believe that reinforcements are not under their own control but are under the control of powerful others, luck, chance, fact, et cetera. Thus, depending upon his life experience, an individual develops an orientation toward either an internal or external locus as the source of reinforcement.\(^\text{36}\)

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While this definition could be widely accepted, Rotter has reminded researchers that to focus primarily on expectancies for reinforcement as the determinant of behavior ignores the fact that the "psychological situation" in which the interaction takes place is equally critical. From the social learning point of view the specificity of a given psychological situation may alter the usefulness of the I-E scale prediction. It would be more precise to state that "a person's actions are predicted on the basis of his values, his expectations, and the situations in which he finds himself."38

Theoretical antecedents. In his discussion of the development of the theoretical background of I-E Scale, Rotter recognizes conceptions not only of learning theorists which are related to his ideas, but also that over a good many years social scientists have been speculating about the significance of the belief in fate, chance, or luck as these influence behavior.39 He cites the writing of Veblen who thought that a belief in luck or chance represented a barbarian approach to life and implied that such


a belief as a solution to one's problems was characterized by less productivity. Merton, he points out, discussed the belief in luck more or less as a defense behavior to help people maintain self-esteem in the face of failure. The concept of alienation developed by Marx, Weber, Durkheim, Merton and Seeman appears to be related to the variable internal-external control - the alienated individual feels unable to control his own destiny. In psychology, the work of White on the concept of competence and Angyal's work on the significance of the organism's striving toward autonomy or active mastery of the environment seem related to locus of control. The studies in "need for achievement" seem particularly close because of the probability that people with a high need to achieve have some belief in their own ability to determine the outcome of their efforts. Linton's notion of field dependence, field dependent people are more conforming, bears some relationship. Rotter recognizes the apparent similarities between his work and that which Riesman did in conceptualizing the "inner-directed" and "other-directed" character models. Rotter points out, however, that while Riesman was concerned about whether the individual was controlled from within or without, his own interest is with whether or not an individual believes that his own behavior, skills, or internal dispositions determine the reinforcements he receives.

Thus it seems apparent that although Rotter's colleagues developed the first instrument to try to measure
I-E orientation, the idea has been part of our intellectual background for quite some time.

The degree of interest created by the concept can be estimated by the fact that there are currently a dozen measures of locus of control with more being developed.\(^{40}\) Further, in 1974 Rotter estimated that well over six hundred studies using his scale had been published.\(^{41}\) In 1971 Psychological Reports published two Monograph Supplements which provide a wealth of information on locus of control. One is Throop and MacDonald's article "Internal-External Locus of Control: A Bibliography."\(^{42}\) The other is "Review of the Internal-External Control Construct as a Personality Variable" by Victor C. Joe.\(^{43}\) Subsequently, books by Leffcourt and Phares have provided even more material about the construct and the abundant research generated from it.

Investigations reported in these reviews suggest that individuals with an internal locus of control orientation take more initiative in their attempts to attain their goals and control their environment, obtain lower scores than externals on self-report anxiety measures, are more resistive to manipulation from the environment, and are


\(^{41}\)Rotter, p. 56.

\(^{42}\)Throop and MacDonald, 175-190.

\(^{43}\)Joe, 619-640.
superior in cognitive reasoning and, therefore, personal effectiveness.

For purposes of this investigation, however, it must be recognized that the bulk of this research has been with students. Can one generalize from college freshmen to seventy year olds? Given the number of instruments and the quantity of research, some limitations needed to be set for this review. Since the focus of the investigation was internal-external (I-E) orientation in older adults, the decision was made to report on research related to older people whatever the research instrument used.

The twelve studies to be reviewed investigated relationships between I-E and age, life satisfaction, social functioning, death anxiety, and the effect of situational constraint on locus of control in the elderly. Before turning to the research on older adults, one study which used a sample composed largely of middle-aged respondents seemed relevant because it examined I-E and self-concept.

Kivett, Watson, and Busch designed a survey study to try to determine the importance of physical, psychological and social variables to I-E orientation in a sample of 337 adults between the ages of forty-five and sixty-five years drawn from fifty churches of a single denomination in one geographical area. Their rationale was that while

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*Vira R. Kivett, J. Allen Watson, and J. Christian Busch, "The Relative Importance of Physical, Psychological and Social Variables to Locus of Control Orientation in*
most studies show that individuals with an internal orientation tend to show higher life satisfaction and self-esteem, have fewer mental disorders, and demonstrate stronger ego functioning, there has been little attempt to demonstrate the relative importance of these variables to perceived control in middle age. Ten independent variables were categorized and entered into a multiple regression equation which used locus of control scores as the dependent variable. The categories were physical which included self-rated health, race, sex, age; psychological which incorporated self concepts actual, appearance, desired and a social category which included education, occupation and religious motivation. Factors which were found to be influential were self-concept (actual), self-concept (ideal), religious motivation and occupation. For this study the findings emphasized the spurious nature of physical variables such as health, sex and age. The authors recognized, however, that for middle age health is not the problem that it may be for older adults.

Locus of control and age. While Reynolds cites three studies which found no correlation between age and


locus of control, Staats reported otherwise. One hundred fifty people, twenty-five men and twenty-five women in each of three age groups, were administered the Rotter I-E Scale. The oldest age group included fifty people between forty-six and sixty. The increase in internal locus of control up to age sixty was significant. The sex effect was not significant for groups other than forty-six to sixty where males appear to be more internal in their beliefs.

A great deal of research has been directed to determining the variables associated with life satisfaction in older people. This research has found that there are substantial relationships between life satisfaction and health, activity, socio-economic status and, to some extent, age. Little of the early research, however, has attempted to determine the relative importance of these several variables for life satisfaction.

Life satisfaction and locus of control. Palmore and Luikart attempted to analyze the relative importance to Life Satisfaction of health, activity, social-psychological and socio-economic variables in early and late middle age. Data for the study came from the Duke Adaptation Study, an


interdisciplinary longitudinal study of 502 persons aged forty-five to sixty-nine at the beginning of the study in 1968. In their findings of correlates of life satisfaction, self-rated health was by far the strongest variable. The second strongest variable for the sample as a whole was organizational activity, which included the number of church and other meetings attended in a month. The third strongest variable for the total group was an internal control orientation. For 234 subjects over sixty, however, internal control was the second strongest variable. The study also found men to be more internal than women. Palmore and Luikart suggest that part of the explanation for the strength of this variable may be that internal control is associated with such concepts as autonomy and competence which probably contribute to life satisfaction while it is negatively related to alienation, hopelessness and powerlessness which would reduce life satisfaction.

Self-rated health is a powerful explanatory variable with older adults even when it is not a central variable in the study. Brodie investigated the relationship between social activity, general fearfulness and locus of control in a sample of seventy-two retired men and women whose ages ranged from sixty-four to ninety-six living in

a suburban housing development. The hypothesis that general fearfulness would be significantly related to social activity was supported. A negative correlation was found between locus of control and activity. Internals were less involved in social activity. An auxiliary finding was that the retiree's perception of his health correlated with his level of fearfulness and social activity. The author suggested that general fearfulness, locus of control and self-rated health might be a useful way to predict social activity.

In examining the relationships between perceived privacy options, self-esteem and internal control Aloia administered a fifty item inventory to a population of 184 aged people living as community residents, senior citizen home residents, and convalescent home residents. The mean age of the sample was 75.5 years. Analysis of the data revealed a significant relationship between perceived privacy options and self-esteem but not to perception of internal control.

Individuals with high self-esteem, however, indicated a perception of internal control. Since perceptions of privacy options differed significantly on the basis of residential setting, the investigator concluded that

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physical environment was able to coerce behavior and attitudes.

**I-E orientation and personal adjustment.** Wolk and Kurtz, Kuypers, and Hanes have all used I-E in studies of adjustment in older adults.

To analyze the relationship between internal control and adaptive behavior in older people, Wolk and Kurtz assessed the adjustment, involvement, life satisfaction, and locus of control of a volunteer sample of ninety-two men and women aged sixty to eighty-five. They found that internal elderly individuals manifested higher levels of involvement, more adaptive levels on developmental tasks accomplishment, and more positive emotional balance in their satisfaction with life, this despite the number of adaptations which aging requires. The mean I-E score for the sample was 8.22, which is lower than that of college samples which Wolk and Kurtz reported are now centering between twelve and thirteen. This mean score might not be

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51 Joseph A. Kuypers, "Internal-External Locus of Control, Ego Functioning and Personal Characteristics in Old Age," The Gerontologist, XII (Summer, 1972), 168-173.

expected theoretically because at this age the expectancy for control should be in the external direction. Wolk and Kurtz point out that this relationship between internal control and adaptive behavior seems to emphasize the potency of locus of control as a personality characteristic.

To further the gerontologist's understanding of the characteristics of men and women who effectively interact with their environment in old age, Kuypers studied locus of control, ego functioning, self-descriptions, and intellectual functioning in a sample of sixty-four men and women in their late sixties. Subjects were categorized as either internal or external and comparisons for age, sex, marital status and economic status showed no consistent differences. In the area of ego functioning, internals were significantly more objective, intellectual, logical in their analysis, tolerant of ambiguity, emphatic and sublimated. The differentiating self descriptions were verbal fluency, wide range of interests, is introspective, able to see to the heart of important problems, is socially perceptive, etc. cetera. Internals were significantly higher on the WAIS than externals. Kuypers concluded that elderly persons who experience an internal locus of control are characterized by greater activity, differentiation, complexity and adaptability.

Hanes' exploratory study of depressed elderly revealed that they experienced twice as many stressful life change events and twice as much stress as normal.
Correlates of depression included these personality variables: external locus of control orientation, low self-esteem, relative lack of involvement with secondary relational networks, and indications of poor social integration.

**Situational constraints and I-E orientation.** Following Rotter's reminder about "situation" in studying I-E orientation, Wolk published "Situational Constraint as a Moderator of the Locus of Control-Adjustment Relationship."\(^5^3\)

In this research Wolk attempted to study systematically the effects of "situation" on the relationship between locus of control and adjustment. Two settings were selected to vary the degree of situational constraint. Setting 1 was a local settlement of a national retirement village in which residents lived in separate dwellings. Setting 2 was a typical non-sectarian "retirement home." Individuals had their own rooms, but all basic needs were met through organized staff procedures and a clearly defined set of rules and regulations was in operation. In Setting 1 the sample included ninety-six male and female residents with a median age of seventy-four. The sample in Setting 2 included seventy men and women whose median age was seventy-seven. Again, Life Satisfaction, adjustment,

activity level, self-concept, and locus of control were assessed.

Findings of the study included:

1. Residents of Setting 1 manifested significantly greater internal control.

2. Correlations on four measures of adjustment were all significant for Setting 1 and none significant for Setting 2.

3. In Setting 1 the correlation between locus of control and indices of adjustment reflect the type of relationship expected of younger populations; the greater expectancy for internal control, the more positive the adjustment behavior, personal satisfaction and self-concept. In Setting 2 locus of control possessed no relationship with any of the indices in this type of environment.

An investigation by Felton and Kahana lends additional support to the influence of "situation" on locus of control orientation. This study attempted to determine the relationship of perceived locus of control and adjustment among 124 "well" residents of three homes for the aged. Contrary to the earlier studies, good adjustment in this

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study was related to perceiving the locus of control to be in others. Possible explanations of this departure were the fact that the locus of control measure differed in format and conceptualization from Rotter's I-E scale, that the preponderance of subjects in this study were women and women have been found to be more externally oriented than men, and finally the fact that respondents were institutionalized may provide another explanation. Residents of homes for the aged generally experience a diminished capacity for controlling their environments; and where opportunities for actual control of behavior are absent, perception of oneself as in control may indicate an unhealthy, non-realistic adaptation to institutional life.

Reid, Haas and Hawkings examined locus of control and self-concept using an I-E instrument designed to try to measure that construct more precisely with older people.\textsuperscript{55} The instrument not only contained items closer to the everyday concerns of older people, but it measured the desirability of those outcomes for the individual respondent. The hypothesis tested was that those elderly residents of a home for the aged who have a more internal expectancy of control over desired outcomes have a more positive self-concept. Two studies were conducted. The first study

included sixty residents of a home for the aged whose mean age was eighty-three. A ten item semantic differential was used to measure self concept. The experimental instrument tested I-E orientation. Nurses' ratings of patients' happiness, friendliness, decisiveness and independence were also obtained, and these were compared with the respondent's ratings of self-concept and control orientation. The second study used a sample of 147 men and women sixty-five years of age and older, seventy-eight of whom lived in homes for the aged and sixty-five of whom lived independently in their own homes and apartments.

As had been predicted, the correlation between locus of desired control score and self-concept score was significant. Subjects with a low sense of control also had a negative self-concept. Unexpectedly, the relationship was high for males. In the second study the results were similar. Those with a low sense of control had a more negative self-concept and reported themselves as less content and less happy. These relationships were especially strong for men living in homes for the aged, suggesting that having a sense of control is more relevant to a man's adjustment and that this relationship is more salient in institutional settings where it is more likely that fewer opportunities for personal control are available.

The final study to be reported in this section employed Rotter's I-E Scale as one of the instruments in an effort to test Erikson's statements regarding ego integrity
Twenty men and twenty women from each of three residential settings (general community, public housing and nursing homes) completed life satisfaction, locus of control and death anxiety scales. Locus of control was related to residential setting. Respondents living in nursing homes scored in a more external direction, the general community group was somewhat more internal, and those living in public housing were most internal in their orientation. Erikson's hypothesis of internal control, high life satisfaction and low death anxiety was supported only by the public housing sample.

**Summary.** In summary, findings on I-E orientation in later adulthood are sometimes conflicting. Research suggests that an internal locus of control is generally associated with high self-concept, greater satisfaction with life, and with adaptive behavior. Results are divided on the relationship of chronological age, sex, and extent of social activity to control orientation. The social and physical changes which accompany aging may bring environmental changes which in turn may modify control orientation, although the nature of these changes require further investigation.

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The diversity of research outcomes found in this review of self-concept and locus of control is typical and a source of concern to gerontologists. Neugarten, one of the foremost researchers in personality and old age, has commented both on the "disarray" in the general field of personality theory and the lack of "coherence" in the field of aging and personality. Diverse theoretical frameworks, differing definitions of basic personality concepts, and a multiplicity of measuring instruments are among the obvious factors which contribute to contradictory findings. As this review has demonstrated, for instance, there is no agreement on who is "old." One sample defines fifty-five as old, a second includes sixty-five year olds in a study of middle age, while a third may study those in the early sixties and those in their mid-nineties in the same sample. In this latter group the researcher may well have been studying members of different generations. In this regard, one wonders whether the more negative findings of the 1950s research on self-concept when compared with the 1970s might be partially explained by the fact that different cohorts were being investigated.

This, in turn, highlights one of the most critical problems in the research on personality in older adulthood. Most findings are derived from cross-sectional rather than

longitudinal studies. Until methodologically sound longitudinal studies are available, the issues of continuity and change in personality in old age will remain in the area of speculation.

Behavioral Dimensions

Eating Patterns

Food, like oxygen, is necessary for human survival. Because the elderly for a variety of reasons are particularly vulnerable to malnutrition, gerontologists consider the study of nutritional status of the elderly crucial to improving the quality of life of older adults. Nutrition is not a focus of this study, however, so research related to nutritional status per se will not be reviewed here. Studies such as those by Davidson et al., Lyons and Trulson, Skillman et al., Steinkamp et al. and Swanson provide valuable information in this particular area. 58


Social scientists who have given attention to the social aspects of nutrition are also clear about its importance in the course of man's development. "Whatever may have happened, it is indubitable that the original food sharing habit was the groundwork for all subsequent divisions of social roles and social labor. Without it man could never have progressed in the way he has."

Food intake practices. While the physiological role of food in survival is understood, the meaning of food in living and well being must also be recognized to understand eating patterns in older adults. Cultural factors of many kinds contribute to the attitudes and habits with respect to food and eating to be found in any population of older people. Troll describes the meaning of food for older people.

From earliest life, eating is a social activity, embedded in a complex web of interpersonal interactions and interrelationships. The baby develops love for his mother within the bounds of an eating situation and whether the enriched meaning of food comes from mother love or the enriched meaning of mother love comes from the satisfactions of eating is a mute point. All through life, enjoyment of life is wrapped up with enjoyment of food. Consider


such significant food-involving situations as the family evening dinner, the birthday party, the dating dinner, the Thanksgiving get-together, the wedding breakfast, and the funeral meats. One of the consequences of relatives and friends in old age is a loss of eating companions and therefore, probably, a reduction in the enjoyment of eating.

While basic attitudes toward eating and food may be laid down in childhood, food intake practices in older adults are a result of a complex set of social, economic, psychological and biological variables. These factors include his income, his living situation, his distance from shopping, the safety of his neighborhood, his physical health and the ways this might affect his ability to take care of himself, possible food fadism and the general emotional use that he makes of food. Attention has been given to these factors in the literature.

One of the most obvious factors is whether or not the individual has an income adequate to permit him choice in food purchases, or choice in where he buys meals if he does not prepare food for himself. Not all old people do.

Schulz, in discussing income distribution and the aging, cites U.S. Bureau of Census data. In 1974 3.4 million people, 16.3 percent, sixty-five years and over had

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income levels below the 1973 poverty standards defined by the Social Security/Interagency index. Looked at another way, 1975 census data report that 10.0 percent of white married couples and 29.8 percent of black married couples who are sixty-two years of age or older have annual incomes less than $3,000.00. For the single, widowed, or divorced in that age group the statistics were even more grim. Fifty-six percent of whites and almost 82 percent of blacks lived on incomes of less than $3,000.00.

An equally important consideration is the older person's living situation.\(^{63}\) Perhaps the most abrupt and profound change which takes place for the older adult occurs with the death of his spouse and the transition to living alone and providing food for only one person. This change may mean moving in with the children or other relatives or into a nursing home. If the choice is living with one's children, then that family's needs will probably determine what food will be served and when. (One woman interviewed in a nutritional study commented that women's eating habits had followed three different patterns. The first was controlled by their parents, the second by themselves as homemakers and parents and the third by their daughters or daughters-in-law with whom they were living.)\(^{64}\)


\(^{64}\)Beeuwkes, p. 215.
While living alone by no means implies loneliness, one of the major crises for older people is making the transition to living alone. Loneliness can be a major depressant of appetite which, in turn, can mean less thought given to food and eating and, as a consequence, less care for health.\textsuperscript{65}

In the Davidson et al.\textsuperscript{66} study of 104 members of the Age Center of New England, one objective was to learn more about eating habits as they related to contacts with people. The ten members of the sample who were most isolated lived alone, ate most of their meals alone, and were not working. Seven lived in furnished rooms with hot plates or kitchen privileges. Three who lived in apartments with stove and refrigerator reported disinterest or dislike of cooking. Shopping was usually done without the aid of an automobile so groceries were often carried home. Members of this isolated group were older and contained more females than males.

Adjustment to gradually decreasing physical abilities is another of the adjustments which older adults must usually make. In time, they may be required to depend more upon others for help with day-to-day necessities such as shopping, and meal preparation. Information about the

\textsuperscript{65}Ibid.

dependence on others for shopping was one of the findings of the research on food marketing practices of 109 one-person and 174 two-person households in Rochester, New York in 1957.67

In general, household members managed to do their own marketing for food items. This did not occur quite as often in one-person households, however, where nine percent of the respondents had to rely on someone else to market for them. In the two-person situation only about three percent relied on help from outside. In fourteen of the sixteen households that had someone from the outside doing the shopping, it was the physical condition of either the respondent or the other household member that prevented them from doing their own marketing.

For many elderly living in urban communities, shopping is further complicated by fear of violence in moving about the city streets. Their frailty and inability to fight back makes them ready prey for purse snatchers or muggers.

Nutritionists are concerned that with the changing body image which comes with aging, elderly people may spend scarce food money on food fads in the hope of solving some of the physical problems which accompany aging. They try

\[\text{March, 1962}, \text{p. 192.}\]

to warn against believing too easily in the promises held out by health food faddists. In at least one study, however, the older adults who did make use of food supplements were among those with the best nutritional status.\textsuperscript{68}

For the older person in whose family food was used as a comforter, the dilemma may not be undernutrition but overnutrition.\textsuperscript{69} If food has been a comforter, there are more and more losses with age for which comfort is needed; and possibly more and more desire for food which is not needed for its nutritional value.

**Frequency of meals.** Cross cultural studies of eating and food habits indicate that frequency of meals is a matter of custom, rather than physiological need or feelings of hunger. Frequency of eating is learned in relation to one's own cultural or family expectations of when mealtimes will be. In the United States and England, for example, custom decrees three defined meals per day, although variations in content and size of the meals may occur in particular regions. Disruptions in this pattern may have negative results. During World War II it was found that factory workers whose work shifts necessitated their eating two lunches and one dinner were found to be less well nourished than those who ate three meals, one of

\textsuperscript{68} Davidson, et. al., p. 194.

\textsuperscript{69} Troll, p. 456.
which could be socially defined as breakfast with a different nutritional content.\footnote{Howell and Loeb, p. 34.}

While health professionals are increasingly recommending numerous small meals as more digestible for older persons, older adults appear to conform to the three meal per day pattern commonly accepted in this country. Pao\footnote{E. Pao, "Food Patterns of the Elderly," Family Economics Review (December, 1971), pp. 16-19.} reported data on meal patterns from a study of 202 men and 257 women, sixty-five years or older residing in the north central United States. Three meals a day was the most frequent meal pattern for this group. (In this analysis a "meal" was defined as any intake of food or beverage other than water.) Relatively few persons ate less than three meals on the day on which they were surveyed, but about two-fifths ate more than three. The distribution of individuals by the number of meals eaten was

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<th>Number of Meals</th>
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<td>2</td>
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<td>3</td>
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Information on skipping meals from this study disclosed that 2 percent of men and 2 percent of women skipped the midday meal while 1 percent of men and 2 percent of
women skipped the evening meal. More than half of the respondents reported snacking occurring in the evening, somewhat less in the afternoon, and relatively little in the morning. Snacking was less frequent among persons over seventy-four years of age than in the group sixty-five to seventy-four.

The Davidson group in their survey of 104 members of the Age Center of New England found that most of their members ate the customary three meals a day although somewhat more than one-third ate more frequently. More than half ate alone, or most frequently alone. Appetites were generally said to be good or excellent, although more thought of eating as a necessary activity than as a pleasure. Dinner or the main meal was enjoyed most, with breakfast a close second.

Guthrie in a survey of seventy households of one or two persons over sixty years of age in rural Pennsylvania concluded that older people, perhaps more than any other group, exhibit a wider range of intake from day to day than a group with more regular working habits and less day-to-day fluctuation in mood and health. The extreme was exemplified by one subject who had not eaten in the previous twenty-four hours.

72 Davidson et al., p. 185.

While snacking is recognized as a part of most older people's eating habits, it has been difficult to obtain clear information on the amount of snacking done by older people of various classifications.\textsuperscript{74} One study found that those who ate with others and who consumed more snacks had the most satisfactory diets.\textsuperscript{75}

Exercise Patterns

The interest of gerontologists and some physicians in the role of physical exercise in aging is both recent and growing. As a society, we are beginning to recognize the potential for greatly increased vigor and well-being in old age through appropriately planned and supervised exercise programs.

Indications of burgeoning interest are to be found in testimony given before the Senate Subcommittee on Aging.\textsuperscript{76} The weight of this testimony helped to move Congress to amend the Older Americans Act to "encourage the development of services designed to enable older Americans to attain and maintain physical and mental well-being through programs of regular physical activity and

\textsuperscript{74}Howell and Loeb, p. 26.


\textsuperscript{76}Richard Keelor, "Physical Fitness and Health - Highlights of the Senate Subcommittee on Aging Hearing," \textit{Aging}, No. 258 (April, 1976), 6-10.
exercise." The Administration on Aging has funded a pilot project to train physical fitness leaders for the elderly.

While the potential for increased physical fitness is known to leaders in the field, whether older Americans will modify their habits with respect to exercise is another matter. According to the National Adult Physical Fitness Survey, only 39 percent of Americans aged sixty and over get any systematic exercise. The favorite form of exercise is walking which is practiced by 46 percent of men and 33 percent of women. Few of these older people engage in more strenuous forms of activity: only one percent are joggers, six percent do calisthenics, three percent ride bicycles, and four percent swim. In spite of this evidence that relatively few Americans sixty and over get much vigorous exercise, 71 percent of older adults believe they get all the exercise they need. The gap between what older people do and the way they perceive what they need suggests the special nature of their problem. Carson, in commenting on the survey, added this about older adults and exercise.

The adult survey showed that the elderly are much less likely than the young to have had physical education, to have had any experience in competitive sports, or to have had formal instruction in sports skills. For instance, only 7% of American men and women aged 60 years and over have had swimming lessons. From their responses to survey questions, it also is apparent that few of them


78 Conrad, p. 12.
have been informed about the contributions that physical fitness can make to personal health, performance, and appearance.

**Physical activity in old age.** "Decrease" and "decline" have been the key words in many of the studies which have investigated physical activity among older adults. Examples are studies by Chalfen, Zborowski, Cunningham et al., and De Carlo. 79

In his study of leisure time activities of over two hundred men and women sixty-five years of age or older Chalfen found very few involved in physical activities. For those living in homes for the aged he found activities primarily sedentary. For those attending recreation centers active sports earned very few participants.

In view of Zborowski's findings in 1962 that result could not be surprising. Two hundred four members of the Age Center of New England were participants in a study to determine the effects of age on recreational life. The median age of the group was sixty-nine. From a list of ninety-three activities the respondents were asked to indicate which activities they participated in when they were forty and which they were currently engaged in. The most spectacular change was a decrease of 60 percent in

activities associated with physical exertion.

Zborowski made the following observation:

However, it is also important to realize that participation in this type of activity is limited in our society to adolescents and younger adults. Older individuals are frequently excluded from such activities, not so much from physical limitations, but because of cultural norms which view these activities as "unsuitable" for an "Elderly" person.

The author felt this position was supported by the significant decrease in the mean score for group activities that were associated with physical exertion while the difference in scores for solitary activities remained statistically non-significant.

As part of a community health study in Tecumseh, Michigan, Cunningham, et al. administered a physical activity recall record to 1,695 males sixteen years of age or older during the years 1962-1965. Respondents were divided into four age groups, the oldest being 60 - 69. In each of thirty-three active leisure time activities the percentage of participation by age was determined. Very few persons participated regularly, defined as at least 1.5 hours per week per year, in leisure activities requiring high energy expenditures. The percentage of the population which participated in leisure activities only a very small amount of

time (1 hr./wk/yr) increased considerably from age forty to age sixty-nine. A general decrease in leisure activity participation was observed from age sixteen to sixty-nine.

De Carlo studied the recreation activity of a sample of sixty twin Ss who had a mean age of 85.5. Nineteen intact pairs of twins were included in the sample. The study demonstrated numerous differences in the way the twins aged including the expected decline in recreation activities after middle age.

**Value of exercise.** Despite this sedentary status quo, evidence is accumulating which requires looking at the question of exercise and aging in a different light.

Between June, 1965, and March, 1966, Brown and Ritzman studied 133 VA Hospital patients aged sixty-five through eighty-five who were without demonstrable heart disease to determine possible factors (including living habits) accounting for the absence of coronary heart disease in the elderly. There were one hundred control patients aged sixty-five through seventy-nine. Data were obtained by personal interview, physical and psychologic examination and clinical laboratory test. The significant factors were: moderate eating habits, no family history of heart disease, no concern for social status, regular

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physical exercise, normal serum total cholesterol level, and absence of physical manifestations of generalized arteriosclerosis.

Sidney and Shephard discussed a number of other studies which indicate why it is important for the elderly to improve their physical fitness. Hammond, they reported, found that death rates show a gradation with activity. In men aged sixty through sixty-four the range was from 4.0 deaths per 100, for those taking no exercise, to 0.92 per 100 in those taking regular heavy exercise. In the group aged sixty-five through sixty-nine the gradient was even steeper, from 10.33 to 1.38 per 100. Palmore reported from the Duke University studies that more than four times as many inactive subjects reported poor health as those who were engaged in regular physical activities. In another study it was found that older adults following good health practices, including regular physical activity, had a health status equivalent to the general population who were thirty years younger.

**Fitness programs for elders.** When older adults participate in physical conditioning programs, what are the results? A number of studies suggest the need to reexamine the widely held expectations of decline.

The work of Kasch with forty-three middle-aged men demonstrated that through a physical conditioning program which was continued over a period of six to eight years a reversal of the usual decline in \( \text{Vo}_2 \) (maximal oxygen uptake) with age had been accomplished. In two of the groups within the sample, the score was 14 percent above the average for their age. The third subgroup within the sample, whose mean age was fifty-five years, was 36 percent above the average for other men their age. The authors felt this group was not representative, however, because it included several highly motivated individuals who had been athletes.\(^8^2\)

In a study using forty-seven volunteer female subjects aged twenty through sixty-nine, Wessel and Van Huss\(^8^3\) investigated the influence of physical activity on exercise adaptation during and after sub-maximal work in healthy women. Findings were that oxygen uptake, oxygen pulse, and ventilation volume were significantly related to physical activity level and age. There was a consistent pattern for these responses to be higher with decrease in general level of physical activity with advancing age, and this would reflect a declining efficiency in the adjustment to exercise.


From this they concluded that the diverse degree to which circulatory-respiratory fitness of individuals are affected with advancing years may be attributable both to the aging process and a decrease in general level of physical activity.

Birren reported work by Jalavisto, Lindquist, and Makkonen which was especially provocative for those who are studying the relationship of exercise to aging.\(^{84}\)

In early work on life expectancy, an association was found between life span of individuals and the length of life of their immediate ancestors. While at the present time this does not account for even the major individual differences in life span, the association is a significant one and has been presumed to reflect differences in heredity. Jalavisto, Lindquist, and Makkonen tried to operationalize biological age by linking it to family longevity. They expanded the concept of biological age to include the idea of "survival vigor" and selected a battery of tests to measure the concept. Familial and parental longevity, therefore, were chosen as criteria for biological vigor. Measurements of blood pressure, coordination, reaction time, hearing loss, memory, abstracting ability, and

related intellectual functions and respiratory functions were made of a group of 130 women aged forty-four through ninety-three.

Six important factors were isolated, one of which was the parental longevity factor which was regarded as a reflection of potential longevity based upon biological vigor. The parental longevity factor was related to intellectual abilities, which have been shown to be related to survival in other research. Further, a significant "aging factor" was identified that accounted for most of the variance since most of the sensory, perceptual and intellectual tests showed high loadings on this factor. This aging factor was not related to the parental longevity factor, and results lend some support for the separation of the concepts of biological vigor and aging. For example, two test results which were closely related to aging factor, slower reaction time and decreased vital capacity, showed no correlation with the parental longevity factor.

In Birren's opinion the fact that vital capacity of the lungs was related to sensory, motor, and cognitive processes was an important finding. In speculating about useful ways to extend this work Birren proposed an experimental study to test the hypothesis that the significant loading of vital capacity on the aging factor reflects a disuse atrophy with increasing age, as well as the consequences of disease. He suggests that if society were to provide maximum health care, to eliminate nutritional deficiencies, and provide
opportunities for relaxation and hygienic exercise, it is possible individuals might show a smaller aging factor in studies similar to Javalisto et al.

When physical training programs have been undertaken with groups of older people, the results are generally positive. Buccola, Barry et al., Sidney and Shephard, and de Vries have all reported improvement in physiological functioning with training. A study by de Vries is illustrative.

In an experiment in a senior retirement community in southern California 112 men aged fifty-two through eighty-seven (mean age 69.5) volunteered to participate in a vigorous exercise training program. The men exercised at calisthenics, jogging and either stretching exercises or aquatics for approximately one hour three times per week under supervision. All subjects were pretested, and sixty-six were retested at six weeks, twenty-six at eighteen weeks and eight at forty-two weeks.

The most significant findings were related to oxygen transport capacity. Oxygen pulse and minute ventilation at heart rate 145 improved by 29.5 and 35.2 percent respectively. Vital capacity improved by 19.6 percent. For the

group retested at six weeks, there were also significant improvement in percentage of body fat, physical work capacity and both systolic and diastolic blood pressure. Controls did not improve upon any of the above measures.

In a companion study of twenty-three women aged fifty-two through seventy-nine from the same retirement community, Adams and deVries found that after three months of vigorous physical conditioning the experimental subjects improved significantly in physical work capacity (37 percent), maximal $O_2$ consumption (20.8 percent), $O_2$ pulse (19 percent), had consistently greater decrease in heart rate than controls, but no significant changes in vital capacity, ventilation equivalent or tidal volume percentage of vital capacity at 85 percent maximum heart rate. Their conclusion was that, in general, the trainability of older women appears to be similar to that found in older males except that only the men improved in ventilatory mechanics.  

While deVries is optimistic about the potential of fitness training for older people, he is equally clear about the importance of developing a "prescription" for exercise

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for each individual who plans to undertake training and cons­iders that prescription as important as a prescription for drugs. He states the physician-patient relationship should be a close one, and he has begun to write for medical jour­nals to share his experience and recommendations. 87

**Personality and fitness.** Buccola and Barry et al., in their studies already cited, tried to measure changes in personality which might accompany increased physical fitness. Barry and his associates found no significant changes in tests of personality, cognition, or motivation. Buccola, using Cattell's Sixteen Personality Factor Questionnaire, observed mixed results. Men who chose bicycling as a com­ponent of the training showed no change in personality. Male walk-joggers became more self-sufficient, independent and de-surgent. Analysis of covariance between male cyclers and walk-joggers indicated no significant physiological differ­ences, but the male cyclers were significantly more sur­gent, tough-minded and alert than the male walk-joggers.

The final study to be discussed in this section is one by Sidney and Shephard. 88 In addition to endeavoring to improve physical conditioning, they investigated

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personality attributes and attitudes toward physical exercise of their sample of older adults.

Forty-two men and women in their sixties participated in one hour of physical training four days per week for fourteen weeks. Emphasis in the class was on fast walking, jogging and other forms of endurance work. Six test instruments were administered before and after the training period.

With training there was a decline in the number of miscellaneous physical complaints for the whole group, while the most highly motivated group showed a decrease of complaints related to anxiety. With respect to their general fitness a large proportion of the sample had either noticed no change or thought their health and fitness had improved as they became older although their activity patterns and aerobic power showed the majority were almost sedentary. There was a modest overall decline in scores on anxiety. There was no relationship between reductions in anxiety and gains of aerobic power.

In examining self-concept scores, conditioning led to no change in average score, although those who trained the hardest showed significant improvement in body image. Mood scores improved for subjects with moderate or large gains of maximum oxygen intake. No changes were observed on the Life Satisfaction Index.

A semantic differential approach was used to test perceived attitudes towards physical activity as a social
experience, a means for health and fitness, the pursuit of vertigo, an aesthetic experience, a catharsis of tension, an ascetic experience, and as games of chance. The sample initially valued exercise more as an aesthetic experience and as a means for health and fitness. Following training, there was statistically significant change on only one scale - physical activity as the relief of tension.

When the subjects were asked to list three reasons for joining the exercise program, the most common reasons were health related, although none of the subjects indicated that exercise had been recommended to them by their personal physician. A second reason given for joining the class was the provision of a program and appropriate physical facilities, including instructions on how to exercise safely and how to establish regular patterns of physical activity with opportunities to measure physical fitness. Other reasons participants listed were desire to assist research, enjoyment of physical activity (particularly by men) and anticipation of increased vigor and alertness (particularly in the women). The authors thought an important, although unadmitted motive, was a desire to achieve a certain body image.

The attitudes of older adults who did not join the exercise program seem equally relevant. Sidney and Shephard concluded the following about that group.

Those who did not wish to join the program expressed certain ideas we would not have anticipated in a younger age group. Many said that they were active
enough already, that their weight was normal and even that their fitness was above average. How could such faulty perceptions arise? Many old people have limited physical expectations. North American society has conditioned the belief that at retirement a person will "slow down" and "enjoy" a "well-earned rest." Perhaps on this account some of our contacts suggested they would be embarrassed to be seen on campus in a T-shirt and gym shorts "at their age." While there was little vocalization of concern about the possible dangers of exertion, we also sensed that this was a worry for both participants and nonparticipants. There was much misunderstanding of the degree of exercise needed to maintain physical condition. We also suspect that in those who were unfit, feelings of fatigue occurred early, so that minimal work was perceived as significant effort.89

A source of real concern for these researchers is the apparent attitude of physicians toward physical activity in their patients. They cited surveys from the United States and Canada which indicate the reluctance of physicians to prescribe exercise. They speculated that failure in this respect reflected current emphasis on secondary and tertiary health care, low personal levels of fitness in physicians, and a surprising absence of sports medicine from medical school curricula.90

Not only do doctors ignore the physical conditioning of older people, but the communities in which they live are equally neglectful as far as these authors are concerned. They observed that facilities such as swimming pools, tennis courts and skating rinks are not only

89 Sidney and Shephard, p. 250.
90 Sidney and Shephard, p. 251.
overcrowded but may be inconveniently located for older people who have transportation problems. Lastly, the majority of facilities which are available do not offer the senior citizen encouragement and a clear prescription showing what he can safely undertake on a given day. 91 These opinions sound very similar to those expressed by Zborowski almost fifteen years earlier.

Summary. A marked decrease in participation in activities requiring physical exertion is characteristic of older adults in this country. Evidence suggests, however, that in late maturity, vigor, health, well-being, and possibly longevity can be increased with carefully planned exercise programs. Before the current attitude toward physical activity can be changed, it will be necessary to change the stereotypes about aging and exercise held by doctors, older people themselves, and the public at large.

Social Participation Patterns

Gerontologists have long endeavored to learn more about the factors related to the quality of later life. Among the variables which has generated research is social interaction. Social participation has, in fact, been pivotal to early theories of aging. Disengagement theory maintains that high life satisfaction in aging results from acceptance of the "inevitable" reduction in interaction.

91 Ibid.
while activity theory maintains that reduction in activity results in reduction in satisfaction. While it is now acknowledged that both theories are simplistic, support for both positions can be found in the literature.

This review is divided into four parts. It will first examine participation in voluntary associations in later life and then participation in interpersonal networks, that is, with family and friends. The third component will be a review of social participation of special groups such as widows, minorities and single individuals. Finally, the last section will review research on social participation and well-being in later adulthood. It is evident that there is a great deal of overlap in these categories, and that many studies incorporate several of these elements simultaneously.

Organizational participation. It has been theorized that voluntary associations, non-profit, non-government private groups that individuals join by choice, have a number of advantages for older adults.\(^9\) Such associations can promote the goals of their members, resist changes inimical to members' interests, reduce isolation by fostering social interaction and striving to meet the socio-emotional needs of members and can compensate for some of the role losses.

which accompany aging. Aging and voluntary association membership have, therefore, been studied from a number of perspectives.

One position states that most older adults do not belong to voluntary associations. Cross-sectional analyses of age differences in voluntary association memberships have demonstrated a decline in such memberships after age forty-five. Some observers have concluded that the age differences are attributable to aging.

Cutler examined aging and association participation in longitudinal data available on two samples of older adults. The first set of data was derived from the Adaptation Study at the Center for Study of Aging and Human Development, Duke University. At the start of the research in 1968 the panel consisted of 502 persons between the ages of forty-six and seventy. The 374 respondents in the present analysis had participated in rounds one, two and three of follow-up studies. The investigator's major conclusion was that the respondents tended to maintain their general attendance level in voluntary associations over the four years under study. Most of the respondents (76 percent)

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attended association meetings once a month or more at some
time of the four year period. Most of those (77 percent)
attending one or more times per month at the first interview
were attending at the same level at the time of the third
interview. Seventy-three percent of the respondents who
were not attending any association meetings at round one re-
ported not attending any at round three.

Cutler then examined data from the Oberlin Longi-
tudinal Survey in which a sample of persons sixty-five to
ninety had been followed for a two and a half year period.
Eighty-seven percent of the sample of 104 men and women in
the Oberlin study reported belonging to one or more volun-
tary associations at one of the two measurement times and
there was no appreciable difference by sex or age. Sixty-
nine percent of the subjects reported being very involved
in one or more associations. Females were more likely than
males to report being actively involved, and persons sixty-
five to seventy-two years of age were slightly more likely
than respondents seventy-three years of age or over to be
very involved in one or more associations. Seventy-four
percent of the total sample attended association meetings
once a month or more frequently at one of the two measure-
ment times, and again females were more likely to be fre-
quent attenders although the difference by age was very
slight. These findings pointed to considerable stability
in levels of voluntary association participation for all
respondent categories with the mean number of association
memberships increasing slightly over the two and a half year period. The aggregate data masked some changes by individuals within the sample. For example, 27 percent of the respondents belonged to fewer associations at round two than at round one, 40 percent belonged to more, 20 percent belonged to the same number and about 13 percent of the sample belonged to none at both times. Again, the expected decline in levels of participation was not demonstrated. Cutler concluded that the data clearly indicated that older adults are members and participate actively in voluntary associations contrary to cross-sectional findings which suggest that involvement among those forty-five years or older declines.

In another investigation of the curvilinear pattern of voluntary association membership and participation, Cutler studied the relationship of socio-economic characteristics of the elderly and association membership. The large body of evidence indicating older and younger persons belong to fewer voluntary associations than members of the middle age strata has not been examined to try to specify some of the reasons for the characteristic patterns of age differences.95 Data from two national surveys supported findings of other studies in showing that there is a curvilinear pattern in voluntary association memberships, that income and

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education are significantly related to membership in voluntary associations, and that the elderly have just those socio-economic characteristics that are associated with lower membership levels. After controlling for socio-economic variation between the age strata, the pattern of age difference is demonstrably altered. Membership levels tended to remain low for younger persons, were higher for those in the middle age groups, and then maintained similar levels, or were still higher, for those in the older age groups. Thus, the curvilinear cross-sectional pattern would appear to be largely attributable to socio-economic status of the elderly. The data showed that membership levels were higher for men than for women at all ages though for both there were decreases in memberships during particular transition periods such as when women between forty-five and fifty-four withdrew from youth serving associations or men between sixty-five and seventy-four decreased involvement in work related organizations. In both instances, however, membership levels were higher in the next age group. Cutler concluded the empirically observed age differences could no longer be attributed to age changes; but, rather, other characteristics such as age, health, socio-economic status must be considered in reaching any conclusions about social interaction in the later years.

Social class differences. Trela focused on social class differences in voluntary association membership among
older people because of the possibility that the predictive power of social class as a variable might decline in old age and that there might be a leveling or reversal of class participation for age-graded associations. He found that for age-graded associations 25 percent of Class I-II subjects belonged to at least one association for older people exclusively, while for only 6 percent of Class V subjects was this the case. When, following a special recruitment drive, joiners and non-joiners of a senior center were compared, only 7 percent of the joiners compared with 21 percent of the non-joiners were members of Class V (the lowest socio-economic category). Once recruited, however, there were no significant social class differences in the tendency to high participation and retention of membership.

Babchuk et al. attempted a systematic study of social participation among older adults in a midwestern non-metropolitan community of 35,000. From an estimated sampling frame of 2,200 they drew a random sample of 124 persons whose mean age was 74.4 years. The study was designed to examine several aspects of voluntary association participation. Information was obtained on (a) extent to

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which older individuals affiliate with groups, (b) whether men are more likely to belong to groups than women, (c) the specific types of associations which characterize the aged, (d) whether multiple memberships are at all characteristic, (e) the degree to which there is either similarity or overlap between memberships, and (f) how often those with memberships attend meetings and their general level of participation.

Among the findings were the fact that 79.8 percent of the sample were affiliated with a voluntary association, and a clear majority, 58 percent, belonged to more than one association. In fact, four out of every ten were members of three or more groups. Over 65 percent of individuals age seventy-five to seventy-nine and 75.9 percent of those eighty or older had one or more memberships. These groups were less likely to have more than three memberships however. The differences between the sexes with respect to affiliation or having multiple affiliations were negligible. This finding supported Cutler's earlier analysis, as opposed to previous reports which almost uniformly show that men are more likely than women to be affiliated with voluntary associations.

While the subjects held memberships in a wide range of organizations, the bulk of the memberships were in five types of associations: (1) church linked associations, (2) fraternal/sororal organizations, (3) veteran/patriotic groups, (4) associations for the aged, and (5) social-
expressive groups. The first three types of associations accounted for about 58.6 percent of the total memberships. When the investigators examined the data to learn whether or not there were overlapping memberships, they found that a greater number of respondents had overlapping memberships in fraternal/sororal groups than in any other kind. In all, about half the respondents with affiliations belonged to more than one organization of the same type. Correspondingly, only about 24 percent of the individuals belonged to more than two types of associations. There were differences between men and women in the types of groups to which they belonged. Women were significantly more likely to belong to church related and to "social-expressive" voluntary groups than men. Men, on the other hand, were significantly more likely to belong to service and professional work-related associations. Apart from these four, rates for men and women roughly paralleled one another in hobby groups, sororal/fraternal organizations, et cetera.

Data on attendance at meetings of organizations to which the respondents belonged indicated that they were reasonably active in the groups they belonged to. Women were significantly more likely to attend groups with which they were affiliated regularly than men. Further, those who belonged to the most organizations were most active participants. Individuals who had three or more memberships attended three-quarters of the time that each of the groups met. Thus, older persons with three or more
memberships were not only active in organizational life, but committed in terms of high frequency attendance.

The data from this study further reinforced the relationship between social class and membership. Respondents from higher social class background were likely to be affiliated. Those from a higher social class background were also the individuals most likely to have three or more memberships. When this fact is coupled with the data from attendance, it is apparent that the differential participation by class is substantial. While recognizing that the high participation rates demonstrated in this study could be related to sampling, the researchers concluded that probably a greater number of persons beyond sixty-five continued to maintain an active role in organizational life than has often been assumed.

Cutler believes that there is a strong possibility that future cohorts of older persons may belong to and participate in voluntary associations to a greater extent than is presently true. To establish trends in future association membership and participation levels he felt comprehensive base line data were needed. For this reason he studied age profiles of membership in sixteen types of voluntary associations. 98 Using data from the 1974-1975 National Opinion Research Center General Social Survey, N of 2,974, he developed information about the kinds of associations to

which older persons are most likely to belong. By rank ordering of associations according to the proportions of older persons who belonged, Cutler discovered that the groups to which the most adults sixty-five and over belonged were church affiliated groups. Second ranked were fraternal groups, third "other" groups, fourth labor unions, and fifth veterans groups. For men the ranking was church affiliated groups, fraternal groups, labor unions, veterans groups and "other" groups. Females joined church affiliated groups, "other" groups, fraternal groups, literary, art, discussion or study groups and, finally hobby or garden clubs.

Cutler further pointed out that three of the four types of associations to which older people belonged in the 1974-75 data had also been among the organizations to which older persons were most likely to belong in a survey completed in 1955.

Ward took a quite different approach to studying voluntary association participation of older adults. He asked the question, "What is the meaning of such participation in older adulthood?" Since participation in voluntary associations constitutes an important use of time, it would be important to know the consequences of this participation. Surprisingly, he found the membership in voluntary associations appears to have less meaning than gerontologists have

In order to study the meanings or functions of group involvement, interviews were conducted with 323 non-institutionalized residents (at least sixty years of age) in a midwestern city. The respondents in this study, as in most others, were somewhat better off with regard to education, income and health than the general population of older adults. The mean age of the sample was seventy-four years. Group members were asked about the types of activities of the groups to which they belonged, the nature of their own involvement, and their reasons for participating. Persons of higher socio-economic status were more likely to be more active participants and to belong to groups with age-related programs, and were less likely to participate in card playing or purely social activities. Better health was associated with more active participation and involvement in volunteer work. Only two activities were related to life satisfaction. Card players displayed lower overall satisfaction, even controlling for health and socio-economic status. Active group participation was associated with higher satisfaction, but this was apparently a function of better health and higher socio-economic status. Similarly, those who were leaders of groups were not more satisfied once health and socio-economic status were controlled. Health, former occupation, education, were significant predictors of how actively people participate in the groups to which they belong.
To investigate further the nature of group participation, respondents were asked to choose three statements from a list of "reasons people often give for joining groups" which best described why they participated in the groups to which they belonged. Contacts with friends was by far the most frequently mentioned benefit. Another was simple enjoyment or escape. Other reasons appear to be helping others, creativity, and learning. Relatively few respondents specifically mentioned gaining self-respect or status from group participation. A substantial number of persons simply said that group participation made time pass. While this is hardly a glowing affirmation of the pleasures of group activity, it was the third most frequent choice indicating that group participation may be perceived as merely something to do by a number of older adults.

Social interaction with family. Along with voluntary association participation, participation in interpersonal networks with family and friends represents another vital aspect of social interaction among older adults. This section looks first at older adults and their families.

Shanas recently updated information bearing on the widely held myth that old people are alienated from their families and particularly from their children. The data for Shanas' critique came from nationwide and probability

100 Shanas, Ethel, "Social Myth as Hypothesis: The Case of the Family Relations of Old People," The
surveys of non-institutionalized persons age sixty-five and over. These surveys were made in 1957, 1962, and 1975.

In 1975, at the time of the most recent survey, about 94 percent to 95 percent of all persons over sixty-five were community residents. According to Shanas, the alienation myth has provided at least four hypotheses. One of these states that because of geographic mobility, most old people who have children live at great distances from them. The second is because of the alienation, most older parents rarely see their children. Third, because of the predominance of the nuclear family in the United States, most old people rarely see their siblings or other relatives, and, finally, because of existence and availability of large human service bureaucracies, families are no longer important as a course of care for older people. While these hypotheses seem reasonable, the data does not support them. Shanas' findings about the first three hypotheses will be presented.

About four of every nine non-institutionalized persons over sixty-five have living children. This proportion of old people having living children has remained unchanged over the last twenty years. The proportion of old people who live in the same household with one of these children has declined, however, from 36 percent in 1957 to 18 percent in 1975. At the same time there has been a rise in the

proportion of old people living within ten minutes distance of a child. As a result, the proportion of old people with children who either live with one of their children or within ten minutes distance from their child has remained fairly constant over the twenty year period: 59 percent in 1957, 61 percent in 1962, and 52 percent in 1975. The findings thus indicate that while old people no longer live in the same household as the child, they now live next door, down the street, or only a few blocks away.

Living near adult children is no guarantee the older parent will see his children, of course. In 1975, however, 53 percent of persons with children including those with a child in the household saw one of their children the day they were interviewed, or the day before that. The proportion of older parents who saw at least one child during the week before they were interviewed has remained stable over roughly twenty-five years: 83 percent in 1957, 77 percent in 1975. Perhaps even more important, the proportion of older parents who have not seen at least one of their children for a month or more has remained stable over the twenty year period at about one in ten. About half of the older persons who live alone had seen at least one child the day they were interviewed or the day before that, and three out of every four had seen at least one child during the week before they were interviewed. There has been no decrease in visiting between parents and at least one of their children from the first survey to the last.
Along with children, brothers and sisters remain important to the older person. The proportion of older persons with siblings was the same in 1962 and 1975, about eight of every ten. Even when those persons over seventy-five are considered separately from those under seventy-five, seven of every ten still report surviving brothers and sisters. In 1975 one-third of older persons with living brothers and sisters saw at least one of these during the week before they were interviewed, and more than half of the old people with brothers and sisters saw at least one of these during the month before they were interviewed. For the widowed or older persons who have never married, brothers and sisters play an especially important role. While one-third of all persons with siblings had seen a brother or sister the previous week, three-fourths of those who had never married, saw a brother or sister during that time. In 1975 about three out of every ten older persons said they had seen some relative, who was neither a brother nor a sister, a child nor a grandchild during the previous week. For the childless elderly, this relative is often a niece or nephew who assumes the responsibilities of a child.

There may be some class differences in the nature of the contact of the older person and his relatives. Contacts with relatives are more common among persons in higher socio-economic levels, though the pattern is reversed for
contact with children. 101

While the data just described demonstrated that older adults are neither alienated nor isolated, their satisfaction with these relationships was not examined. The quality of relationships has become a critical question since work by Lowenthal and Haven found that having an intimate relationship with a confidant may serve as a buffer against loss of morale in the face of such decrements as loss of role or reduction of social interaction.102

Brown interviewed 263 persons fifty-five years or older to examine the satisfaction they felt in relationships with descendants, other relatives, friends, and groups to try to determine whether these expressions of satisfaction or dissatisfaction related to disengagement patterns.103 The majority of the respondents reported having contact with immediate family members, and 70 percent said they saw relatives at least as frequently as they had ten years earlier. Only about 7 percent reported having anything other than very satisfactory relations with their descendants, and


even those who expressed dissatisfaction were no more likely to be disengaged from their descendants than those who reported completely satisfactory relationships. Those who were less satisfied had more frequently disengaged in general, however, than those who expressed complete satisfaction.

The pattern with extended family relationships was somewhat different. The 69 percent who maintained contact with other relatives were more willing to express less than complete satisfaction with the relationships, and those least satisfied tended to have disengaged from their extended families though this did not influence their general disengagement.

The pattern with respect to friendships and group participation was similar to that with extended family. Only 13 out of the 263 persons interviewed failed to report relationships with friends. While few respondents expressed serious dissatisfaction with friends, a low negative association was found between satisfaction with friendships and disengagement from friends. About 45 percent of the group said they attended groups of various kinds with some regularity, but those who expressed less than complete satisfaction with group activities were slightly more apt to have disengaged from group activities than those expressing greater satisfaction. Withdrawal from unsatisfactory friendships or unsatisfactory groups did not affect overall disengagement, however.
Brown concluded that the pattern of changing relationships for older adults tends to progress to fewer formal and group relationships and to more personal and individual relationships. In particular, immediate family ties appear to be the last social stronghold to which the elderly cling.

Babchuk studied the primary relations of eight hundred persons forty-five years of age and older to discover the nature of their primary resources, that is, the extent of their primary relatives, confidant relatives, primary friends and confidant friends. A person could have all four types, a combination of the four or be an isolate without any primary resources. Only thirty of the eight hundred persons were isolated from kin, but 117 of the sample reported lack of ties with friends. While 120 respondents reported no confidant relative, a third did not have a single confidant friend.

Age did not make a difference in the number of primary relatives reported, but older respondents reported fewer confidant relatives. Age was also more significant when considering primary and confidant friends with seventy the turning point with respect to primary friends. More than one in five above that age was without a primary friend, as compared to about half below that age. Sixty-five was the turning point with regard to confidant friends.

Clearly those who were older had fewer resources than those who were younger.

With respect to social class differences Babchuk commented, "Those with much formal schooling and in prestigious occupations maintained a somewhat richer network of kinsmen (many of whom were confidants) and of primary and confidant friends than individuals with less formal schooling and in unskilled occupation, but the differences between them were more in degree than kind."

While the study suggested middle aged and older individuals have a greater number of primary resources than might be expected based on earlier research, the way in which the four types operate and the meaning of each will require further research.

**Friendship in later life.** Lowenthal and Robinson recently reviewed studies of friendship in later life and described the following general characteristics.¹⁰⁵ Some reports indicate that friendships are maintained into old age while others suggest that because friends died or moved away older persons had difficulty in getting about and making new friends. Not surprisingly, older persons in good health were more likely to visit with friends than those in poor health.

There is little difference in friendship

¹⁰⁵ Lowenthal and Robinson, p. 439.
association by sex although women have more close friendships than men. Widowhood narrows the circles of friends for men, but may have the opposite effect for women. Some studies indicate that friendship contacts are more frequent among persons of higher socio-economic status, though one recent longitudinal study suggests that personality characteristic and lifestyle are also important attributes for involvement with friends.

Evidence indicates that interaction with friends is more highly valued than that with family; but when commitments conflict, kinship takes priority. Relations with family and friends are usually not competitive and are managed separately. Elders in age-segregated housing are more likely to associate with neighbors than in age-integrated housing leading to the conclusion that homogeneity of social milieu has a strong bearing on friendship patterns. Where unlike statuses exist, social life is more restricted. Stability in a friendship network lends a sense of continuity of self to the individual and may be particularly important when the individual's ties to other networks are loosening.

Widowhood and social interaction. Because widowhood is one of the major crises in later life and is often associated with loneliness and loss of satisfaction with life, gerontologists are increasingly devoting attention to the social and psychological adjustment to widowhood.
Pihlblad and Adams compared three categories of individuals, the married, the recently widowed (within four years) and the late widowed (five years or more) with respect to family associations, friend contact and participation in formal organizations, noting the contributions of each to life satisfaction. The subjects of the study included 1,551 non-institutionalized, married or widowed elderly, aged sixty-five or older who resided in small towns in the midwest.

Over three-fourths of the widowed resided alone, but data indicated that the widowed were more apt to reside with children or other relatives than were the married. For both males and females the proportion residing with family members increased steadily with the length of widowhood, and living with children or near relatives was somewhat more frequent among widowers than widows.

For the recently widowed males, frequency of contact with children increased; but after five years of widowhood, the association was below the pre-widowed level. The same was true of contacts with other relatives. Females, however, showed no great change in contact levels with widowhood. It also appeared that there was an adjustment to widowhood which was independent of family contact. Persons widowed five or more years had higher satisfaction levels than the recently widowed, but lower than the

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married, at almost every level of family association. For females, the level of child contact tended to be associated with higher satisfaction, but males showed no consistent pattern. In fact, widowers of five or more years who had high contact with their children showed a depressed level of satisfaction. Sibling and other relative contact appeared more conducive to satisfaction increase than did children contact.

For men the number of friends decreased by one-half after five years of widowhood, while the number remained the same for widows. The frequency of visiting was less for males in all marital categories and decreased steadily with length of widowhood. Daily visiting was more common by widows than by married women and showed no decline with the duration of widowhood. Persons with no friends had lower satisfaction than persons without children or siblings, while those with high friend contact had higher satisfaction than those with high family contact. There was little doubt that friend association explained more of the satisfaction variance in widowhood than did family association and that the level of friend contact was more linearly related to satisfaction increase than was the case with the level of family contact.

In examining formal participation, the researchers found that among the small town elderly over 80 percent of formal contacts were limited to the church. Three-fourths of the females in any marital category were active in at
least one formal group. By comparison, about two-thirds of
the married males and one-half of the late widowers were
this active. Among males there was a linear trend for de-
creased interest in formal organizations in widowhood.
According to the findings, formal participation was even
more conducive to high satisfaction than contact with
friends, with the exception that persons without formal
organizational memberships were not as dissatisfied as those
with such memberships but no participation in them.

The author concluded that among small town elderly
satisfaction was most affected by participation in formal
organizations, second by friend associations, and least by
family contacts. In terms of levels of associations, it was
evident that females were more activity oriented than males,
whether it be with family, friends, or formal organizations.
There was no great change in female activity patterns upon
widowhood whereas, males showed a decline in most types of
participation with length of widowhood.

Rosen examined social relationships and successful
aging among the widowed aged testing two hypotheses. 107
The first was that the greater the frequency and the more
intimate the type of social relationship in which the aged
widow was engaged the higher would be her morale. Second,

107 David H. Rosen, "Social Relationships and Suc-
cessful Aging Among the Widowed Aged" (Unpublished Ph.D.
dissertation, Brandeis University, 1973), Dissertation
Abstracts, Volume 34, No. 4, 2029-A.
the foregoing associations may be modified by demographic characteristics in circumstances of widowhood. Data was based on a sub-sample of 158 non-institutionalized aged widows who had been interviewed as part of a comprehensive national survey. Associations with successful aging were examined for three types of social relationships: kinship, friendship, and organizational participation. The demographic characteristics included: age, race, income, education, health, living arrangements, length of widowhood, and age when widowed. The findings did not support the proposition that the frequency of participation in social relationships of all types would be consistently associated with level of morale. Only certain forms of social relationships were positively associated. These included indirect contact with children by letter or phone, having a confidant, and particularly group or organizational participation. Frequency of seeing siblings and contact with neighbors and friends exhibited virtually no association with morale, and the data suggested the possibility of an inverse relationship between seeing children and morale. Moreover, those living with children were found likely to have the lowest morale. The researcher concluded that while intimate relationships are important for the maintenance of morale, voluntary forms, such as having a confidant may be preferred by the aged widow.

In his survey of 409 elderly widows in South Carolina, Arling focused on two central questions: What
factors can account for the social involvement of elderly widows? and in what way is social involvement related to morale? His conclusion was that the greater the social involvement the higher the morale, irrespective of age or stage of disengagement. Neighborhood involvement was strongly related to both daily activity and morale. Those widows who had a number of neighbors they could visit also participated in more daily activities such as hobbies, shopping, church services, etc., and had higher morale. In contrast, the relationships with children and other family members made virtually no difference in daily activity or morale regardless of age, health, or economic status. The evidence suggests, therefore, that neighborhood and family relationships are independent of each other and that widows do not substitute family for neighbors or neighbors for family. When a further problem of whether or not the most dependent widows, i.e., those who were poor or physically handicapped, was examined it was found that the poorest and most incapacitated of the widows had less contact with family and neighbors, fewer daily activities, and lower morale.

**Single elderly.** One category of the elderly which has received little attention are those in the population over sixty-five years of age who have remained single.

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Single older adults constitute about 8 percent of those over sixty-five.

The amount of research done on single elderly is very limited but the available data suggest single elders tend to be life-long isolates, are not especially lonely in old age, evaluate their every day life in ways similar to married elders in the sense that both are more positive than divorced or widowed aged persons, and, finally, being single does allow the individual to avoid the effects of bereavement following spouse death.

As part of a larger study, Gubrium interviewed twenty-two aged and single elderly people living in a metropolitan area. Among the aspects of their lives investigated were considerations about non-marriage, social contacts, and leisure time. While it appeared that the single elder at one time had many friends, he was no longer close to them in old age. Comments were such as "Oh, I have dozens of friends! Years ago I could go to them. I learned to be satisfied with what I have, I tell ya. I sit here for hours and hours, but I'm happy." "I have a lot of close friends. I went more often with them when I was 45. I see them enough now." "I stopped seeing friends since I moved into this apartment. It's funny that I'm so satisfied." Single elders, then, often say they associated with friends

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and relatives more when they were younger than at present. They are aware that they have become more isolated from them as they have aged, but they do not typically say that they are lonely. Rather, the more common response is they prefer being alone. Their leisure time is likewise spent in relatively solitary activity such as watching TV, knitting, listening to the radio, walking, reading, etc. Their daily lives are solitary ones which they take for granted as comprised of ongoing ordinary routines. They involve personal independence, long term continuity in life events, relatively minimal social lives which are taken for granted as being normal and representing the continuity of their lifetime.

This somewhat different lifestyle does not necessarily mean single elders are more vulnerable. When single older women in a sample of 1600 older adults were compared to women of other marital statuses, two differences emerged. Singles elicited support from more distant relatives such as nieces, nephews and cousins more frequently. Thirty-five percent received help from such extended family members compared to 3 percent for married, 9 percent for widows and 3 percent for divorced women. The second finding was that on five indicators of well-being, the single woman appeared to be the healthiest.

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Minority elderly. As gerontologists have recognized that minority aged are in "double jeopardy," various facets of their lives have been studied. Findings in this area, as in others, have been divided.

While one study may find that elderly whites have larger primary networks and receive emotional and social support from more family members than do blacks, another offers contradictory findings. Blacks have significantly more contact with their children and kin than do whites and that was true for all social classes included in the study. Whites, in turn, had more contacts with neighbors and friends except for those in the lowest socio-economic category. Blacks in the highest social class had very rich social networks while whites in the lowest group lived in relative social isolation. Whites were more involved in community and group activities, while blacks were involved with church and church groups.

Rubenstein found that while more black elderly than white lived in the same household as their grown children, there were no major differences in the number of children, and numbers and kinds of siblings and other family members

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with whom the elder was in contact.\textsuperscript{113} In this sample, too, white elderly had more close relationships with friends, neighbors and confidants than did black elderly. Further, more elderly whites than blacks reported belonging to social organizations. The amount of participation and the degree of morale varied with the type of participation, sex of the subject and economic status.

When Clemente et al., studied participation of black aged in voluntary associations, they reached different conclusions.\textsuperscript{114} Studies of racial differences in participation in voluntary associations have rather consistently reported that blacks had higher rates of participation than whites, but whether or not this difference also held true for black aged had been less thoroughly examined.

Clemente's study proceeded from the hypothesis that aged blacks had higher rates of membership and activity in voluntary associations than aged whites. Data were derived from 1,022 non-institutionalized older adults. Seventy-four percent of the sample were black and 26 percent were white. Regression analysis was used to test the hypothesis, and four control variables - sex, dollar income, education,

\textsuperscript{113}Daniel S. Rubinstein, "An Examination of Social Participation of Black and White Elderly" (Unpublished Ph.D. dissertation, Brandeis University, 1972), Dissertation Abstracts, Volume 33, No. 1, 418A.

and health - were entered into the equation. There proved to be a statistically significant difference between the mean participation of blacks and whites with the mean number of memberships for blacks being .356 and the mean for whites .200, significant at the .05 level. Findings with respect to race and attendance were likewise significant in the expected direction.

Korte examined the social interaction and morale of a small sample of Spanish-speaking elderly.¹¹⁵ It is recognized that modernization erodes the kin and communal contact considered important in the lives of Spanish-speaking elderly. This study, which is one of the few concerned with that group, set out to investigate whether or not loss of social interaction with significant kin tended to be demoralizing and whether or not substituted forms of social interaction such as involvement with comadres/compadres, neighbors, community or service groups was thought to sustain loss of interaction and to maintain self-esteem. Structured interviews were held with 52 urban and rural Spanish-speaking elderly couples in northern New Mexico. Data was collected on the level of interaction with immediate and extended kin, compadres, neighbors, and community organizations. It was found that rural elderly had higher

morale scores and higher levels of social interaction with the immediate and extended kin as well as with the ritualized kinship network of compadres. Generally the urban elderly who had high morale scores participated with more neighbors as a substitute for less interaction with kin. Elderly females in both sample groups were found to have more variable morale scores reflective of the greater strain in their social situations.

Jackson has examined both the relationship of elderly black parents to their adult children and compared lifestyles with respect to family and friend relationships of older black women. According to Jackson, most old blacks with kin can legitimately expect to be able to depend upon kin for their instrumental and affective needs although the actual availability of assistance may be limited by the kin's socio-economic condition. Even those attempt "to squeeze blood from a turnip" to provide assistance. In the first study Jackson found that, where available, most elderly black parents tended to rely especially upon their eldest daughters. Differences in requests of children were dependent both on the sex of the child, sex of the parent, and the child's socio-economic status.

In her study of older black women's relationships with children and friends, Jackson compared selected

instrumental and affective aspects of those relationships. Her major finding was the degree of similarity in instrumental and affective relationships with oldest children and with closest friends between married and spouseless older women. Presence of spouse had negligible impact on contact frequency and satisfaction with children and friends. The principal exception was that spouseless women were significantly more likely than married women to report shared commercial recreation with friends. Differences between friends and children were found in the greater frequency of shared visiting or outdoor recreation and attendance at the same religious or other organization groups which occurred with friends than with children among both the married and spouseless women. The study finally suggested greater contact frequency and satisfaction with friends than with children for both married and spouseless women.

Life satisfaction and social interaction. A great deal of gerontological research has centered on life satisfaction in older adulthood. This final section of this part of the review of the literature will examine some of the diverse approaches which have been utilized to study potential relationships between life satisfaction and various

types of social interaction. First, findings related to "activities" in general will be reviewed. Next, studies which focused on voluntary association participation and life satisfaction will be considered. Finally, results which related to the informal social interaction with friends and relatives will be presented.

In his review of thirty years of research on life satisfaction or subjective well-being of older Americans, Larson found social activity to be one of the ten major life situation variables related to well-being. From his study of the research he estimated that from 1 percent to 9 percent of variance in well-being was "explained" by social activity. According to Larson, this research "has yielded an array of differing findings for different measures of activity and different study populations, but, in general, it shows measures of these two variables to be positively related." The positive relationship is clear for general indices of activity, but the results for more specific measures are less consistent.

Among the studies which demonstrated a positive relationship between general indices of activity and well-being was one reported on 127 participants in the Duke Longitudinal Study of Aging. The volunteers had first been


119 Erdman B. Palmore, "The Effects of Aging on
interviewed during 1955-59 and they had completed four waves of interviews by 1966-67. At this date the mean age was 78. The **Chicago Inventory of Activity and Attitudes** was the measuring instrument used at each round of interviews. Findings for the ten year follow-up noted that the men had almost no overall reduction over the ten years in either activities or attitudes. For women, there were significant but quite small reductions in both activities and attitudes. Those who had reduced their activities as they aged tended to suffer reduction in overall satisfaction; and, conversely, those who increased activities tended to enjoy an increase in satisfaction. There was clear evidence that patterns of behavior and attitudes among the aged tended to be fairly stable over long periods of time.

In a four year follow-up of forty-four elderly women Graney's findings were similar. Current levels of activity reported on six of the nine measures of social participation were significantly related to happiness, while a seventh was close to statistical significance. There was not only a significant relationship between the interviewee's current level of activity and happiness, but also a significant direct relationship between happiness and change in activities and attitudes," *The Gerontologist*, VIII (Winter, 1968), 259-263.

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level of activity over the four year period. Activity increments appeared to be more important to happiness and decrements to unhappiness among the oldest respondents than the youngest.

Using data from the eleven observations over twenty-one years of a sample of respondents from the Duke Longitudinal study, Palmore investigated the predictors of "successful aging."\textsuperscript{121} Successful aging persons were defined as those who survived to age seventy-five with less than 20 percent disability who had a happiness rating which indicated they were generally or always happy, contented and unworried. Eighteen variables were examined initially. These included ratings of health, happiness, activities, attitudes, and socio-economic measures. The two strongest predictors were physical function rating and the happiness rating. This was expected because both were used as criteria for successful aging when the person reaches age seventy-five. Of the eight significant zero order predictors, the strongest of these for both men and women was secondary group activity. This had almost as strong correlation with successful aging as did physical-function and happiness. When the relative importance of the significant predictors were tested, secondary group activity for both men and women was most important. For women the second and third

\textsuperscript{121} Erdman-Palmore, "Predictors of Successful Aging," The Gerontologist, XIX (October, 1979), 427-431.
explanatory variables were physical activity and solitary activity; for men, they were work satisfaction and physical activity.

As Palmore discussed the findings, he pointed out that he believed the fact that primary-group activities were not significant might be explained by the fact that most of the participants in the study had fairly high levels of primary group activity and so had enough to allow successful aging. "Secondary group activity was much lower on the average, and thus represents a more critical factor in successful aging." Only the more active and involved belonged to several groups and participated in them regularly enough for their participation to contribute to successful aging.

In an earlier study using the Duke Adaptation Study data Palmore and Luikart had investigated health and social factors related to life satisfaction. 122 While self-rated health was by far the strongest variable related to life satisfaction, the second strongest factor related to life satisfaction was organizational activity, a simple sum of the number of church and other meetings attended per month.

In 1973, Cutler had challenged the use of voluntary association participation as a predictor of well-being of the aged without regard to social characteristics of the

Cutler's finding was:

The positive relationship between participation in voluntary associations and life satisfaction of the aged is an artifact of the manner in which participants differ from non-participants.

After controlling for the effects of health and social status, Cutler found that participation in voluntary associations explained no significant relationship with life satisfaction.

Three years later Bull and Aucoin replicated Cutler's study to see if the relationships found by Cutler held up over time and in a different geographic area. The data for the replication study were collected by a survey of a randomly selected sample of ninety-seven non-institutionalized respondents aged sixty-five or older living in a midwestern city. An index of social participation was derived from the number of association memberships held, the number of associations very involved in, and the frequency of attendance at association meetings.

Results of the replication study were similar to those of the original. In both studies, a positive relationship between extent of voluntary association participation and life satisfaction was observed. After controlling for the effects of health and socio-economic status,


124C. Neil Bull and Jackie B. Aucoin, "Voluntary
however, the relationship between voluntary association participation and life satisfaction became non-significant. The authors concluded that the positive relationship between participation and life satisfaction was due to differences between participants and non-participants. The elderly who have high levels of participation are more often of better health or of higher socio-economic status than those with low levels of participation.

Cutler, after recognizing the inconsistent findings in research on voluntary association participation and life satisfaction, undertook a study designed to discover whether or not there was a difference between types of organizations to which older adults belonged and life satisfaction. The sample included 438 older adults with a mean age of 72 years. The dependent variables were a self-reported measure of overall happiness and a Satisfaction Index developed from four questions in the interview schedule. Memberships in different types of voluntary associations were measured by a series of questions related to types of organizations to which the respondent belonged. In the first stage of the regression analysis, health, education and income explained a significant proportion


of the variance in each of the dependent variables. In the second stage, the sixteen measures of voluntary association were entered into the equation. For both dependent variables, membership in only one type of association - church affiliated groups - emerged as a significant predictor over and above the results of the first stage predictors and membership in the remaining types of associations.

The same procedure was applied to a second set of data with results which were consistent with the first. Cutler stated that, taken together, these findings support the conclusions that, among older persons, psychological well-being does not appear to be related to membership in most types of voluntary association. To the extent that well-being is significantly and independently related to membership in any particular kind of association, this effect appears to be confined primarily to membership in church affiliated groups.

Several times in this review it has been noted that family interaction seemed to have less relationship to well-being than some other forms of social participation. One recent study produced a different outcome. Conner et al., developed a complex multiple-measurement approach to social interaction in the hope that it would provide a more definitive test of the importance of interaction styles for life satisfaction than the usual single interactional
They studied frequency of interaction, scope of interaction, and distribution of interaction over the social network in terms of content, age grading and exclusivity. Data were obtained from 218 non-institutionalized persons aged seventy and older living in small communities in a midwestern state.

The relationship between the twenty-two measures of social interaction and life satisfaction were examined with Pearsonian Zero order correlational techniques. First and second order partial correlations were used to control for the effects of income and health status. The findings indicated that four of the twenty-two social interaction variables were related to life satisfaction: (1) age grading and frequency of interaction; (2) number of immediate family members seen; (3) total number of persons seen; and (4) exclusivity in confidant relationships. Although these relationships were statistically significant, they explained little of the variance in the respondent's life satisfaction. Controlling for the effects of income and health status eliminated these relationships and produced significant relationships between life satisfaction and: (1) number of siblings and other relatives; (2) exclusivity in scope of interaction with immediate

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family members; and (3) exclusivity in scope of interaction with siblings and other relatives. Overall, the results indicated that both the number of persons interacted with and the frequency of this interaction were of little importance for the adjustment of older people.

Friendship and life satisfaction. Investigations by Lemon, Bengston and Peterson, by Bowling, and by Edwards and Klemmack also demonstrated the saliency of friendship to life satisfaction among older adults.

Lemon et al., first prepared a formal, explicit statement of the activity theory of aging. From one of the theorems developed - the greater the activity, the greater one's life satisfaction - seven hypotheses were constructed to be tested in this study. The major independent variables were informal, formal, and solitary activity types and were measured by computing the frequency of interaction with close friends, neighbors, relatives, number of memberships and degree of participation in formal organizations and frequency of involvement with solitary activities. Subjects were 411 men and women interviewed prior to their anticipated move into a retirement community.

Of the seven hypotheses tested in the study only Hypothesis 1, informal activity is directly associated with life satisfaction, and Hypothesis 3, informal activities are more highly associated with life satisfaction than formal activity received support of any kind. Only one type of activity, informal activities with friends, was significantly correlated with life satisfaction.

The authors concluded the consistently non-significant relationships concerning informal activities with relatives, and neighbors, formal activity, and solitary activity may indicate these types of activity were not important sources of role support for the subjects in this sample. The authors further suggested that to propose that activity, in general, is predictive of life satisfaction, in general, obscures the complex interplay between the individual and his changing social systems. They raised the question of whether or not there were other types of variables, such as personality or psychological factors, which are important in determining differential life satisfaction among aged individuals.

Edwards and Klemmack attempted to determine which of many variables related to life satisfaction were the most efficient predictors of that satisfaction and what combination of factors was most successful in explaining the variance in experienced satisfaction in life.128

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128 John N. Edwards and David L. Klemmack,
Subjects of the study were five hundred men and women forty-five years and older living in a rural area. Independent variables included socio-economic status, personal and social background characteristics, formal social participation, informal familial relations, informal non-familial participation, and health status. Data were analyzed by Pearson r, then controls for socio-economic variables were applied, and finally the relative contribution of each predictor determined.

While initially most of the factors were related to satisfaction, the application of controls changed these results. The primary determinant of life satisfaction was socio-economic status. Perceived health also had a substantial positive relationship. Finally, non-familial participation variables, particularly the extent and intensity of neighboring, appeared to have a substantial positive effect. It was surprising to the researchers to find that informal participation with kin had but negligible relationship with satisfaction whether controls were instituted or not.

Bowling's findings from a study of 167 older adults on the influences of family and friends on life satisfaction reinforce some of the findings of the study just

Health was the most salient predictor of life satisfaction with intensity of friend contact being the second most important relationship. Increased activity with friends was directly related to life satisfaction, while increased family contact had negligible effect.

The Kansas City Study of Adult Life found that, in general, there was a positive correlation between extent of social interaction and psychological well-being, and that the correlation was higher for persons seventy and over than for those younger. At the same time the relationship was not consistent because there were some older persons who were low in social activity who had high life satisfaction and vice versa.

Based on these findings Neugarten, Havighurst, and Tobin studied the relationship of personality type to disengagement. Their data included personality type, based on an ego psychology model, extent of social role activity and degree of life satisfaction. Subjects were fifty-nine women between ages seventy and seventy-nine.

Fifty of the fifty-nine respondents fell into one or another of eight personality patterns. As had been

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expected, there were several mixes of activity level and life satisfaction. For example, mature "integrated" personalities could be high, medium, or low in activity and still experience high life satisfaction. The "constricted" pattern of aging, in which the women closed themselves off from experiences, resulted in low role activity but was related to high or medium life satisfaction.

Neugarten et al., concluded that neither the activity nor disengagement theories of successful aging accounted for the empirical findings. Rather, a personality-continuity or development theory of aging was suggested by the data. Individuals seem to continue to exercise choice and to select from the environment in accordance with long established patterns. Personality thus is the pivotal dimension in predicting relationship between level of social role activity and life satisfaction.

**Summary.** Again it is clear that the literature on social activity and well-being presents a diversity of outcomes. Discussions of the methodological issues involved in life satisfaction investigations point to the sloppy usage of constructs such as "morale" and "happiness," to the use of global rather than domain-specific measures, to the application of measures across social classes without knowing how the constructs are interpreted by those groups, and to interpretations which are unwarranted in view of criticisms such as those just listed. Despite the
limitations, it seems likely this will continue to be one of the most frequently researched aspects of aging.

Social gerontologists have long theorized that social participation is related to successful aging although empirical support for this proposition is conflicting. Patterns of social participation which are significantly influenced by health, socio-economic status, sex, and possibly personality type appear to remain generally stable at least into the seventies. Informal social interaction with family and friends as well as participation in formal organizations have been examined for their relationship to life satisfaction. All have been found to be significant in some studies but not in others. Thus, both low and high social participation in several types of interactions have been found to be positively related to life satisfaction.

The Personality Scales

This final portion of the review of the literature focuses on the two personality measures used in the study. A brief description and a summary of relevant psychometric data is presented for each scale.

The Tennessee Self-Concept Scale

The scale consists of one hundred self-descriptive statements each to be answered on a five point scale ranging from completely false to completely true. Typical self-statements on the scale include the following:
8. I am a calm and easy-going person.
9. I am a nobody.
20. I am a sick person.
31. I am mad at the world.

William H. Fitts, the author of the Tennessee Self-Concept Scale (TSCS), developed the scale in conjunction with the Tennessee Department of Mental Health in 1955.\footnote{Fitts, p. 13.} He created it because he felt there was a need for a self-concept scale which was simple for the subject, widely applicable, well standardized, and multi-dimensional in its description of the self-concept.

The subject uses the one hundred self-descriptive statements to portray his own picture of himself. The scale is self-administering for either individuals or groups and can be used with subjects age twelve or higher and having at least a sixth grade reading ability. It is also applicable to the whole range of psychological adjustment from healthy, well-adjusted people to psychotic patients. According to the author most subjects complete the scale in ten to twenty minutes with the mean time being about thirteen minutes.

According to Fitts,\footnote{Fitts, p. 13.} the standardization group from which the norms were developed was a sample of 626

\footnote{William H. Fitts, Tennessee Self-Concept Scale Manual (Nashville, Tennessee; Counselor Recordings and Tests, 1965), 1-31.}
individuals from various parts of the country whose ages ranged from twelve to sixty-eight years. There were approximately equal numbers of both sexes, both negro and white subjects, and representatives of all socio-economic, intellectual and educational levels. Subjects were obtained from high school and college classes, employers at state institutions, and various other sources.

The test manual reports the following two week test-retest reliability coefficients for sixty college students: total self-regard .92, rows from .88 to .91, columns from .85 to .90. However, reliability data from many other groups offered in support of the test validity is not available.

Fitts reports four types of validation procedures: (1) content validity, (2) discrimination between groups, (3) correlation with other measures, and (4) reports of personality changes under particular conditions.

The author feels content validity is developed through the classification system used for row and column scores which provides the basic structure of the scale. This is further supported, he believes, because an item was retained in the scale only if there was unanimous agreement by the psychologist judges that it was classified correctly.

His second approach to demonstrating validity is that of determining how the scale differentiates between groups. Statistical analyses have been performed in which
a large group (369) psychiatric patients were compared with the 626 non-patients of the norm group. Fitts maintains that the comparisons demonstrate highly significant, mostly at the .001 level, differences between patients and non-patients for almost every score utilized on the scale. He further cites four studies which demonstrate similar patient versus non-patient differences. Data are also presented to suggest that the scale differentiates the type of disorder as well as the degree of disorder. This scale has also been used to study the relationship between self-concept and behavior differences in groups. Predicted differences between delinquents and non-delinquents, for instance, have been in the predicted direction.

In the TSCS Manual, Fitts presents correlational data between the **Tennessee Self-Concept Scale** and the **MMPI**, the **Edwards Personal Preference Schedule**, and Izard's **Self-rating Positive Affect Scale**. The correlation in this last instance was .68.\(^{133}\)

Using 260 college students as subjects, Vacchiano and Paul S. Strauss explored the construct validity of the TSCS through factor analysis.\(^{134}\) Twenty-two factors were extracted accounting for 66 percent of the total variance. While the analysis failed to find clear indications of an

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\(^{133}\)Fitts, p. 24.

internal frame of reference claimed by Fitts, the investigators thought that the factors did indicate a measure of physical self, moral-ethical self, personal self, family self, and social self. They concluded that the finding of the five proposed measures of self just enumerated lent some support to the validity of the scale.

Writing in the Seventh Mental Measurements Yearbook, Richard Suinn commented on the need for more scientific presentation of the normative data. He thought the content validity might be adequate, but that there has been little work toward the empirical validity of the individual scores, i.e., what does acquiescence conflict score relate to behaviorally. He pointed to the fact that factor analytic work presented findings which conflict with the use of several scales, each with presumed differing information. Despite these limitations, Suinn stated that "the TSCS ranks among the better measures combining group discrimination with self-concept information" and "offers great potential as a promising clinical instrument."

The Internal-External Control Scale

The Rotter Scale consists of twenty-nine forced choice statements. Six items are filler items included

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136 Julian B. Rotter, "Generalized Expectancies for
in an attempt to disguise the purpose of the test, so the scale consists of twenty-three I-E items. The score is determined by counting the number of responses determined by the test maker to be external responses.

Sample statements from the scale include the following:

6. a. Without the right breaks one cannot become an effective leader.
   
b. Capable people who fail to become leaders have not taken advantage of their opportunities.

9. a. I have often found that what is going to happen will happen.
   
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

Phares provides the most recent update and summary of the psychometric data related to the I-E Scale. \textsuperscript{137} With respect to internal consistency, Rotter's estimates ranged from .65 to .79. Rotter suggests that the non-comparability of the items in an additive scale of this type makes it difficult to achieve high estimates of internal consistency. On test-retest reliability, Rotter reported reliabilities for varying samples over varying intervals from .49 to .83. Phares reports that these numbers were similar

\textsuperscript{137} E. F. Phares, Locus of Control in Personality (Morristown, New Jersey: General Learning Press, 1973), 38-51.
to those obtained by Hersch and Scheibe who report test-retest reliability ranging from .48 to .84. Similarly Harrow and Ferrante reported a reliability figure of .75 for psychiatric patients over a six week span. Phares concludes that from a psychometric point of view, test-retest reliability of the scale appears adequate.

In his review of the internal-external control construct Joe concluded

The most significant evidence for the construct validity of the internal-external control variable lies in the area of personality functioning. While findings are not remarkably consistent, generally, data tend to support Rotter's contention that the internal-external control concept is a generalized expectancy operating across many situations. There are some areas in which subsequent use of the scale have obtained information contrary to Rotter's original findings. Initially, for instance, he claimed that sex differences did not appear to influence an individual's belief regarding locus of control. There have been enumerable studies which have pointed to the fact that sex often moderates the relationship between IE Scale scores and other behaviors.

Both Joe and Phares agree that this difference is probably attributable to the cultural roles assigned to each sex, to social class and possibly to regional effects. Findings on ethnic and social class differences have consistently pointed to variations in I-E scores being related to differences in access to power in this country. Blacks and subjects from lower socio-economic groups are

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relatively more external in their beliefs. Evidence for racial differences have been noted in cross-cultural work which has been done with the scale. As Joe points out, "individuals from lower socio-economic classes and minority groups have higher expectancy of external control because they perceive limited environmental and material opportunities.

Two areas in which the scale has received considerable challenge are its relationship to social desirability and its multidimensionality. Although in the developmental work Rotter reported specific efforts were made to insure that socially desirable responses were minimized and he reported - . 07 to - . 35 correlations with the Marlowe-Crowne social desirability scale, subsequent research has found significant correlations in this area. Reynolds, after reviewing the studies which examine social desirability in the I-E Scale, came to the following conclusion. 139

The conclusion of this reviewer is that since independent measures of social desirability tend to correlate so weakly with IE Scale scores, and since the item by item analyses of social desirability effects of Bern, Hardson, Hjele, and Joe are inconclusive and occasionally inconsistent, it is probably premature to abandon the IE Scale as hopelessly effected with social desirability factor.

A second aspect of the scale which has been

questioned recently is whether or not it is unidimensional as Rotter originally reported. A number of studies have focused on this aspect of the scale. While evidence is accumulating to suggest the scale is multidimensional, the researchers are not in agreement about what those dimensions are nor what the significance of the findings may mean with respect to the scale itself.

Despite the findings on lack of unidimensionality Sechrest, reviewing locus of control research in the `Annual Review of Psychology,` commented that "the degree and meaning of multidimensionality of I-E remains to be elucidated." 140

**Summary and Conclusions**

Chapter 2 of this report has reviewed the literature which has the most direct relationship to the study. In summarizing the related literature, the investigator concluded:

1. Through the use of a variety of scales, checklists and interview questions, self-concept in older adulthood has been studied extensively. Findings suggest that self-concept is a multidimensional concept which changes with age, and recent research suggests that feelings

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about self become more positive with age. Life circumstances rather than age, per se, appear to account for the variability in self-feelings in older adults. Education, income, health, activity, satisfaction with life achievements, and resources to match aspirations are among the variables which have been found to be associated with positive self-concept. While social interaction in old age has been studied in relation to self-concept, most other aspects of lifestyle have not. Up to this point inferences have been made about behavior from studying attitudes rather than from studying behavior itself.

2. In older adults, an internal orientation toward control of reinforcements is associated with activity, complexity, adaptability, high self-esteem, autonomy, and competence. Correspondingly, a low sense of control over life is associated with negative self-concept. A limited amount of research has been done which relates I-E orientation to social interaction and to the effect of constraints on autonomy to locus of control. Many other aspects of behavior have yet to be explored.

3. While basic attitudes toward food and eating are laid down in childhood, a number of changes
which accompany aging may impinge on those attitudes. Adequacy of income, living situation, ease of shopping for food are among the factors which might influence food intake patterns. Despite the potential for change, the majority of older adults tends to follow the practice, which is customary in this country, of eating three meals per day. At the same time, we know that loneliness may depress appetite and poor appetite is often associated with depression. Almost no research has been done which tries to relate personality dimensions such as self-concept or locus of control to food intake practices.

4. A very limited number of older people participate in vigorous exercise activities, yet there is growing evidence that planned programs of physical activity are beneficial to health and well-being in old age. Little is known about the characteristics of those who do or do not exercise. Is there a relationship between aspects of personality and maintenance of a regimen of regular physical exercise?

5. A multiplicity of studies have been devoted to examining the role of social interaction in older adulthood. Contradictory findings are so prevalent that suggestions are now being
made for the future direction of research in this field. One suggestion is that personality may be an intervening variable which must be taken into account in order to understand the association of social participation and life satisfaction in old age.

After reviewing the related literature, the investigator concluded that:

1. An exploratory study is needed which endeavors to directly relate the concepts of locus of control and self-concept to every day behavior in older people. Does poor self-concept or an external locus of control reveal itself in day-to-day activities of living?

2. Such a study would contribute new knowledge to the field by going a step beyond depending on inferences about behavior from attitude scales. It would increase understanding of the congruence between attitudes and actions, and might reveal specific behaviors which should be studied further as indicators of stress or vulnerability in older people.

In this chapter, the research pertinent to such an investigation has been reviewed. The sampling procedure, the data gathering process and the data analysis are explained in Chapter 3.
Chapter 3

DESIGN AND PROCEDURES

Introduction

As was indicated in Chapter 1, the intent of this exploratory study was to investigate whether or not there is a relationship between the personality dimensions of self-concept and locus of control and patterns of eating, exercise, and social participation in men and women sixty-five years of age and over living in the community.

A discussion of the research design and methodology is presented in this chapter. Included is a statement of the objectives of the study, the sampling plan, the method of data collection, and the plan for data analysis.

The following objectives for the study were established:

1. To identify the patterns in eating, exercise, and social participation of a sample of older adults living in the community.
2. To determine the locus of control and self-concept of individuals in the sample.
3. To investigate the relationship of locus of control and self-concept for this sample of older people.
4. To investigate the relationship between self-concept and locus of control to patterns of eating, exercise and social participation.

5. To examine relationships between personal characteristics of the sample participants and their scores on self-concept and locus of control measures.

6. To examine the relationship between personal characteristics of members of the sample and their eating, exercise and social participation patterns.

The Sampling Plan

To meet these objectives a sample of one hundred men and women sixty-five years of age or older and living outside congregate care facilities was recruited. Thirty-one men and sixty-nine women volunteered to participate. The one hundred respondents were gathered in the following ways: through human services classes in two colleges in the Sacramento area, through six programs for seniors in the Sacramento area, through acquaintances of the researcher, and, finally, from study participants themselves who provided names of friends who in turn became respondents in the study.
Rationale for the Plan

It is recognized that isolated or alienated elders are underrepresented in a volunteer sample. In soliciting participants, the goal was to obtain a purposive sample, one which though composed of volunteers, would include individuals with varying incomes, educational backgrounds, health statuses, marital statuses, and from different racial groups. Three of the programs for seniors which were approached for recruitment of volunteers were chosen because they would facilitate reaching this goal. Recruitment of potential participants took place from February through December, 1977.

Recruitment of the Sample

The first attempt to reach respondents was made in February, 1977 through distribution of a one-page flier to students in three classes related to aging taught by colleagues of the investigator at California State University, Sacramento. Dr. Charles Borwiak, the instructor for courses in aging at American River Community College, was very willing to allow a presentation to his classes in an effort to solicit names for the study. He requested, however, that his students have the opportunity for additional learning by administering the instruments

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themselves to older adults they might recruit for the study. The researcher, therefore, made presentations to two classes not only to discuss the research but also to discuss the instruments and to instruct students in their administration. These were in early May, 1977.

The following programs for older adults were used in the effort to obtain study respondents.

1. Adult Activity Centers sponsored by the Sacramento City Unified School District. These are programs held one day a week in various churches in the Sacramento area. The programs are primarily crafts classes—painting, ceramics, sewing, macrame, et cetera. Three activity centers were used to obtain names. The investigator met with Ruth Manning at the Temple Bnai Israel program in February, 1977, and with Cecile Kentworth who directed the programs at St. John's Lutheran and St. Mary's Catholic Churches in March and June, 1977. At these meetings, the research project was discussed and upon the leader's agreement, a plan for presenting the study to group members was determined.

2. The Sacramento Senior Center, a recreation center for seniors sponsored by the Sacramento Parks and Recreation Department, was also one location at which volunteers were solicited. The investigator obtained the cooperation of David Mori, director of the program, by telephone in February, 1977.

3. Stanford Settlement, a neighborhood based, multi-service social welfare center, which offers special services for senior citizens, was another program which was approached for volunteers. The Settlement is located in a low income area and was approached for this reason. Joan Barry, coordinator of senior programs, agreed to cooperate after a conference in May, 1977.

4. The Senior Health Day Care Center was a fourth agency through which participants were located. The Senior Health Day Care Center provides a five day a week program
for older adults who have some physical impairment. A nurse is in attendance. Physiotherapy, art therapy, social, educational activities, and recreational activities are provided for residents of Sacramento County who are sixty years of age or older. In July, 1977, the researcher met with Marie Jones, director, to discuss the project and plan how to work together.

5. The Sacramento Area Economic Opportunity Council Senior Nutrition Program. The SAEOC sponsors a lunch program five days a week, Monday through Friday, at five sites in the outlying areas of Sacramento, and participants were solicited from two of those sites. The initial discussion with Dorothy Salas, coordinator of the nutrition program, was held in September, 1977. She obtained administrative approval before proceeding further.

6. The sixth agency the researcher visited was the United Christian Center, Broderick unit. Broderick is a community in East Yolo County, directly across the river from Sacramento, which is again located in a generally low income neighborhood but has an active program for seniors. The program includes recreation, arts, crafts, knitting, sewing, field trips, medical transportation, and a lunch program three days a week. In December, 1977, the investigator met with director, Lenore Espindel and program coordinator Phoebe German.

As the recruiting just described proceeded, friends of the investigator continued to provide names of potential participants. Frequently these respondents referred friends, who, in turn, became participants. This final category of respondents was termed "referrals."

From these three general sources 111 respondents who met study criteria were recruited. Eleven subjects were used in the pilot study and the remaining one hundred in the principal study. The number of participants developed from each source is as follows:
College Classes

American River College  22
California State University, Sacramento  5

Programs for Older Adults

Adult Activity Centers  18
Senior Recreation Center  2
Stanford Settlement  2
Sacramento Senior Health Day Care Center  10
Sacramento Area Economic Opportunity Council  14
Broderick Christian Center  8

Referrals  30

Data Collection

The data used to test the hypotheses of the study were collected by means of three instruments administered during individual interviews with the one hundred respondents. The two standardized personality scales were reviewed in Chapter 2. The interview schedule and the interviewing process are described in this section.

Instruments

The Interview Questionnaire. The eight page interview questionnaire developed by the researcher was designed to facilitate description of the sample along
four major dimensions. (See Appendix A)

First, in order to obtain a profile of the sample, fourteen questions were asked about socio-economic characteristics which included age, sex, marital status, financial status, ethnicity, education, transportation, health status and living situation.

The second section was designed to inquire about eating habits and contained thirty questions.

Section three was devoted to twelve questions which explore exercise and physical activities.

Finally, in section four that aspect of lifestyle called social participation was investigated through seven questions.

Sections two, three, and four included a mix of fixed alternate items, probes, and open-ended items.

The Interviewing Process

The steps taken to transform a potential participant into an actual respondent varied with the source from which the individual was recruited. In the case of the "referrals," who usually already knew something about the research project, a telephone call was used to arrange an appointment. This was the procedure with about a third of the sample.

With the six programs for older adults the first step, already described, was to obtain agreement from the program director. Subsequent to obtaining this approval
the initial contact with respondents was made.

**Safeguards for subjects.** When an individual indicated interest in participating in the project, he was informed as to the nature of the research, the type of questions that would be asked, and the purpose for which the study was undertaken. He was encouraged to request clarification or ask any questions either then or in the interview which might follow. Respondents were assured of their right to refuse to continue the interview at any point they so desired. In addition, they were informed that their responses would be held in strictest confidence and that the final report would in no way reflect their individual identity. These explanations were given again at the beginning of the appointment for the interview.

**The research interview.** Most of the research interviews were conducted by graduate students from California State University, Sacramento, between March, 1977, and January, 1978. In March, 1977, prior to their first interviews, the group met with the researcher to discuss the purpose of the project, to review the data gathering instruments, and to review general principles of interviewing older people for this purpose. After each had completed two interviews, the interviewers again met with the researcher to discuss any problems administering the instruments presented and to review procedures to try to insure uniformity.
Interviews averaged about one and one-half hours in length though, in a few instances, the interview took place over two sessions because of the respondent's health. To minimize problems which might result from sensory impairments or educational deficits and as a means of standardizing the interviewing process, all questions from all three instruments were read to the participants. Because of educational deficits, there were a few occasions when the language of the Rotter I-E Scale had to be restated in less academic vocabulary. As a result of the pre-test, two five-by-eight cards were prepared to assist respondents with the question related to income on the interview schedule and to assist them in remembering the five possible responses on the Tennessee Self-Concept Scale. It had been observed that it was difficult to remember the five options when these were being read aloud.

While most of the interviews were held in the homes of respondents at a time of their choice, interviews with Senior Health Day Care participants were held in a small conference room at the center, and a few women from St. Mary's activity program chose to be interviewed at the center.

The twenty-two interviews conducted by American River College Students were completed during May and June, 1977.
Pilot Study. During the first two weeks of March, 1977, a pilot study of eleven interviews was conducted. This afforded the opportunity to pre-test the Interview Schedule and the Activity Report Form. The latter form asked subjects to record two kinds of activity for one week. They were asked to record both what and when they ate and all physical activities. Among the results of the pilot study was the decision to abandon the activity report form. When the forms were collected from pilot participants, they were often incomplete; and if not incomplete, there were serious questions about reliability of the information.

Data Analysis

This portion of the chapter delineates the components of the hypothesis-testing procedures. First, the variables used in the data analysis are outlined. Finally, the plan for the treatment of the data is described.

Description of the Variables

The twenty-one variables used in this study are organized in three categories:

1. The independent variables which include the personal characteristics of the participants.
   a. Age
   b. Sex
c. Minority status
d. Years in school
e. Marital status
f. Living situation
g. Owns automobile
h. Has valid driver's license
i. Annual income
j. Assets
k. Self-rated health
l. Number of chronic health problems
m. Physical mobility
n. Self-rated appetite

2. The intervening variables included in the study are:
   a. Self-concept as measured by the *Tennessee Self-Concept Scale*, and
   b. Locus of control as measured by the *Rotter Internal-External Control Scale*

3. Dependent variables include:
   a. Eating patterns
   b. Exercise patterns
   c. Social participation patterns
   d. Self-concept
   e. Locus of control
Null Hypotheses and Questions

In the analysis of the data, the following null hypotheses were tested:

1. There is no significant relationship between self-concept and living situation or locus of control and living situation.

2. There is no significant relationship between internal locus of control and high self-concept.

3. There is no significant relationship between high self-concept and eating patterns, exercise patterns, and participation in activities outside the home in older adults.

4. There is no significant relationship between internal locus of control and eating patterns, exercise patterns, and participation in activities outside the home in older adults.

In addition, the following two questions were explored in the data analysis:

1. Is there a relationship between the personal characteristics of the older individual and his eating, exercise, and social participation patterns?

2. Is there a relationship between self-concept and locus of control and the personal characteristics of the older individuals in the sample?
Plan for Data Analysis

Upon completion of the data collection, several steps were followed in the analysis of the data. First, the responses were coded to enable computer processing of the data. After being punched into cards, data were analyzed by the Control Data Corporation 3150 Computer at the Computer Center, California State University, Sacramento, using the Statistical Package for the Social Sciences. There were then two parts to the subsequent analysis. Data were first analyzed to permit statistical description of the sample and relevant scores. Then, the hypotheses formulated for this study were tested.

Descriptive statistics such as frequency distributions and percentages were used to develop six profiles: personal characteristics of the sample; eating, exercise, and social participation patterns; and profiles of the scores on the Tennessee Self-Concept Scale and the Rotter Internal-External Scale.

In the second stage of data analysis, the hypotheses posed in the study were tested using a variety of statistical techniques.

1. One-way analysis of variance was employed to test differences between groups when data were at the interval level, i.e., living situation and TSCS and I-E scores, eating patterns and TSCS and I-E scores.
2. Pearson Product-Moment Correlation was used to test association when data were at the interval level, i.e., relationship between I-E score and TSCS score, relationship between hours of exercise and TSCS and I-E scores.

3. Chi Square test was used to measure associations between nominal level data, i.e., minority status and eating pattern, eating pattern and physical mobility.

The significance value for the study was set at the .10 level.

Summary

The third chapter of this research report has (1) given an introduction which reviewed the objectives of the study, (2) discussed the sampling plan, (3) provided an account of the methodology utilized in data collection, and (4) outlined the variables and statistical techniques used in the data analysis.

Two additional chapters comprise the remainder of the dissertation. In Chapter 4 the findings of the study are presented and discussed. Chapter 5 concludes the study and consists of conclusions based on the data, recommendations for further study, and a general summary of the study.
Chapter 4

PRESENTATION AND ANALYSIS OF FINDINGS

In Chapter 1 the following question was asked. Is there a relationship between self-concept and locus of control and patterns of eating, exercise, and social participation in older adults living in the community? In this chapter the findings relevant to that question are presented. The data presentation is composed of two sections. In the first half, the data related to scores on the personality scales and the three aspects of behavior are described using frequency distributions and percentages. Following this presentation, the results of testing the null hypotheses and the findings related to the two exploratory questions are described.

Description of the Data

This section of the report is largely descriptive and provides profiles of the personal characteristics of the respondents, their scores on the two personality measures, and profiles of the patterns of eating, exercise and social participation for the sample.

Personal Characteristics of the Sample

The personal characteristics of the respondents are outlined in Table 1. The sample was composed of individuals who were generally healthy and well-educated, as
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N/%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>65-69</td>
<td>40</td>
</tr>
<tr>
<td>70-74</td>
<td>29</td>
</tr>
<tr>
<td>74-79</td>
<td>20</td>
</tr>
<tr>
<td>80-84</td>
<td>8</td>
</tr>
<tr>
<td>85-89</td>
<td>3</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
</tr>
<tr>
<td>Female</td>
<td>69</td>
</tr>
<tr>
<td><strong>Ethnic Group</strong></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>11</td>
</tr>
<tr>
<td>White</td>
<td>89</td>
</tr>
<tr>
<td><strong>Years in School</strong></td>
<td></td>
</tr>
<tr>
<td>0-8</td>
<td>21</td>
</tr>
<tr>
<td>9-12</td>
<td>32</td>
</tr>
<tr>
<td>13-16</td>
<td>33</td>
</tr>
<tr>
<td>17-21</td>
<td>14</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
</tr>
<tr>
<td>Never Married</td>
<td>5</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>15</td>
</tr>
<tr>
<td>Widowed</td>
<td>42</td>
</tr>
<tr>
<td>Married</td>
<td>38</td>
</tr>
<tr>
<td><strong>Living Situation</strong></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>50</td>
</tr>
<tr>
<td>With Spouse</td>
<td>36</td>
</tr>
<tr>
<td>With Children</td>
<td>8</td>
</tr>
<tr>
<td>With Siblings</td>
<td>1</td>
</tr>
<tr>
<td>With Other Relatives</td>
<td>0</td>
</tr>
<tr>
<td>With Non-related</td>
<td>4</td>
</tr>
<tr>
<td>With Spouse and Children</td>
<td>1</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td></td>
</tr>
<tr>
<td>Car</td>
<td>65</td>
</tr>
<tr>
<td>Valid Driver's License</td>
<td>63</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N/%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Status</strong></td>
<td></td>
</tr>
<tr>
<td>Annual Income</td>
<td></td>
</tr>
<tr>
<td>Under $1,000</td>
<td>1</td>
</tr>
<tr>
<td>1,000 - 1,999</td>
<td>3</td>
</tr>
<tr>
<td>2,000 - 2,999</td>
<td>7</td>
</tr>
<tr>
<td>3,000 - 3,999</td>
<td>22</td>
</tr>
<tr>
<td>4,000 - 4,999</td>
<td>8</td>
</tr>
<tr>
<td>5,000 - 5,999</td>
<td>9</td>
</tr>
<tr>
<td>6,000 - 6,999</td>
<td>9</td>
</tr>
<tr>
<td>7,000 - 9,999</td>
<td>14</td>
</tr>
<tr>
<td>10,000 and over</td>
<td>27</td>
</tr>
<tr>
<td>Assets</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>20</td>
</tr>
<tr>
<td>Under $5,000</td>
<td>20</td>
</tr>
<tr>
<td>$5,000 or More</td>
<td>60</td>
</tr>
<tr>
<td><strong>Health Status</strong></td>
<td></td>
</tr>
<tr>
<td>Self-rated Health</td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>36</td>
</tr>
<tr>
<td>Quite Good</td>
<td>43</td>
</tr>
<tr>
<td>Average</td>
<td>14</td>
</tr>
<tr>
<td>Fair</td>
<td>4</td>
</tr>
<tr>
<td>Poor</td>
<td>3</td>
</tr>
<tr>
<td>Chronic Health Problems</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>27</td>
</tr>
<tr>
<td>One or Two</td>
<td>45</td>
</tr>
<tr>
<td>Three or Four</td>
<td>26</td>
</tr>
<tr>
<td>Five or More</td>
<td>2</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td></td>
</tr>
<tr>
<td>No Difficulty with Mobility</td>
<td>58</td>
</tr>
<tr>
<td>Minor Difficulties</td>
<td>14</td>
</tr>
<tr>
<td>Some Problems but Active</td>
<td>14</td>
</tr>
<tr>
<td>Significant Interference</td>
<td>11</td>
</tr>
<tr>
<td>Move only with Assistance</td>
<td>3</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>48</td>
</tr>
<tr>
<td>Very Good</td>
<td>26</td>
</tr>
<tr>
<td>Good</td>
<td>16</td>
</tr>
<tr>
<td>Fair</td>
<td>7</td>
</tr>
<tr>
<td>Poor</td>
<td>3</td>
</tr>
</tbody>
</table>
volunteer samples in gerontological research frequently are.

**Age and sex.** The sixty-nine women and thirty-one men who comprised the sample ranged in age from sixty-five to eighty-six years, with over two-thirds (69%) of the group under age seventy-five. The mean age for the men was 71.3 years, and the women averaged 72.1 years of age. The mean age for the total sample was 71.9 years.

**Ethnic group.** Although efforts were made to obtain respondents from several racial groups, the only minority represented are blacks. A few other minority elders, who might have been willing to participate, were not interviewed because their limited facility with English offered serious barriers to completing the two personality scales.

**Years in school.** Years of education for this sample ranged from zero to twenty-one years. The mean for years in school was 12.08, with forty-seven participants reporting education beyond high school. In 1975, national statistics indicated that only thirty-two percent of those sixty-five and over had completed high school and only seven percent were college graduates.¹ The black respondents spent significantly fewer years in school with five of the eleven having less than an eighth grade

education. When Chi Square was used to test the association between ethnic group and years in school, the result was Chi square = 8.09019, 3df, Sign. 0.0442.

Marital status. Five percent of the sample had never married, but over half (57%) were no longer living with a spouse. Forty-two percent of the sample was widowed whereas the national statistics indicate that fifty-two percent of women sixty-five and over are widowed.²

Living situation. As Table 1 illustrates, half the participants in the sample lived alone, while somewhat over a third of them (36%) lived with a spouse. The remaining fourteen percent lived with children, siblings, or others to whom they were not related. In view of the small numbers in the last five categories of living situation, these fourteen were regrouped into a new category, "With others," for purposes of data analysis.

Transportation. Nearly two-thirds of the sample own an automobile, and almost the same number retain a valid driver's license. The importance of this resource becomes apparent in the data analysis.

Financial status. Annual income in this sample ranged from less than one thousand to over ten thousand dollars per year. Income clustered at two points, between

²Weg, p. 1.
three and four thousand dollars and over ten thousand dollars. In fiscal 1977-78 Supplemental Security Income for a single person 65 or over was $307 per month, or $3,684 per year. This probably accounts for the number of participants whose income was between $3,000 and $4,000. In 1977, the year these data were gathered, the average annual income for older adults in the United States was approximately $6,300. Income for this sample was similar.

Fifty percent of the participants had income less than six thousand dollars per year while the same number had six thousand dollars or more per year.

As Table 1 reveals, twenty percent of the respondents reported no assets, while sixty reported owning assets worth over $5,000.

Health status. As Table 1 demonstrates, study participants tended to view themselves as healthy. Over three-fourths (78%) reported quite good or excellent health while only seven considered themselves in fair or poor health. Almost that same number (72%) reported no, or only one or two, chronic health problems. Similarly, seventy-two reported little or no difficulty with physical mobility. Fourteen percent reported experiencing serious interference with mobility, however.

Self-rated appetite. When the questionnaire was

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developed, a question about self-rated appetite was included almost incidentally, rather than because the literature had highlighted it as an important variable. Generally the literature on older adults has little to say about it. Poor appetite is considered a symptom of mental health problems. Further, Lowenthal reported that in a group of elderly living in the community, but judged to have impaired mental health, twenty-six percent stated their appetite was poor.

As the data analysis for this study proceeded, self-rated appetite appeared to be a significant variable. It has, therefore, received more attention than was originally anticipated. As Table 1 shows, almost half of the sample stated that their appetite was excellent, with only ten percent reporting a fair or poor appetite.

The Tennessee Self-Concept Scale

For this sample, Total Positive scores on the TSCS ranged from 280 to 434, with a mean score of 364. The mean score for women was 368 and the mean for men was 356. The difference between the sexes was not a significant one. Chi Square test of association between TSCS score

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and sex found the following: Chi Square = 1.62745, 2 df, Sign. 0.4432.

While the mean score for this group was higher than the 345 of the normative sample, it was not nearly as high as the mean of 380 found by Trimakas and Nicolay in a study of older adults which used the TSCS. 6 It was, however, congruent with Knox's report that for older adults the typical pattern is above-average self-esteem on the Tennessee Self-Concept Scale. 7

Respondents were assigned to low, medium or high self-concept categories depending on their placement within the total range for this sample. The third of the sample with the lowest scores were identified as low self-concept, while the third with the highest scores were identified as high self-concept. The remaining third were categorized as intermediate in self-concept. Scores for the low self-concept group ranged from 280 to 350. High self-concept included scores from 385 to 434. Scores of the intermediate group ranged from 352 to 382. Table 2 shows the number of participants in each self-concept category.


Table 2
Distribution of Sample by Sex Across Three Self-Concept Categories

<table>
<thead>
<tr>
<th></th>
<th>Low (280-350)</th>
<th>Medium (352-382)</th>
<th>High (385-434)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>13</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Women</td>
<td>20</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Internal-External Control Scale

Scores on the I-E Scale ranged from zero to nineteen, with a mean score of 8.25 for the total sample. Men scored in a somewhat more internal direction, 7.32, than women, 8.33; but the difference was not significant. When I-E Scale scores were tested for association with sex, Chi Square = 1.98162, 2 df, Sign. 0.3713. These mean scores were lower than those originally reported by Rotter in the college-age normative populations. The mean score for this sample, however, is very close to the 8.22 reported by Wolk and Kurtz in an investigation which used the Rotter scale with older adults.⁸ Racial differences were significant, Chi Square = 8.96163, 2 df, Sign. 0.0113.

Respondents who appeared to hold an extreme internal or extreme external control orientation for this sample were identified by their placement within the

total range for the sample. The third of the sample with
the lowest scores were identified as internals, while the
third with the highest scores were identified as external.
The remaining third were categorized as having an inter-
mediate orientation. Scores for the internal group ranged
from zero to six. External locus of control included
scores from ten to nineteen. Scores of the intermediate
group ranged from seven to nine.

The two tables which follow illustrate the data
further. Table 3 presents the number of respondents in
each locus of control category, while Table 4 offers a
similar distribution by racial group.

Table 3
Distribution of Sample by Sex Across
Three Locus of Control Categories

<table>
<thead>
<tr>
<th></th>
<th>Internal 0-6</th>
<th>Medium 7-9</th>
<th>External 10-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>10</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>Women</td>
<td>23</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4
Distribution Across Three Locus of Control Categories by Two Racial Groups

<table>
<thead>
<tr>
<th></th>
<th>Internal 0-6</th>
<th>Medium 7-9</th>
<th>External 10-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>1</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>White</td>
<td>32</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>33</td>
<td>34</td>
</tr>
</tbody>
</table>

Eating Patterns

In discussing their eating habits, most of the respondents stated that they ate three meals per day, the customary pattern in this country. Almost three-fourths of the sample followed this pattern. Twenty-three of these reported that they never ate snacks and never skipped meals. The majority (51%) reported both snacking and occasional meal skipping. Thirteen respondents ate two meals per day as their regular pattern; and thirteen, mostly women, seemed to follow no particular pattern as far as eating was concerned. Table 5 outlines the eating patterns reported by the sample.
### Table 5

**Distribution of Sample by Sex on Identified Eating Patterns**

<table>
<thead>
<tr>
<th>Eating Pattern</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Three meals per day with no snacking and no skipping of meals</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>B Two meals per day with no snacking and no skipping of meals</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>C One meal per day with no snacking or skipping of meals</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D Three meals per day with occasional skipping of meals and including snacks</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>E Two meals per day with occasional skipping of meals and including snacks</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>F One meal per day with occasional skipping of meals and including snacks</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G No regularity in number of meals eaten per day. Skips meals four or more times per week and substitutes snacks for meals four or more times per week</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

Most of the respondents said they ate meals at regular times. A third also reported they were on special diets prescribed by their doctor. While over two-thirds (68%) reported eating snacks, only about a quarter of the group said they snacked rather than eating regular meals. Over half of the participants (56%) took food supplements such as vitamins.

**Exercise Patterns**

The study participants were asked questions about three kinds of exercise: 1) hours of work around the house
each week, 2) hours per week spent walking for exercise, and 3) hours of recreational exercise each week. These three estimates were then summed to determine the total number of hours of exercise each week for each subject.

In this sample the number of hours of exercise per week ranged from zero to forty-four hours. The mean was 13.27 hours per week. Forty-one of the respondents reported that their physicians had recommended that they exercise, with walking and swimming the forms of exercise most frequently recommended.

Exercise around home was the total of hours worked in the house or in the yard. As Table 6 illustrates, fifteen participants said they did no work around the house. From two to ten hours per week was the most common number of hours worked. Forty-six respondents fell within this time period.
Table 6

Distribution of Sample by Sex on Hours of Work Per Week Around the Home

<table>
<thead>
<tr>
<th>Exercise Around Home</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Less than two hours</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2-6 hours</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>6-10 hours</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>10-14 hours</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>14 or more hours per week</td>
<td>7</td>
<td>15</td>
</tr>
</tbody>
</table>

A review of Table 7 discloses that almost a third of the sample (32%) reported they did no walking for exercise. Thirty-seven stated they walked from one to five hours per week. Seventeen reported that they walked the equivalent of an hour or more per day each week.
Table 7

Distribution of Sample by Sex on Hours Per Week Spent Walking for Exercise

<table>
<thead>
<tr>
<th>Hours Walking</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Less than one hour</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>3-5 hours</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>5-7 hours</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7 or more hours per week</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>69</td>
</tr>
</tbody>
</table>

About a third of the sample reported participation in sports for exercise. Those who were active in recreational exercise played golf, bowled, swam, danced, bicycled, hiked, practiced hatha yoga, and one played tennis. Table 8 presents the distribution of recreational exercise by sex and indicates that two to six hours per week was the most common number of hours spent in recreational exercise.
Table 8
Distribution of Sample by Sex on Total Recreational Exercise Hours Per Week

<table>
<thead>
<tr>
<th>Recreational Hours</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>Less than two hours</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2-6 hours</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>6-10 hours</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10-14 hours</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>69</td>
</tr>
</tbody>
</table>

The range of total exercise hours per week was determined; and then, based on placement on that range, participants were assigned to low, medium or high exercise groups. Low exercise participants were those who exercised from zero to seven hours per week. The medium exercise category included those who reported eight to sixteen hours of exercise. The high exercise group was made up of those who said they exercised from seventeen to forty-four hours per week. Table 9 illustrates the distribution by sex.
### Table 9

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>12</td>
<td>10</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>Women</td>
<td>21</td>
<td>24</td>
<td>24</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>34</td>
<td>33</td>
<td>100</td>
</tr>
</tbody>
</table>

Participation in Voluntary Associations

Fewer than half of the respondents in this study belonged to a voluntary association. The number of organizational meetings participants attended each month ranged from zero to thirty-five. The sample mean was 9.3 meetings per month.

Table 10 lists the types of voluntary associations to which the participants belonged and whether or not they took an active role. Active role was defined as serving as an officer, serving on a committee, or, in some way, taking part beyond just attending meetings.

A review of Table 10 reveals that the largest number of respondents reported attending church services. This was followed by attendance at a club for seniors, a learning activity, church-related groups, fraternal organizations and service clubs, with political organizations attracting only six percent of the participants.

Two-thirds of the respondents who belonged to a political organization or a fraternal organization took
an active role. One-half of those who belonged to a club for seniors or a service club reported being active. About a third of those who attended a church-related group took an active part. Active involvement in church services and learning activities was lower, which might be expected in view of the nature of these organizations.

Table 10

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>Attend Yes</th>
<th>No</th>
<th>Take an Active Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Church Services</td>
<td>48</td>
<td>52</td>
<td>8</td>
</tr>
<tr>
<td>Club for Seniors</td>
<td>40</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Learning Activity</td>
<td>33</td>
<td>67</td>
<td>6</td>
</tr>
<tr>
<td>Church-related Group</td>
<td>30</td>
<td>70</td>
<td>11</td>
</tr>
<tr>
<td>Fraternal Organization</td>
<td>15</td>
<td>85</td>
<td>11</td>
</tr>
<tr>
<td>Service Club</td>
<td>12</td>
<td>88</td>
<td>6</td>
</tr>
<tr>
<td>Political Organization</td>
<td>6</td>
<td>94</td>
<td>4</td>
</tr>
</tbody>
</table>

Informal Social Interaction

The second aspect of social participation for which data was collected was informal social activity with neighbors, friends, and relatives. Each respondent was asked to recall the number of times in the week before the interview he had taken the initiative in visiting, telephoning, or inviting for some purpose, his friends,
relatives or neighbors.

The number of informal social events per week ranged from zero to seventy-two. The mean number of informal events was 17.69.

The findings about informal social activities are presented in Table 11. The least interaction was with neighbors. The most was with friends, while activity with relatives fell in between. With respect to neighbors, thirty-one participants invited neighbors, forty-one went to visit neighbors, and thirty-six telephoned neighbors. With friends, by contrast, forty-nine respondents invited friends for some activity, fifty-four visited friends, while seventy-two telephoned friends. Finally, forty-one respondents invited relatives to their homes, thirty-nine visited relatives, and sixty-six telephoned relatives.
Table 11
Distribution of Sample on Weekly Informal Social Contacts with Neighbors, Friends, and Relatives Initiated by Respondent

<table>
<thead>
<tr>
<th></th>
<th>Invited</th>
<th>Visited</th>
<th>Telephoned</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neighbors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>69</td>
<td>59</td>
<td>64</td>
</tr>
<tr>
<td>1-2</td>
<td>21</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>3-4</td>
<td>7</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>5-7</td>
<td>3</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>8 or more</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Friends</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>51</td>
<td>46</td>
<td>28</td>
</tr>
<tr>
<td>1-2</td>
<td>36</td>
<td>32</td>
<td>26</td>
</tr>
<tr>
<td>3-4</td>
<td>9</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>5-7</td>
<td>2</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>8 or more</td>
<td>2</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td><strong>Relatives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>59</td>
<td>61</td>
<td>34</td>
</tr>
<tr>
<td>1-2</td>
<td>26</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>3-4</td>
<td>6</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>5-7</td>
<td>5</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>8 or more</td>
<td>4</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

Results of Testing the Hypotheses

Employing the data described in the preceding section, the four null hypotheses were tested and the two exploratory questions examined. The results are presented by first reporting the findings on each hypothesis, and then presenting the findings pertaining to the two questions.

Findings Related to Hypotheses

Null Hypothesis 1. There is no significant relationship between self-concept and living situation or locus of control and living situation.
An examination of Table 12 indicates that there was a significant association between living situations and scores on the Tennessee Self-Concept Scale. Respondents who lived alone earned higher Total Positive scores than those living either with a spouse or with others.

Table 12
Analysis of Variance on the Relationship Between Tennessee Self-Concept Scale Scores and Living Situations

<table>
<thead>
<tr>
<th></th>
<th>Alone</th>
<th>With Spouse</th>
<th>With Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>n:</td>
<td>50</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>M:</td>
<td>373.26</td>
<td>357.00</td>
<td>353.14</td>
</tr>
<tr>
<td>SD:</td>
<td>35.80</td>
<td>29.22</td>
<td>31.16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>s.s.</th>
<th>m.s.</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>7666.85</td>
<td>3833.42</td>
<td>3.530</td>
<td>0.0321</td>
</tr>
<tr>
<td>Within Groups</td>
<td>97</td>
<td>105331.33</td>
<td>1085.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>112998.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The same result did not hold when the association between living situations and scores on the Internal-External Control Scale were tested. As Table 13 reveals, locus of control and living situation were not significantly related.
Table 13
Analysis of Variance on the Relationship Between Rotter Internal-External Scale Scores and Living Situations

<table>
<thead>
<tr>
<th></th>
<th>Alone</th>
<th>With Spouse</th>
<th>With Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>n:</td>
<td>50</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>M:</td>
<td>8.46</td>
<td>7.63</td>
<td>9.07</td>
</tr>
<tr>
<td>SD:</td>
<td>3.87</td>
<td>3.41</td>
<td>5.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>s.s.</th>
<th>m.s.</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>25.096</td>
<td>12.54</td>
<td>0.821</td>
<td>0.4464</td>
</tr>
<tr>
<td>Within Groups</td>
<td>97</td>
<td>1481.654</td>
<td>15.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>1506.750</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on this data, the null hypothesis is accepted.

Null Hypothesis 2. There is no significant relationship between locus of control and self-concept.

The two sets of personality measurements were correlated using the Pearson Product Moment Correlation Coefficient. Results indicated $r = -0.2691$ with Significance = 0.00339. The negative relationship between the scale scores means that individuals scoring low on one tended to obtain high scores on the other. In this case, a low, or internal, score on the Internal-External Control Scale is associated with a high score on the Tennessee Self-Concept Scale.
Based on this data, the null hypothesis is rejected.

**Null Hypothesis 3.** There is no significant relationship between high self-concept and eating patterns, exercise patterns, and participation in social activities in older adults.

The association between scores on the Tennessee Self-Concept Scale and the three behavioral dimensions are examined sequentially.

**A. Eating Patterns**

As Table 14 illustrates, there was no significant relationship between TSCS scores and eating patterns.

<table>
<thead>
<tr>
<th>Table 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of Variance on the Relationship Between Tennessee Self-Concept Scale Scores to Eating Patterns</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>s.s.</th>
<th>m.s.</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4</td>
<td>3817.61</td>
<td>954.40</td>
<td>0.830</td>
<td>0.5110</td>
</tr>
<tr>
<td>Within Groups</td>
<td>95</td>
<td>109180.57</td>
<td>1149.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>112998.18</td>
<td>2103.66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Exercise Patterns

There was no significant relationship between TSCS scores and hours of exercise around the house, hours spent walking for exercise, or hours of recreational exercise. The statistics which follow specify the relationship which were found.

1. Hours of Exercise around Home and Tennessee Self-Concept Scale were tested using Chi Square with the following result: Chi Square = 22.7266, 16 df, Sign. 0.1212.

2. Hours Walking for Exercise and Tennessee Self-Concept Scale were tested using Chi Square with the following result: Chi Square = 10.99087, 16 df, Sign. 0.8100.

3. Hours of Recreational Exercise and Tennessee Self-Concept Scale were tested by use of Pearson Correlation Coefficient: \( r = -0.0805, \) Sign. 0.213.

4. Total Exercise Hours. As explained earlier, the hours of exercise around the home, hours walking and hours of recreational exercise were combined to obtain total exercise hours. Participants were assigned to low, medium, or high exercise categories depending on their total exercise hours. The association between TSCS score and these three exercise categories were then tested using one-way analysis of
Examination of Table 15 indicates there was a significant relationship, but it was not the one hypothesized. The medium self-concept group, rather than the high self-concept category, exercised most.

Table 15

Analysis of Variance on the Relationship Between Self-Concept and Three Levels of Total Exercise Hours

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>s.s</th>
<th>m.s.</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>470.72</td>
<td>235.36</td>
<td>2.720</td>
<td>0.069</td>
</tr>
<tr>
<td>Within Groups</td>
<td>97</td>
<td>8394.98</td>
<td>86.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>8865.70</td>
<td>321.90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Social Participation Patterns

1. Organizational Participation. When TSCS scores were correlated with the number of meetings of voluntary associations attended per month using Pearson Correlation Coefficient, the result was not significant. The finding was $r = -0.0471$ with Sign. = 0.321.
2. Informal Social Events. Scores on the TSCS were not significantly related to informal social interaction as Table 16 reveals.

Table 16

<table>
<thead>
<tr>
<th>Informal Activity</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visited</td>
<td>13.02402</td>
<td>14</td>
<td>0.5246</td>
</tr>
<tr>
<td>Invited</td>
<td>7.20429</td>
<td>10</td>
<td>0.7060</td>
</tr>
<tr>
<td>Telephoned</td>
<td>7.45321</td>
<td>14</td>
<td>0.9158</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visited</td>
<td>16.29856</td>
<td>14</td>
<td>0.2955</td>
</tr>
<tr>
<td>Invited</td>
<td>12.70032</td>
<td>14</td>
<td>0.5502</td>
</tr>
<tr>
<td>Telephoned</td>
<td>13.87135</td>
<td>22</td>
<td>0.9060</td>
</tr>
<tr>
<td>Relatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visited</td>
<td>18.58921</td>
<td>16</td>
<td>0.2905</td>
</tr>
<tr>
<td>Invited</td>
<td>14.82980</td>
<td>14</td>
<td>0.3899</td>
</tr>
<tr>
<td>Telephoned</td>
<td>15.47220</td>
<td>24</td>
<td>0.9062</td>
</tr>
</tbody>
</table>

When Pearson r was subsequently used to correlate TSCS scores and number of telephone calls to friends, the result for this one activity was $r = 0.1311$, Sign. 0.097.

Based on this data, the null hypothesis is accepted.

Null Hypothesis 4. There is no significant relationship between internal locus of control and eating patterns, exercise patterns, and participation in social activities in older adults.
The association between scores on the Internal-External Control Scale and the three behavioral dimensions are examined sequentially.

A. Eating Patterns

An examination of Table 17 demonstrates that there was no significant association between locus of control and eating patterns in this sample.

Table 17

Analysis of Variance on the Relationship Between Internal-External Scale Scores and Eating Patterns

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>s.s.</th>
<th>M.S.</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4</td>
<td>51.36</td>
<td>12.84</td>
<td>0.838</td>
<td>0.5062</td>
</tr>
<tr>
<td>Within Groups</td>
<td>95</td>
<td>1455.38</td>
<td>15.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>1506.74</td>
<td>28.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Exercise Patterns

There was no significant relationship between I-E score and hours of exercise around the house or hours spent walking for exercise. The relationship between locus of control and hours of recreational exercise was significant, however. The statistics which follow specify
the relationships which were found.

1. Hours exercise around home and I-E scores were tested using Chi Square with the following result: Chi Square = 14.48586, 16 df, Sign. 0.5626.

2. Hours of walking for exercise and I-E scores were tested using Chi Square with the following result: Chi Square = 16.33296, 16 df, Sign. 0.4300.

3. Hours of recreational exercise and I-E scores were tested using Pearson r with the following result: r = -0.1469, Sign. 0.072.

4. Total exercise hours. The association between I-E scores and total exercise hours was tested by one-way analysis of variance. As inspection of Table 18 shows, there was no significant relationship between the two measures.
Table 18

Analysis of Variance on the Relationship Between Three Locus of Control Categories and Total Exercise Hours

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>s.s.</th>
<th>m.s.</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>268.466</td>
<td>134.233</td>
<td>1.515</td>
<td>0.2235</td>
</tr>
<tr>
<td>Within Groups</td>
<td>97</td>
<td>8597.244</td>
<td>88.631</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>8865.710</td>
<td>222.864</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. Social Participation Patterns

1. When Internal-External Control Scale scores were correlated with the number of meetings of voluntary associations attended per month using Pearson r, the relationship was significant. The finding was $r = -0.1362$ with Sign. = 0.088.

2. Informal Social Events. When the association between I-E scores and informal social events was tested using Chi Square, only one type of informal social activity, telephoning neighbors, reached significance. Table 19 presents the evidence for this aspect of social participation.
Table 19
Relationship Between Locus of Control and Informal Social Activity Initiated by Respondent

<table>
<thead>
<tr>
<th>Social Activity</th>
<th>Events</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbors</td>
<td></td>
<td>19.94240</td>
<td>14</td>
<td>0.1320</td>
</tr>
<tr>
<td>Visited</td>
<td></td>
<td>1.91213</td>
<td>10</td>
<td>0.9970</td>
</tr>
<tr>
<td>Invited</td>
<td></td>
<td>23.46999</td>
<td>14</td>
<td>0.0530*</td>
</tr>
<tr>
<td>Telephoned</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td>8.07534</td>
<td>14</td>
<td>0.8854</td>
</tr>
<tr>
<td>Visited</td>
<td></td>
<td>12.99132</td>
<td>14</td>
<td>0.5272</td>
</tr>
<tr>
<td>Invited</td>
<td></td>
<td>14.25498</td>
<td>22</td>
<td>0.8922</td>
</tr>
<tr>
<td>Telephoned</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relatives</td>
<td></td>
<td>14.07894</td>
<td>16</td>
<td>0.5928</td>
</tr>
<tr>
<td>Visited</td>
<td></td>
<td>7.27483</td>
<td>14</td>
<td>0.9236</td>
</tr>
<tr>
<td>Invited</td>
<td></td>
<td>28.97707</td>
<td>24</td>
<td>0.2210</td>
</tr>
<tr>
<td>Telephoned</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .10 or better

When, subsequently, Pearson r was used to correlate I-E scores and number of telephone calls to friends, the result, \( r = -0.1371 \) was Sign. = -0.087. Similarly, the association between I-E scores and the total of all informal events with friends was significant with \( r = -0.1688 \), Sign. = 0.047.

Based on this data, the null hypothesis is accepted.

Findings Related to the Exploratory Questions

Exploratory Question 1. Is there a relationship
between the personal characteristics and patterns of eating, exercise, and social participation in this sample?

The associations between personal characteristics of the sample and the three behavioral dimensions are examined sequentially.

A. **Eating Patterns**

Three of the fourteen personal characteristics were significantly associated with eating patterns. Years in school, self-rated health and self-rated appetite reached significance, as Table 20 indicates.

An eating pattern of two meals per day was associated with fewer years in school. Excellent or quite good health and excellent or very good appetite were associated with a pattern of three meals per day with snacking and occasional skipping of meals.

B. **Exercise Patterns**

The four types of exercise used in testing the hypotheses were tested for their possible associations with personal characteristics.

1. As can be seen in Table 21, exercise hours around home was significantly related to the five following characteristics.
   a. **Years in school.** Participants with eight to ten years of school worked the most hours around home.
   b. **Annual income.** More hours of work around home was related to higher
Table 20
Relationships Between Identified Eating Patterns and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristic</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>38.54759</td>
<td>80</td>
<td>0.3755</td>
</tr>
<tr>
<td>Sex</td>
<td>1.02374</td>
<td>4</td>
<td>0.9062</td>
</tr>
<tr>
<td>Minority Status</td>
<td>3.11835</td>
<td>4</td>
<td>0.5382</td>
</tr>
<tr>
<td>Years in School</td>
<td>97.94548</td>
<td>68</td>
<td>0.0086*</td>
</tr>
<tr>
<td>Marital Status</td>
<td>13.60914</td>
<td>12</td>
<td>0.3264</td>
</tr>
<tr>
<td>Living Situation</td>
<td>14.42597</td>
<td>20</td>
<td>0.8083</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.79161</td>
<td>4</td>
<td>0.7732</td>
</tr>
<tr>
<td>Driver's License</td>
<td>2.21229</td>
<td>4</td>
<td>0.6968</td>
</tr>
<tr>
<td>Annual Income</td>
<td>24.65539</td>
<td>32</td>
<td>0.8197</td>
</tr>
<tr>
<td>Assets</td>
<td>9.98378</td>
<td>8</td>
<td>0.2662</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>28.41911</td>
<td>16</td>
<td>0.0282*</td>
</tr>
<tr>
<td>Chronic Problems</td>
<td>10.87844</td>
<td>12</td>
<td>0.5394</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>22.60040</td>
<td>16</td>
<td>0.1248</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>23.20411</td>
<td>16</td>
<td>0.1084*</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
<table>
<thead>
<tr>
<th>Personal Characteristic</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>151.90803</td>
<td>160</td>
<td>0.6666</td>
</tr>
<tr>
<td>Sex</td>
<td>4.61147</td>
<td>8</td>
<td>0.7982</td>
</tr>
<tr>
<td>Minority Status</td>
<td>11.61874</td>
<td>8</td>
<td>0.1690</td>
</tr>
<tr>
<td>Years in School</td>
<td>185.58519</td>
<td>136</td>
<td>0.0025*</td>
</tr>
<tr>
<td>Marital Status</td>
<td>23.30086</td>
<td>24</td>
<td>0.5021</td>
</tr>
<tr>
<td>Living Situation</td>
<td>37.96585</td>
<td>40</td>
<td>0.5622</td>
</tr>
<tr>
<td>Automobile</td>
<td>11.73905</td>
<td>8</td>
<td>0.1632</td>
</tr>
<tr>
<td>Driver's License</td>
<td>8.95750</td>
<td>8</td>
<td>0.3459</td>
</tr>
<tr>
<td>Annual Income</td>
<td>93.55170</td>
<td>64</td>
<td>0.0079*</td>
</tr>
<tr>
<td>Assets</td>
<td>38.11255</td>
<td>16</td>
<td>1.0015*</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>43.51588</td>
<td>32</td>
<td>1.0842*</td>
</tr>
<tr>
<td>Chronic Problems</td>
<td>31.11273</td>
<td>24</td>
<td>0.1506</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>53.54273</td>
<td>32</td>
<td>0.0099*</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>26.94603</td>
<td>32</td>
<td>0.7203</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
income. Conversely, less income was associated with fewer hours of work around home.

c. **Assets.** Owning assets in excess of $5,000 was related to more hours of exercise around the home.

d. **Self-rated health.** Excellent or quite good health was related to more hours of work around home.

e. **Physical mobility.** Little or no difficulty with mobility was associated with fourteen or more hours per week around home.

2. As Table 22 shows, hours spent walking for exercise was significantly related only to sex. Women walked for exercise more than men did.

3. Hours of recreational exercise were related to six personal characteristics, as Table 23 illustrates.

   a. **Age.** The number of hours of recreational exercise decreased with age.

   b. **Years in school.** The amount of recreational exercise increased as the number of years in school increased.

   c. **Automobile.** Owning an automobile was significantly related to the number
Table 22
Relationship Between Hours Spent Walking for Exercise and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristic</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>126.53254</td>
<td>160</td>
<td>0.9747</td>
</tr>
<tr>
<td>Sex</td>
<td>14.40571</td>
<td>8</td>
<td>0.0718*</td>
</tr>
<tr>
<td>Minority Status</td>
<td>2.86540</td>
<td>8</td>
<td>0.9425</td>
</tr>
<tr>
<td>Years in School</td>
<td>151.96570</td>
<td>136</td>
<td>0.1654</td>
</tr>
<tr>
<td>Marital Status</td>
<td>23.37403</td>
<td>24</td>
<td>0.4974</td>
</tr>
<tr>
<td>Living Situation</td>
<td>30.75629</td>
<td>40</td>
<td>0.8531</td>
</tr>
<tr>
<td>Automobile</td>
<td>3.81653</td>
<td>8</td>
<td>0.8733</td>
</tr>
<tr>
<td>Driver's License</td>
<td>4.72510</td>
<td>8</td>
<td>0.7865</td>
</tr>
<tr>
<td>Annual Income</td>
<td>62.44952</td>
<td>64</td>
<td>0.5374</td>
</tr>
<tr>
<td>Assets</td>
<td>12.75054</td>
<td>16</td>
<td>0.6909</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>25.46150</td>
<td>32</td>
<td>0.7869</td>
</tr>
<tr>
<td>Chronic Problems</td>
<td>22.46408</td>
<td>24</td>
<td>0.5516</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>37.26568</td>
<td>32</td>
<td>0.2396</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>21.51057</td>
<td>32</td>
<td>0.9199</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
Table 23

Analysis of Variance on Relationship Between Hours of Recreational Exercise and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristic</th>
<th>df</th>
<th>m.s.</th>
<th>F Value</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>4.95</td>
<td>22.605</td>
<td>2.433</td>
<td>0.0519*</td>
</tr>
<tr>
<td>Sex</td>
<td>1.98</td>
<td>4.035</td>
<td>0.408</td>
<td>0.5311</td>
</tr>
<tr>
<td>Minority Status</td>
<td>1.98</td>
<td>23.013</td>
<td>2.374</td>
<td>0.1227</td>
</tr>
<tr>
<td>Years in School</td>
<td>3.96</td>
<td>19.655</td>
<td>2.064</td>
<td>0.1087*</td>
</tr>
<tr>
<td>Marital Status</td>
<td>3.96</td>
<td>2.908</td>
<td>0.289</td>
<td>0.6557</td>
</tr>
<tr>
<td>Living Situation</td>
<td>2.97</td>
<td>17.033</td>
<td>1.759</td>
<td>0.1757</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.98</td>
<td>78.836</td>
<td>8.639</td>
<td>0.0044*</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1.98</td>
<td>53.064</td>
<td>5.652</td>
<td>0.0183*</td>
</tr>
<tr>
<td>Annual Income</td>
<td>8.91</td>
<td>22.379</td>
<td>2.564</td>
<td>0.0143*</td>
</tr>
<tr>
<td>Assets</td>
<td>2.97</td>
<td>12.928</td>
<td>1.324</td>
<td>0.2700</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>4.95</td>
<td>10.941</td>
<td>1.118</td>
<td>0.3525</td>
</tr>
<tr>
<td>Chronic Problems</td>
<td>3.96</td>
<td>2.875</td>
<td>0.286</td>
<td>0.6531</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>4.95</td>
<td>22.110</td>
<td>2.3474</td>
<td>0.0567*</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>4.95</td>
<td>7.711</td>
<td>0.777</td>
<td>0.5438</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
of hours of recreational exercise.

d. Driver's license. Similarly, having a valid driver's license was associated with more recreational exercise.

e. Annual income. Higher income was related to more exercise through recreational sports.

f. Physical mobility. Ease of mobility was associated with hours spent in recreational exercise. Activity decreased as problems with mobility increased.

4. The total number of hours of exercise per week was associated with ten characteristics, as Table 24 demonstrates.

a. Years in school. Participants with ten to sixteen years of education exercised most.

b. Marital status. Married respondents exercised more than those in other statuses.

c. Automobile and driver's license. Having a car and a valid driver's license were associated with more hours of exercise.

d. Living situation. Total exercise hours was significantly related to
Table 24
Analysis of Variance on Relationship Between Total Exercise Hours and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>df</th>
<th>m.s.</th>
<th>F Value</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>20.79</td>
<td>63.753</td>
<td>0.664</td>
<td>0.6358</td>
</tr>
<tr>
<td>Sex</td>
<td>1.98</td>
<td>9.654</td>
<td>0.107</td>
<td>0.6852</td>
</tr>
<tr>
<td>Minority Status</td>
<td>1.98</td>
<td>197.483</td>
<td>2.233</td>
<td>0.1344</td>
</tr>
<tr>
<td>Years in School</td>
<td>17.82</td>
<td>142.215</td>
<td>1.809</td>
<td>0.0403*</td>
</tr>
<tr>
<td>Marital Status</td>
<td>3.96</td>
<td>228.864</td>
<td>2.686</td>
<td>0.0498*</td>
</tr>
<tr>
<td>Living Situation</td>
<td>5.94</td>
<td>183.739</td>
<td>2.173</td>
<td>0.0629*</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.98</td>
<td>470.413</td>
<td>5.491</td>
<td>0.0199*</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1.98</td>
<td>247.725</td>
<td>2.817</td>
<td>0.0925*</td>
</tr>
<tr>
<td>Annual Income</td>
<td>8.91</td>
<td>271.908</td>
<td>3.698</td>
<td>0.0011*</td>
</tr>
<tr>
<td>Assets</td>
<td>2.97</td>
<td>873.013</td>
<td>11.894</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>4.95</td>
<td>329.266</td>
<td>4.144</td>
<td>0.0042*</td>
</tr>
<tr>
<td>Chronic Problems</td>
<td>3.96</td>
<td>875.744</td>
<td>4.661</td>
<td>0.0047*</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>4.95</td>
<td>294.145</td>
<td>3.634</td>
<td>0.0086*</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>4.95</td>
<td>63.620</td>
<td>0.702</td>
<td>0.5905</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
living situation for those living with a spouse.

e. **Annual income.** Participants with the most income exercised most.

f. **Assets.** Having assets in excess of $5,000 was related to a larger total number of exercise hours.

g. **Self-rated health, number of chronic problems,** and **physical mobility.** Excellent or quite good health, few chronic problems, and little or no difficulty with mobility were all three associated with more total exercise in this sample.

G. **Social Participation Patterns**

1. **Organizational Participation.** As Table 25 points out, only having a car and a valid driver's license were significantly related to organizational involvement.

2. **Informal social events with neighbors.**
   As can be seen in Table 26, only two characteristics reached significance.
   a. **Sex.** Women were more involved with neighbors than were men.
   b. **Minority status.** Black participants were significantly more likely than white to invite, visit or telephone neighbors.
Table 25
Analysis of Variance on Relationship Between Organizational Attendance and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristic</th>
<th>df</th>
<th>m.s.</th>
<th>F Value</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>20.79</td>
<td>61.963</td>
<td>0.792</td>
<td>0.6764</td>
</tr>
<tr>
<td>Sex</td>
<td>1.98</td>
<td>10.102</td>
<td>0.134</td>
<td>0.6760</td>
</tr>
<tr>
<td>Minority Status</td>
<td>1.98</td>
<td>84.136</td>
<td>1.124</td>
<td>0.2917</td>
</tr>
<tr>
<td>Years in School</td>
<td>17.82</td>
<td>65.708</td>
<td>0.855</td>
<td>0.6178</td>
</tr>
<tr>
<td>Marital Status</td>
<td>3.96</td>
<td>134.129</td>
<td>1.835</td>
<td>0.1445</td>
</tr>
<tr>
<td>Living Situation</td>
<td>5.94</td>
<td>40.784</td>
<td>0.531</td>
<td>0.6878</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.98</td>
<td>384.275</td>
<td>5.353</td>
<td>0.0214*</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1.98</td>
<td>318.027</td>
<td>4.389</td>
<td>0.0364*</td>
</tr>
<tr>
<td>Annual Income</td>
<td>8.91</td>
<td>50.918</td>
<td>0.661</td>
<td>0.6806</td>
</tr>
<tr>
<td>Assets</td>
<td>2.97</td>
<td>60.533</td>
<td>0.805</td>
<td>0.4540</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>4.95</td>
<td>41.802</td>
<td>0.548</td>
<td>0.6710</td>
</tr>
<tr>
<td>Chronic Problems</td>
<td>3.96</td>
<td>130.411</td>
<td>1.781</td>
<td>0.1544</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>4.95</td>
<td>66.250</td>
<td>0.880</td>
<td>0.4811</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>4.95</td>
<td>99.035</td>
<td>1.340</td>
<td>0.2600</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
Table 26
Analysis of Variance on Relationship Between Informal Social Activity with Neighbors and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>df</th>
<th>m.s.</th>
<th>F Value</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>4.95</td>
<td>37.379</td>
<td>1.829</td>
<td>0.128</td>
</tr>
<tr>
<td>Sex</td>
<td>1.98</td>
<td>87.774</td>
<td>4.223</td>
<td>0.040</td>
</tr>
<tr>
<td>Minority Status</td>
<td>1.98</td>
<td>55.311</td>
<td>2.620</td>
<td>0.104</td>
</tr>
<tr>
<td>Years in School</td>
<td>3.96</td>
<td>4.876</td>
<td>0.222</td>
<td>0.577</td>
</tr>
<tr>
<td>Marital Status</td>
<td>3.96</td>
<td>18.320</td>
<td>0.850</td>
<td>0.472</td>
</tr>
<tr>
<td>Living Situation</td>
<td>2.97</td>
<td>6.295</td>
<td>0.289</td>
<td>0.687</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.98</td>
<td>44.870</td>
<td>2.114</td>
<td>0.145</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1.98</td>
<td>31.483</td>
<td>1.474</td>
<td>0.225</td>
</tr>
<tr>
<td>Annual Income</td>
<td>2.97</td>
<td>23.434</td>
<td>1.094</td>
<td>0.339</td>
</tr>
<tr>
<td>Assets</td>
<td>2.97</td>
<td>17.113</td>
<td>0.794</td>
<td>0.458</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>4.95</td>
<td>10.018</td>
<td>0.457</td>
<td>0.688</td>
</tr>
<tr>
<td>Chronic Health Problems</td>
<td>3.96</td>
<td>9.518</td>
<td>0.436</td>
<td>0.682</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>4.95</td>
<td>20.648</td>
<td>0.961</td>
<td>0.434</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>4.95</td>
<td>28.129</td>
<td>1.328</td>
<td>0.264</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
3. Informal social events with friends. Review of Table 27 indicates that only two personal characteristics were significantly associated with social interaction with friends.

a. **Years in school.** More years of education was related to greater involvement with friends.

b. **Self-rated health.** Excellent or quite good health was associated with more informal interaction with friends.

c. **Age.** When age and activity with friends was tested using Pearson r, the result was \( r = -0.1495, \text{Sign.} 0.069 \) indicating that as age increased, activity with friends decreased.

4. Informal social events with relatives. Involvement with relatives was significantly associated with four personal characteristics, as shown by Table 28.

a. **Sex.** Women were more involved in interaction with relatives than men.

b. **Living situation.** Respondents living with a spouse were significantly involved with relatives.

c. **Physical mobility.** Participants who stated they had some problems with
Table 27
Analysis of Variance on Relationship Between
Informal Social Activity with Friends
and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>df</th>
<th>m.s.</th>
<th>F Value</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>4.95</td>
<td>17.095</td>
<td>0.592</td>
<td>0.6521</td>
</tr>
<tr>
<td>Sex</td>
<td>1.98</td>
<td>4.545</td>
<td>0.159</td>
<td>0.6647</td>
</tr>
<tr>
<td>Minority Status</td>
<td>1.98</td>
<td>67.256</td>
<td>2.400</td>
<td>0.1206</td>
</tr>
<tr>
<td>Years in School</td>
<td>3.96</td>
<td>62.562</td>
<td>2.287</td>
<td>0.0822*</td>
</tr>
<tr>
<td>Marital Status</td>
<td>3.96</td>
<td>18.307</td>
<td>0.637</td>
<td>0.5918</td>
</tr>
<tr>
<td>Living Situation</td>
<td>2.97</td>
<td>45.323</td>
<td>1.615</td>
<td>0.2025</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.98</td>
<td>25.530</td>
<td>0.897</td>
<td>0.3482</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1.98</td>
<td>6.406</td>
<td>0.224</td>
<td>0.6300</td>
</tr>
<tr>
<td>Annual Income</td>
<td>2.97</td>
<td>23.303</td>
<td>0.817</td>
<td>0.4484</td>
</tr>
<tr>
<td>Assets</td>
<td>2.97</td>
<td>33.003</td>
<td>1.165</td>
<td>0.3163</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>4.95</td>
<td>54.932</td>
<td>2.012</td>
<td>0.0980*</td>
</tr>
<tr>
<td>Chronic Health Problems</td>
<td>3.96</td>
<td>19.718</td>
<td>0.687</td>
<td>0.5633</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>4.95</td>
<td>15.282</td>
<td>0.527</td>
<td>0.6778</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>4.95</td>
<td>10.219</td>
<td>0.350</td>
<td>0.6431</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
Table 28  
Analysis of Variance on Relationship Between  
Informal Social Activity with Relatives  
and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>df</th>
<th>m.s.</th>
<th>F Value</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>4,95</td>
<td>24.908</td>
<td>0.663</td>
<td>0.6134</td>
</tr>
<tr>
<td>Sex</td>
<td>1,98</td>
<td>240.945</td>
<td>6.894</td>
<td>0.0098*</td>
</tr>
<tr>
<td>Minority Status</td>
<td>1,98</td>
<td>14.684</td>
<td>0.394</td>
<td>0.5380</td>
</tr>
<tr>
<td>Years in School</td>
<td>3,96</td>
<td>36.583</td>
<td>1.405</td>
<td>0.2449</td>
</tr>
<tr>
<td>Marital Status</td>
<td>3,96</td>
<td>70.520</td>
<td>1.960</td>
<td>0.1238</td>
</tr>
<tr>
<td>Living Situation</td>
<td>2,97</td>
<td>132.383</td>
<td>3.775</td>
<td>0.0256*</td>
</tr>
<tr>
<td>Automobile</td>
<td>1,98</td>
<td>0.058</td>
<td>0.002</td>
<td>0.4515</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1,98</td>
<td>6.522</td>
<td>0.175</td>
<td>0.6566</td>
</tr>
<tr>
<td>Annual Income</td>
<td>2,97</td>
<td>50.185</td>
<td>1.365</td>
<td>0.2591</td>
</tr>
<tr>
<td>Assets</td>
<td>2,97</td>
<td>33.503</td>
<td>0.903</td>
<td>0.4114</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>4,95</td>
<td>4.872</td>
<td>0.127</td>
<td>0.1915</td>
</tr>
<tr>
<td>Chronic Health Problems</td>
<td>3,96</td>
<td>9.754</td>
<td>0.257</td>
<td>0.6257</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>4,95</td>
<td>91.301</td>
<td>2.628</td>
<td>0.0386*</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>4,95</td>
<td>154.574</td>
<td>4.818</td>
<td>0.0017*</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
mobility but were active despite them had the most interaction with relatives. d. **Self-rated appetite.** Those with the poorest appetite were most active with relatives.

**Exploratory Question 2.** Is there a relationship between personal characteristics and scores on the two personality measures.

**A. Tennessee Self-Concept Scale**

Table 29 indicates that three personal characteristics were significantly associated with scores on the TSCS.

1. **Living situation.** High self-concept was significantly related to living alone.
2. **Self-rated health.** Participants who rated their health as quite good or excellent scored higher on the TSCS.
3. **Self-rated appetite.** Excellent or very good appetite was associated with higher self-concept scores.
4. **Age.** When the association between age and TSCS was tested using Pearson r, the result was $r = 0.1249$, Sign. = 0.108 suggesting that as age increased, TSCS score increased.

**B. Internal-External Control Scale**

As can be seen by reviewing Table 30, when
Table 29
Relationship Between Tennessee Self-Concept Scale Scores and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>6.89299</td>
<td>8</td>
<td>0.5482</td>
</tr>
<tr>
<td>Sex</td>
<td>1.62745</td>
<td>2</td>
<td>0.4432</td>
</tr>
<tr>
<td>Minority Status</td>
<td>2.77103</td>
<td>2</td>
<td>0.2502</td>
</tr>
<tr>
<td>Years in School</td>
<td>4.31598</td>
<td>6</td>
<td>0.6340</td>
</tr>
<tr>
<td>Marital Status</td>
<td>10.31788</td>
<td>6</td>
<td>0.1119</td>
</tr>
<tr>
<td>Living Situation</td>
<td>10.51019</td>
<td>4</td>
<td>0.0327*</td>
</tr>
<tr>
<td>Automobile</td>
<td>1.64737</td>
<td>2</td>
<td>0.4388</td>
</tr>
<tr>
<td>Driver's License</td>
<td>1.85755</td>
<td>2</td>
<td>0.3950</td>
</tr>
<tr>
<td>Annual Income</td>
<td>16.11931</td>
<td>16</td>
<td>0.4447</td>
</tr>
<tr>
<td>Assets</td>
<td>6.22698</td>
<td>4</td>
<td>0.1828</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>13.33212</td>
<td>8</td>
<td>0.1009*</td>
</tr>
<tr>
<td>Chronic Health Problems</td>
<td>4.95937</td>
<td>6</td>
<td>0.5490</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>11.22085</td>
<td>8</td>
<td>0.1895</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>13.39176</td>
<td>8</td>
<td>0.0991*</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
Table 30

Relationship Between Internal-External Scale Score and Personal Characteristics

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>Chi Square</th>
<th>df</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>12.08323</td>
<td>8</td>
<td>0.1475</td>
</tr>
<tr>
<td>Sex</td>
<td>1.98162</td>
<td>2</td>
<td>0.3713</td>
</tr>
<tr>
<td>Minority Status</td>
<td>8.96163</td>
<td>2</td>
<td>0.0113*</td>
</tr>
<tr>
<td>Years in School</td>
<td>38.53306</td>
<td>34</td>
<td>0.2719</td>
</tr>
<tr>
<td>Marital Status</td>
<td>5.17836</td>
<td>6</td>
<td>0.5211</td>
</tr>
<tr>
<td>Living Situation</td>
<td>6.59660</td>
<td>10</td>
<td>0.7629</td>
</tr>
<tr>
<td>Automobile</td>
<td>12.91845</td>
<td>2</td>
<td>0.0016*</td>
</tr>
<tr>
<td>Driver's License</td>
<td>10.59050</td>
<td>2</td>
<td>0.0050*</td>
</tr>
<tr>
<td>Annual Income</td>
<td>16.80859</td>
<td>16</td>
<td>0.3981</td>
</tr>
<tr>
<td>Assets</td>
<td>14.49495</td>
<td>4</td>
<td>0.0059*</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>8.99173</td>
<td>8</td>
<td>0.3430</td>
</tr>
<tr>
<td>Chronic Health Problems</td>
<td>12.39494</td>
<td>6</td>
<td>0.0537*</td>
</tr>
<tr>
<td>Physical Mobility</td>
<td>28.21633</td>
<td>8</td>
<td>0.0004*</td>
</tr>
<tr>
<td>Self-rated Appetite</td>
<td>17.22479</td>
<td>8</td>
<td>0.0279*</td>
</tr>
</tbody>
</table>

*Significant at .10 or better
I-E scores and personal characteristics were tested using Chi Square, seven significant associations were found.

1. **Minority status.** Eight of the black respondents were in the intermediate locus of control category with one categorized as internal and two as external.

2. **Automobile and driver's license.** Owning a car and having a valid driver's license was associated with an internal locus of control.

3. **Assets.** Owning assets in excess of $5,000 was associated with an internal I-E score.

4. **Chronic health problems.** Having none, or only one or two, chronic health problems was associated with an internal control orientation. Those with five or more problems were members of the external group.

5. **Physical mobility.** Excellent mobility was related to internal locus of control. In a subsequent F test, little or no difficulty was associated with an internal score. However, in that same test, participants who needed assistance with mobility scored in a more internal direction than those who had problems but were active or those who had significant interference with mobility.
6. **Self-rated appetite.** Poor appetite was associated with external locus of control.

7. **Age.** When the association between age and I-E score was tested using Pearson $r$, the result was $r = 0.2294$, Sign. $0.011$ suggesting that as age went up I-E score also increased.

8. **Self-rated health.** Although Chi Square did not reveal significance between self-rated health and locus of control, an $F$ test did. $F$ value was $2.334$, Sign. $= 0.0603$ (df $4,95$ m.s. $33.706$) with excellent rating of health associated with an internal orientation.

**Summary**

In this chapter the data collected for this study was described and the findings pertaining to the testing of the null hypotheses and exploratory questions presented. Conclusions reached for the study, recommendations for further research, and a summary of the investigation are presented in Chapter 5.
Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this final chapter is to summarize the major findings of the study and to propose aspects for additional research. The first part of the chapter consists of a brief review of the purpose of the investigation, its methodology, and a summary of the findings. This is followed by a presentation of the principal conclusions from the study. The chapter concludes with recommendations for further research.

Summary

Background of the Study

One theory of aging proposes that certain conditions related to aging, role-loss, lack of reference groups, and vague normative information, deprive the older adult of feedback about appropriate roles and behavior and, generally, what his value is to his social world. Since an individual's sense of self and his feelings of mastery over his environment are functions of social labeling and valuing, the lack of feedback creates a vulnerability to the negative stereotypes of aging held by many in this society. Negative social labeling may be internalized as a negative self-view, and psychological equipment needed to cope with the environment lost.
This theory suggests that self-concept and feelings of control over one's life and environment are critically related to the behavior observed in older people. The question then arises: can relationships between personality attributes and the ways older people live be demonstrated in everyday life?

Purpose of the Study

This study was designed to explore the association between two aspects of personality and three aspects of daily life in older adults. The study question was: Is there a relationship between self-concept and locus of control and patterns of eating, exercise, and social participation in older adults living in the community. Fourteen personal characteristics were also included in the examination of relationships. These included: age, sex, minority status, years in school, marital status, living situation, owning an automobile, holding a valid driver's license, annual income, assets, self-rated health, number of chronic health problems, self-rated physical mobility, and self-rated appetite.

Four hypotheses and two exploratory questions guided the study:

1. Self-concept and locus of control will be associated with living situation.
2. Internal locus of control will be associated with high self-concept.
3. Older adults with high self-concept will exhibit more consistent eating patterns, will exercise more, and will participate more frequently in activities outside the home than those with low self-concept.

4. Older adults with an internal locus of control will exhibit more consistent eating patterns, will exercise more and will participate more frequently in activities outside the home.

5. Is there a relationship between the personal characteristics of the older individual and his eating, exercise, and social participation patterns?

6. Is there a relationship between self-concept and locus of control and the personal characteristics of the older individuals in the sample?

Sample

Sixty-nine women and thirty-one men, who ranged in age from 65 to 86 and who lived outside congregate care facilities, participated in the study. The respondents were recruited through college classes on aging, through six programs for seniors in the Sacramento area, through friends of the investigator, and through the respondents themselves. While most of the participants lived in the Sacramento area, about a quarter of them lived in Berkeley, California, or environs.
Procedures

Data were collected during personal interviews held between March, 1977, and January, 1978, and conducted at the time and place of the respondent's choosing.

Three instruments were used in the data collection:

1. The **Tennessee Self-Concept Scale** was used to obtain the measure of self-concept for each participant. The Total P score was accepted as an overall estimate of self-esteem.

2. The **Internal-External Control Scale** was administered to determine the participant's orientation toward locus of control.

3. The Interview Questionnaire, developed by the investigator, was used to obtain information about personal characteristics, eating patterns, exercise habits, and social participation, in organizations as well as informal social interaction with friends, relatives, and neighbors.

The following statistical techniques were used to analyze the data:

1. One-way analysis of variance was used to test differences between groups when data were at the interval level.

2. Pearson Product-Moment Correlation Coefficient was used to test associations when data were at the interval level.
Findings

Statistical analysis indicated that:

1. The null hypothesis of no significant relationship between living situation and scores on TSCS and I-E Scale was accepted. Although living alone was associated with high self-concept at the .03 level, there was no significant relationship between I-E score and living situation.

2. The null hypothesis of no significant relationship between internal locus of control and high self-concept was rejected when the result of correlation of the two personality scales was $r = -0.2691$, Sign = 0.00339.

3. The null hypothesis of no significant relationship between high self-concept and eating patterns, exercise patterns, and social activities was accepted.
   a. High self-concept was not significantly related to any of the identified eating patterns.
   b. There was no significant association between exercise patterns and high self-concept.
c. No association was found between organizational participation and high self-concept.

d. Only one form of informal social interaction reach significance. Number of telephone calls to friends was significantly associated with TSCS, $r = 0.1311$, Sign. 0.097.

4. The null hypothesis of no significant relationship between internal locus of control and eating patterns, exercise patterns, and participation in social activities was accepted.

a. Relationships between eating patterns and internal control were not significant.

b. Findings with respect to exercise were divided. There was no significant relationship between I-E score and hours of exercise around home per week, hours spent walking for exercise, or total exercise hours per week. Internal locus of control was positively associated with recreational exercise, however. Recreational exercise hours correlated with I-E Score with $r = -0.2426$, Sign. = 0.008.

c. Frequency of participation in voluntary associations was positively associated with internal locus of control, $r = -0.1362$, Sign. = 0.088.

d. As far as informal social interaction was
concerned, only telephoning neighbors reached significance when Chi Square was used to measure the association. When Pearson r was used to correlate I-E score with the total activity with friends, the outcome demonstrated that an internal locus of control was positively associated with interaction with friends, \( r = -0.1688, \) Sign. 0.047.

5. The first exploratory question investigated the relationships between personal characteristics and patterns of eating, exercise, and social participation with the following results.

a. Years in school, self-rated health and self-rated appetite were related to eating patterns.

b. With respect to exercise habits

1) Hours of exercise around home were related to years in school, annual income, assets, self-rated health and physical mobility.

2) Hours spent walking for exercise were related to sex.

3) Hours of recreational exercise were related to age, years in school, having a car and driver's license, annual income, and physical mobility.
4) Total exercise hours per week were individually related to the following characteristics: school, marital status, living situation, automobile and a driver's license, annual income, assets, self-rated health, chronic problems and physical mobility.

6. The second exploratory question examined the relationships between personal characteristics and scores on the two personality measures.

a. The **Tennessee Self-Concept Scale** was significantly related to living situation, self-rated health, self-rated appetite, and age.

b. The **Internal-External Control Scale** was significantly associated with non-minority status, having a car and driver's license, assets in excess of $5,000, only one to two chronic health problems, excellent self-rated physical mobility, excellent self-rated appetite, age, and excellent self-rated health.

**Conclusions**

The conclusions drawn from the study are discussed in two sections. The general conclusions derived from the research are presented first. These are followed by the more specific conclusions which evolved from the study
findings.

General Conclusions

The following conclusions were generally supported by the results of the study.

1. In this sample high self-esteem was associated with internal locus of control. Of these two personality tendencies, locus of control demonstrated a greater number of significant relationships with the behavior studied than did high self-concept.

2. Most of the respondents in the study ate three meals per day in common with the rest of the country. Seventy-four percent reported this pattern. Only thirteen individuals seemed to exhibit no regularity in the number of meals eaten each day. Neither self-concept nor locus of control was significantly related to any of the five eating patterns found among the participants.

3. Exercise was not an important aspect of lifestyle for the individuals in this sample. This is congruent with the literature on physical exercise in old age. Most of the participants engaged in some physical exertion in working around their homes. Two-thirds of the sample reported they did some walking for exercise, while one-third participated in recreational
exercise activities. There was a significant association between I-E orientation and recreational exercise. Those with an internal orientation appear to have the health, the resources, and the friendships which would be conducive to greater recreational exercise.

High self-concept was not significantly related to exercise, however. As the literature related to this part of the investigation points out, as a society, we urge older people to take it easy and are generally unaware of the positive value of a carefully planned exercise program for older people. At this time, it may be premature to view the lack of an exercise program as an indication of poor self-attitude or poor self-care.

4. Fewer than half the members of the sample were members of voluntary organizations, a percentage that is smaller than might be expected for this kind of sample. Those who did belong seemed to take an active role. Again, internal locus of control was positively related to organizational activity while high self-concept was not.

5. For the majority of the sample informal social interaction was most frequent with friends, followed in order, by relatives and then neighbors. This, too, was congruent with findings on
informal social interaction in urban areas. Locus of control was associated both with telephoning neighbors and the total number of social events with friends. High self-concept was significantly related only to telephoning friends.

6. High self-concept was not associated with day-to-day living habits to the extent hypothesized. The high self-concept participant in this study can be described as one who was older, who had an internal control orientation, whose self-rated health and appetite were excellent, who lived alone, and who frequently talked with friends by telephone. The lack of association with activity adds some support to the suggestion found in the literature that high self-concept may be maintained by withdrawal from active involvement in the environment.

7. The respondent with an internal locus of control had the following characteristics: a high self-concept, was younger and of non-minority status, had his own transportation, owned assets in excess of $5,000, had excellent self-rated health and appetite with only one or two chronic health problems and excellent self-rated physical mobility. He participated in recreational sports, belonged to voluntary organizations,
was active with friends, and telephoned his neighbors more frequently than could be expected by chance. In sum, he had the characteristics and resources which enabled him to feel in greater control of his own life.

Specific Conclusions

From the findings of the study the following specific conclusions were reached:

1. For purposes of this study with this age group, the Internal-External Control Scale was the more efficient instrument. It demonstrated a greater number of significant associations with the other data and was considerably easier to administer.

2. While many studies of older adults have pointed out the importance of self-rated health as a research variable, this investigation amplified that to demonstrate that the number of chronic health complaints and capacity for physical mobility also bear a significant relationship to other behaviors.

3. There were three significant differences between the sexes. Women walked more for exercise. They were involved in more social interaction with neighbors and with relatives.

4. Two significant differences related to minority status were found. Eight of the black
respondents fell within the intermediate I-E category, and that represented seventy-three percent of the group. The minority elderly also had greater social interaction with their neighbors than did the non-minority respondents. Both telephoning neighbors, Sign. .054 and total of all social interaction with neighbors were significant (F value 2.620, Sign. = 0.1048).

5. Self-rated appetite was significantly associated with eating patterns, with more social activity with relatives and with both high self-concept and internal locus of control.

**Recommendations for Further Study**

Six recommendations are proposed for future research related to the current study.

1. A replication of this study should be conducted if a random sample could be obtained. This would provide a more appropriate examination of the concepts proposed for study.

2. The various aspects of life style should be investigated in separate studies to permit exploration in greater depth. A study of eating patterns, for example, might inquire into the differences between those who eat two meals per day and those who eat three, between those who snack and those who don't, or try to
learn more about the implications of self-rated appetite.

3. A replication of this study which categorized the personality scales into two groups rather than three might be undertaken to learn whether different results would be found.

4. Exercise should be studied again after public understanding of the value of exercise for the elderly has developed further. At that point, it might be more productive to examine the relationships between exercise and the two personality scales to consider whether or not lack of exercise suggests lack of self-care.

5. Consideration should be given to whether or not this type of study could be used with elderly minority subjects who have a limited command of English. Research in this area would require that someone thoroughly acquainted with a specified culture determine whether the assumptions which underlie the scales have meaning in that culture. If the concepts were relevant, the scales would have to be translated into the language and then normative data collected.

6. Knowledge about relationships between attitudes and behavior would be greatly extended if investigation of self-concept and locus of control were incorporated into longitudinal
studies of adulthood. Whether the two personality attributes and the behaviors of concern to this study are relatively constant or change with the changes which accompany aging would be considerably clarified.
Books


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APPENDIX A
I. Personal Data

1. Age: _____ years old
2. Sex: Male____ Female____
3. Minority Group Member: Yes____ No____ Which group?____
4. Education: Highest Grade Completed____
5. Marital Status: Never Married ____
   Sep./Divorced ____
   Widowed ____
   Married ____
   If widowed or Sep./Divorced, how long ago did this change take place?
   one year ago or less ____
   two years ago ____
   three to five years ____
   five years or more ____
6. Living Situation:
   Alone ____
   With spouse ____
   With children ____
   With sibling ____

7. Do you have a telephone? Yes ____ No ____
8. Do you have a car? Yes ____ No ____
   A valid driver's license? Yes ____ No ____
9. Financial Status
   a. Income
      Under 1000 ____
      1000 - 1999 ____
      2000 - 2999 ____
      3000 - 3999 ____
      4000 - 4999 ____
      5000 - 5999 ____
      6000 - 6999 ____
      7000 - 9999 ____
      10,000 or above ____
   b. Other assets such as savings, stocks, property?
      Yes ____ No ____
      Under $5,000 ____
      Over $5,000 ____
10. Health
   a. Compared to other people your age, how would you rate your health?
      1. Excellent ____
      2. Quite good ____
      3. About the same as ____
      4. Not quite as good as ____
      5. Quite poor in comparison ____
   b. Are there physical problems you live with regularly. (List.)
11. Physical Mobility: Do you have any difficulty getting about?
   1. No difficulty whatsoever
   2. Minor physical impairment but very active
   3. Some problem with movement but active despite this
   4. Significant interference with movement
   5. Moves only with assistance
II. **Eating Patterns**

Eating is something people seem to take for granted, but appetites and ways people eat may change over the years. More information is needed about what people's eating patterns are when they have reached retirement age.

A. **APPETITE**

1. How would you describe your appetite?

   1 Excellent ___
   2 Very good ___
   3 Good ___
   4 Fair ___
   5 Poor ___

2. Are you taking any kind of medication which affects your appetite?

   Yes ____ No ____

3. Are you on a special diet prescribed by your doctor?

   Yes ____ No ____

4. Do you take food supplements such as vitamins?

   Yes ____ No ____

B. **FREQUENCY AND NATURE OF MEALS**

5. How many times did you eat yesterday? _________

6. Is this the usual number of times you eat each day?

   Yes ____ No ____ If no, probe.

7. Would you say, then, that ___ meals per day is your regular meal pattern?

8. Which meals are you most likely to eat?

   ___ breakfast   ___ lunch   ___ dinner

9. Do you skip meals?

   ___ frequently   ___ occasionally   ___ never

10. How often would you say you skipped meals this past week? _________

11. Do you sometimes eat snacks? Yes ____ No ____

12. What times of day are you most likely to snack? _________

13. Do you ever eat snacks rather than regular meals?

   Yes ____ No ____
14. How many times do you think you did this in the last week? ________
15. How many times per day do you usually eat hot meals? ________
16. Which meal(s) that you eat are most likely to be hot?
   ___ breakfast   ___ lunch   ___ dinner
17. Do you usually eat your meals at regular times?
   Yes ___  No ___
18. At what time during the day do you usually eat
   ___ breakfast   ___ lunch   ___ dinner?
19. How many meals did you eat away from home last week?________
20. Do you usually eat out about this many times each week?
   Yes ___  No ___
21. Do you usually eat alone or with others?
   Alone ___  With others ___
22. If with others, with whom do you usually eat?________
23. Do you have cooking and refrigeration facilities?
   Yes ___  No ___
24. Do you usually cook your own meals? Yes___  No ___
   If no, who cooks for you?
25. Do you ever attend the lunch program at a senior nutrition
   program? Yes___  No ___
26. Have you ever made use of any of the other services available
   at the program? Yes___  No ___
   If yes, which ones?  transportation  ___
   shopping assistance  ___
   consultation with social worker  ___
   nutrition education  ___
   other?  ______________________
27. Do you participate regularly in any other lunch program for
   seniors? Yes___  No ___
28. How far do you have to go to shop for groceries?________
29. Do you have any problems around meals or eating which you
didn't have twenty years ago? If yes, probe.

30. Eating pattern classification: ___ ___
III. Exercise  People have differing points of view about exercise. We are interested in learning about what you do.

A. Around the home
1. Do you work in your yard as a form of exercise? Yes __ No __
2. If so, about how many hours per week? ______
3. Are you able to do your own housework? Yes __ No __
4. If yes, how much are you able to do?
   a. all including scrubbing, washing windows, etc. ______
   b. most of it, but no heavy cleaning ______
   c. light housekeeping only ______
5. About how many hours per week do you spend cleaning house? ______
   Total hours working about home ______

B. Walking
6. Do you ever take walks for exercise? Yes ____ No ____
7. If yes, how often do you go walking?
   a. nearly every day ______
   b. two or three times per week ______
   c. once a week ______
   d. less than once per week ______
   e. never ______
8. How much time would you say you spend walking on the average?
   ____________________________

C. Recreational Activities
8. Do you participate in any of the following physical activities:

   How much time per week do you spend on the activities in which you do participate?

   How much time per week on checked activities?

   golf ______
   bowling ______
   tennis ______
   swimming ______
   hiking ______
   bicycling ______
   dancing ______
   horseshoes ______
   croquet ______
   miniature golf ______
   other ____________________________
9. Do you belong to a health club? If yes, what activities are you involved in?

10. Has your doctor ever made any recommendations about exercise?  Yes ____  No ____
    If yes, what has he/she suggested?

11. If a physical activity program designed just for older people were held near your home, would you join the group and participate?
    If yes, why?  If no, why?
IV. Social Participation  Some people like to keep busy. Others enjoy taking it easy. Information about your activities will help us know more about this.

A. Organizational activity

1. How many times in the last month have you attended any of the following kinds of meetings?

<table>
<thead>
<tr>
<th>Meetings</th>
<th>Number of Meetings</th>
<th>Take an Active role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Church services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meetings of other groups in the church</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service clubs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraternal organization</td>
<td></td>
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<tr>
<td>Political organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Club for seniors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education or learning activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Looking at the meetings listed above, check in which groups you have been particularly active such as serving as an officer or serving on a committee?

B. Social activity

3. Do you do any volunteer work in the community? Yes___ No___
   If yes, how many hours per week usually? ___________

4. How many times in the last week have you gone to visit with

   Neighbors (more than just saying good morning) ______
   Friends ___
   Relatives ___
   Others __________________________________________

   Is this about what you do each week? Yes___ No___
   If no, probe.

5. How many times in the last week have you invited people into your home for dinner, cards, TV, visiting, etc.?

   Neighbors ___
   Friends ___
   Relatives ___
   Others __________________________________________

6. How many times in the last week have you called any of the following people on the telephone?

   Neighbors ___
   Friends ___
   Relatives ___
   Others __________________________________________
7. Would you like to be able to be more active in the community?
   If no, why?    If yes, what seems to prevent it?
ADDENDUM
ADDENDUM

After this report had been completed, the author and her committee devoted some time to discussing issues related to research with older adults. As a result of that discussion, this addendum has been written with the hope that it may be of use to others considering research related to old age.

The following research procedures are among those which require careful planning when the use of elderly respondents is contemplated.

1. **Population.** Obtaining a random sample of reasonable size is usually difficult. Some researchers have the resources to make use of official sources, such as census tract data, which certainly promises the possibility of obtaining a random sample. Eliciting participation by a representative group from the sample selected may still prove disappointing. It is the healthy, active elder who is more likely to participate, which means the sample is still a biased one.

   For the average investigator without such resources, finding a sufficient number of volunteers may take an unexpectedly long time. Efforts made to obtain a representative, if not random, sample may be thwarted both by the inability to make contact with the isolated or alienated and by their natural hesitation to become involved in something they know nothing about with
someone they've never seen before. This includes minority elderly who, until quite recently, have been virtually ignored.

2. **Instruments.** Data gathering instruments require careful selection for several reasons. If the instrument is too long, or too complex to administer, the elderly respondent may tire, to his detriment as well as to the detriment of the data. Instruments should also be capable of being administered in a way which allows for the sensory or educational deficits which are characteristic of some older people. Most standardized instruments now in use automatically exclude respondents who do not read or understand English easily. This means, of course, that a large segment of the older population is overlooked and less well understood.

3. **The Interviewing Process.** Theoretically, any interviewer who knows how to develop rapport with an interviewee should be able to interview older people satisfactorily. Still, some thought should be given to the use of trained older interviewers of the same sex and socioeconomic status. This could enhance the development of rapport which, in turn, could produce more candid answers. Further, some elders may respond in a manner designed not to offend the interviewer. If understanding and trust have been established, the interviewer is more likely to receive dependable information.
4. **Outcomes.** Gerontologists believe that individuals become increasingly different from each other with age. When generalizations about the elderly are not supported by research findings, the investigator may still be making a contribution to the understanding of the strength, diversity, and variety which we are increasingly recognizing to be the hallmark of the old.