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PHYSICAL, PSYCHOLOGICAL AND SOCIAL PREDICTORS
OF LOCUS OF CONTROL AMONG MIDDLE AGED ADULTS.

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PHYSICAL, PSYCHOLOGICAL AND SOCIAL
PREDICTORS OF LOCUS OF CONTROL
AMONG MIDDLE AGED ADULTS

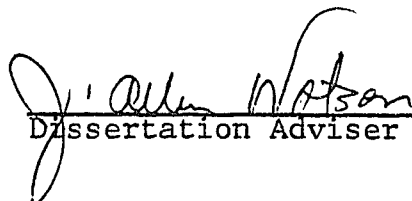
by

Vira Rodgers Kivett

A Dissertation Submitted to
the Faculty of the Graduate School
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of the Requirements for the Degree
Doctor of Philosophy

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Approved by


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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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KIVETT, VIRA RODGERS. Physical, Psychological and Social Predictors of Locus of Control Among Middle Aged Adults. (1976)

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The purpose of this study was to determine through a systematic approach some of the more salient physical, psychological and social variables in locus of control orientation (I.E.) in middle adulthood. The sample for the study consisted of 337 adults from 22 churches selected at random from the Greensboro District of the United Methodist Church. The adults, aged 45 to 65 years, were administered questionnaires by a trained interviewer in church school classes during a regular Sunday morning meeting.

Ten independent variables that were either physical, psychological or social in composition were arranged in a causal ordering and incorporated into a multiple regression equation which utilized locus of control scores as the dependent measure. Category I, or the physical variables, included self rated health, age, sex, and race. The psychological variables constituted Category II and included three measures of self concept: actual, appearance and ideal. Category III, or the social variables, included education, occupation and religious motivation.

The first hypothesis which stated that the composite of 10 or fewer independent variables would account for a significant proportion of the explained variance in locus of control scores was supported by the data. Hypothesis two which postulated that among 10 independent variables,

a physical factor, self rated health, would have the highest normalized regression coefficient expressed by the prediction equation was not supported by the data. Similarly, a third hypothesis stating that there would be a significant interaction between education and race with respect to I.E. control was not upheld by the investigation.

Four major conclusions were drawn from the analysis of the data: (1) Selected psychological, social and physical factors, when observed in relation to each other, account for a significant amount of variance in the locus of control of middle aged adults. Individuals perceiving control over the rewards from their environment (internals) view themselves more positively than external perceiving adults. The more intense the feeling for an "ideal" self concept, the more likely adults are to exhibit feelings of powerlessness over their environment. Adults in job types that are administrative or operative in nature which allow for perceptions of control through the manipulation of people or machines, as opposed to types that allow for little or no control such as laborers and service workers, perceive more power over their environment. Adults in occupations that are clerical in type which require considerable submission to a rigid structure, as opposed to those in labor or service worker types, sense less power over their environment. Adults in whom religion precedes other primary needs and the religious creed is internalized

and strongly embraced perceive more control over their environment than adults for whom religion is mainly instrumental. Females internalize the religious creed more strongly than males and are less likely to use religion as a social tool or as an endorsement of behavior when responding to social demands. (2) Specific occupational contrasts show larger differences in the perceived control of adults than age, sex, health, education, self concept and religious motivation. (3) Education has a similar influence upon the way in which both black and white adults perceive control over the rewards from their environment. (4) Sex, self rated health and age show spurious relationships with perceived control unless the effects of education, occupation, race, self concept and religious motivation are controlled.

The findings from this study supported the literature on locus of control orientation with respect to the relationship between I.E. and self concept (actual), self concept (ideal), and religious motivation. The results generally were not congruent with those from other studies relative to age, self rated health, sex and race.

PREFACE

This dissertation was supported in part by a grant from the Administration on Aging, Department of Health, Education, and Welfare. Researchers undertaking such projects are encouraged to express freely their professional judgment. Therefore, points of view or opinions stated in this document do not necessarily represent the official position or policy of the Department of Health, Education, and Welfare.

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TABLE OF CONTENTS

	Page
APPROVAL PAGE	ii
PREFACE	iii
ACKNOWLEDGMENTS	iv
LIST OF TABLES	viii
CHAPTER	
I. INTRODUCTION	1
Conceptual Framework	2
Social Learning Theory and Locus of Control	4
The Problem	7
Importance of the Study	12
Assumptions and Limitations	15
Definition of Terms	18
Organization of the Dissertation	22
II. REVIEW OF THE LITERATURE	23
Theoretical Background for Personality Studies	24
Social Learning Theory	26
Expectancy and Perceived Control	28
Perceived Control as a Research Variable	29
Perceived Control and Physical Variables	34
Perceived Control and Psychological Variables	40
Perceived Control and Social Variables	45
Conclusions	50
III. METHOD AND PROCEDURES	53
Sample Selection	53
Research Design	61
Research Instruments	62
Procedures	71

	Page
CHAPTER	
IV. ANALYSIS OF THE DATA	77
Interrelationships Among Variables . . .	79
The Prediction of Locus of Control . . .	82
V. SUMMARY AND CONCLUSIONS	92
Discussion	93
Summary of the Research Questions, Hypotheses and Findings	104
Conclusions	108
Methodological Implications	111
Implications for Future Research	112
BIBLIOGRAPHY	115
REFERENCE NOTES	124
APPENDIX A. Questionnaire - Adult Study	125
APPENDIX B. Computations for Determining R^2 Shrinkage	137
APPENDIX C. Form Letters	138

LIST OF TABLES

Table	Page
1. Population and Sample Characteristics of Churches Falling Under the Greensboro, North Carolina, District of the United Methodist Church (Expected Yield)	54
2. Expected and Actual Sizes of Sample I and Sample II	56
3. Age and Education of Middle Aged Adults According to Race and Sex (Percentages). .	60
4. Correlations Between Earlier Scales, the I.R.M. Scale, and Ministers' Judgments . .	71
5. Mean, Range and Standard Deviations for Continuous Predictor Variables and Locus of Control	78
6. Spearman Rank-Order Correlations for Predictor Variables and Locus of Control	80
7. Analysis of Variance Table of the Sources of Variation in Locus of Control Scores Comprising Regression . . .	84
8. Beta Weights, Semipartial Correlations, Squared Semipartial Correlations and Standard Error of Independent Variables in Locus of Control Prediction	86
9. Mean, Range and Standard Deviations for Locus of Control Scores of Occupational Groups	89

CHAPTER I
INTRODUCTION

Studies of personality in adulthood have shown that personality organization or personality type is a pivotal factor in predicting which individuals will age successfully and that adaptation is the key concept (Neugarten, 1973). There is disagreement regarding the extent to which personality patterns reflect long standing life styles, that is, whether consistencies rather than inconsistencies in coping styles predominate over the middle years through old age or whether personality shows elements of both stability and instability, relative to the social environment. Both views have formed the theoretical framework for the few studies that have been conducted on personality organization.

The importance of life history to personality organization in adulthood suggests the need for studies embracing a very broad context of the life cycle, such as that from childhood through old age. Efforts to present findings that span the life cycle have been limited and somewhat unsuccessful (Lidz, 1968; Maas & Kuypers, 1974; Pressey & Kuhlen, 1957). Primary to a paucity of research on adults is the lack of a conceptual framework that encompasses the

life cycle as a whole (Neugarten, 1964; Neugarten, 1973, pp. 311-335).

Conceptual Framework

Neugarten (1973, p. 312) pointed out that before the utility of various conceptual frameworks for explanation and prediction can occur, three major questions must be resolved: (a) How may those personality processes that are most salient at successive periods in adulthood be identified, (b) How can these processes be described appropriately, and (c) How can changes that are developmental be isolated from those that are not.

Two bodies of theory have been of major influence on studies of adult personality and they include psychoanalysis and ego psychology (Bühler, 1935; Bühler & Masserick, 1968; Erikson, 1959, 1963; Fromm, 1941; Jung, 1933; Maslow, 1954) and social psychology and symbolic interactionist theory (Brim & Wheeler, 1966; Rotter, 1972a, pp. 260-306; Sarbin, 1964). Despite differences among theorists within each of the respective theoretical bodies, important commonalities are found within each major viewpoint. Among psychoanalysts, the sense of identity is viewed as becoming established in adolescence, and behavior is characteristically consistent with character structure with both becoming fixed in early adulthood. Although the ego is seen to become an increasingly important and

autonomous agent of change, the personality basically remains stable. Two notable exceptions among the psychoanalysts were Jung (1933) and Erikson (1959, 1963). Jung described stages of development in adulthood and recognized an increase in introversion in middle and later life as well as a reorganization of value systems. Erikson, in speculating on personality change, delineated eight stages of man which spanned the entire life cycle, each stage of which represented a choice or a crisis for the expanding ego. The crisis or choice of generativity and ego integrity were viewed as characteristic of middle and late life, respectively.

In contrast to this view of personality organization, the sociopsychological perspective places major responsibility of social situations, rather than developmental phenomena, on behavior change. This view is in keeping with that of the present study. In brief, the social theorists contend that there are few personality dispositions that are persistent across situations and that the personality is the sum of social experiences and social roles.

In summary, psychoanalysis is basically a developmental theory with biologically determined sequences of drives beginning in early childhood and becoming relatively fixed in adulthood. Social psychology, on the

other hand, generally argues that personality is situational, but exhibits both stability and change. Major criticisms of the sociopsychological perspective in personality studies are that such concepts as commitment or sense of continuity and consistency of self are left unexplored (Neugarten, 1973, pp. 311-335). The sociopsychological perspective of personality as described in this section now leads to a discussion of an important personality construct, locus of control (perceived control), which was founded in social learning theory (Rotter, 1972a, pp. 260-306) and is the dependent measure in the present study.

Social Learning Theory and Locus of Control

Rotter (1973) explained behavior by focusing on the mediating process or "interpretation," which assesses both social structural variables and psychological variables on the basis of past experience. Rotter's theoretical concept forms the basis for the social learning theory through its emphasis on the perceived environment of the individual as accounting for the explanation of behavior. The social learning theory provides the theoretical construct and measure of perceived control. The social learning theory of personality maintains that all behavior is learned through social interaction.

The term learning in the title of Rotter's theory indicates that gradual adaptation or change of behavior is an intelligent and flexible process of coping with new experience, not merely a mechanical modification of responses. The theory assumes that some mediational process between stimulus and response is necessary to explain human behavior. The predictor of present or future behavior is the individual's past experience (history). Behavior is viewed as goal oriented with the effect of reinforcing conditions being dependent upon the value or meaning that the individual places on the reinforcement. The reinforcement effect on behavior is proportional to the value placed on a reinforcement. The nature and value of goals and reinforcements as well as the individual's expectation that these reinforcements will occur determine the probable occurrence of a behavior. A formula for the prediction that a behavior will occur which uses the concepts of value and expectancy was developed by Rotter (1972b, p. 215).

Expectancy is a component of social learning theory upon which the locus of control construct is based. Rotter (1966) found that similar patterns of reinforcement result in marked and consistent behavioral response differences. From this observation he concluded that the effect of a specific reinforcement depended upon whether or not the individual perceived a "causal" relationship between his

own behavior and the reward. This phenomenon was termed as causal perception, or generalized expectancy, a belief in internal versus external control of reinforcement (I.E. control). The concepts internal and external are envisioned as the extreme poles of a continuum referred to as perceived control. Persons identified as having internal control of reinforcement are viewed as perceiving that they control rewards in their "reality world" through their own actions. The generalized expectancy, or perception, that rewards are determined by forces outside one's own control (by luck, fate, or powerful others) is labeled as external control. An event may be regarded by some persons as a reward or reinforcement while it may be differently perceived by others.

Several variables have been identified as distinguishing between internally and externally perceiving individuals. Race, particularly that which is minority in nature, has been shown frequently to be related to I.E. orientation, with minority groups exhibiting more externally perceived control than other groups (Battle & Rotter, 1963; Jessor, Graves, Hanson & Jessor, 1968; Lefcourt, 1973). Self rated health was found by Palmore & Luikart (1974) to be a correlate of perceived control among women. In contrast, age has infrequently been related to perceived control (Palmore & Luikart, 1974, pp. 185-201), and

relatively few studies have attributed variance in perceived control to education (Lichtenstein & Keutzer, 1967; Strickland, 1965).

Parallels between perceived control and numerous other concepts such as autonomy (Erikson, 1959; Havighurst, 1963, pp. 299-320), competence (Neugarten, 1963, pp. 321-334; White, 1959), achievement motivation (Atkinson, 1958, 1966; McClelland, Atkinson, Clark & Lowell, 1953) and alienation (Seeman, 1959) point out the importance of the locus of control construct to adjustment in middle age.

The role of reinforcement, reward, or gratification, is generally recognized as a crucial one in the acquisition and performance of skills and knowledge (Rotter, 1973, p. 260). Findings from experiments using measures of locus of control have also shown that perceived control is a useful variable with important implications for psychopathology, apathy, and withdrawal phenomena (Lefcourt, 1966). The purpose of the present study was to determine some of the factors that influence the type of control that middle aged adults perceive over their environment.

The Problem

Recent studies have pointed out the importance of perceived control to human behavior and this has added impetus for more studies dealing with the locus of control

variable among the middle aged population (Breytspraak, 1974, pp. 221-231; Kuypers, 1972; Luikart, 1971; Palmore & Luikart, 1974, pp. 185-201). The present study investigated the relationship between several physical, social and psychological variables and locus of control orientation in adults 45 to 65 years of age. Three research questions were asked:

1. What is the relationship between a composite of three categories of variables that are either physical (health, age, sex, race), psychological (self concept) or social (educational level, occupation, religious motivation) in type and locus of control orientation?
2. Will self rated health, a physical variable, account for a greater amount of variance in locus of control scores than any of nine other variables that are either physical, psychological or social in type?
3. Is there an interaction between a social factor (education) and a physical factor (race) with respect to locus of control orientation?

Other findings that are not specifically requested by the three research questions but that are of research interest were discussed. This additional description assists in the explanation of primary findings and their implications.

Major support for the selection of the independent variables came from several studies of middle aged adults. Maddox and Douglass (1974, pp. 55-63) concluded that health is a basic variable in the study of aging as a biosocial process. This notion was supported by Palmore and Luikart (1974, pp. 185-201) who investigated the importance of health (self rated) to life satisfaction. Self rated health was found to be the best predictor of life satisfaction among middle aged adults in general and the third best predictor of perceived control among women. In a recent follow up with this same longitudinal panel, Palmore and Kivett (Note 1) found that changes having occurred in life satisfaction over a four year period could be predicted best by changes in self rated health.

Other physical variables incorporated into the present study have been previously linked to perceived control with more or less consistency. There is some indication that sex may be more important to locus of control than previously thought (Levinson, Note 2; Palmore & Luikart, 1974, pp. 185-201) while the influence of race has been frequently observed as a factor in perceived control (Battle & Rotter, 1963; Jessor et al., 1968; Lefcourt, 1973). The function of age in perceived control is less known; consequently, there is a need for its inclusion in more studies dealing with wide age spans such as the present study.

Bieri and Lobeck (1961) argued that self concept is a product primarily of the social learning of the individual. They asserted, in this context, that it should be possible to demonstrate systematic differences in the self concepts of persons whose social experiences have differed in fundamental ways (race, sex, education, religious experiences).

Major support for the inclusion of the religious variable in the study came from Hunt and King (1971, p. 355), who, after a critical review of the literature on the intrinsic and extrinsic concepts of religion, concluded that there seems to be little doubt that what deserves to be called "religious" behavior is involved in the personality structure at its deepest levels and probably in multiple ways. Luckman (1967), in addition, stated that the social processes that lead to the formation of self are fundamentally religious. The role of occupation in locus of control has usually been reflected through socioeconomic variables. In such cases, a higher socioeconomic status has generally been associated with internality (Rotter, 1972a, pp. 260-306).

The literature demonstrated that there is no single sociopsychological pattern by which people grow older, but rather, persons age in ways that are consistent with their earlier histories and present situations. The

importance of the sociocultural factors in the aging process points to the necessity of placing many questions regarding adulthood within the complex of physical, social and psychological variables in the effort to explain behavior.

Hypotheses

Based upon the support provided for the problem statements, the following three hypotheses were presented in alternative form:

- H₁ A composite of 10 or fewer independent variables which are either physical (Category I), psychological (Category II), or social (Category III) in type will account for a significant proportion of the explained variance in the locus of control scores of middle aged adults.
- H₂ Among 10 independent variables, a physical factor, self rated health, will have the highest normalized regression coefficient expressed by a prediction equation for locus of control scores.
- H₃ There will be a significant interaction between education and race with respect to locus of control among middle aged adults.

Importance of the Study

Crises occurring in mid life, such as a growing awareness of personal aging in a youth oriented society, and the changes in life patterns as a result of children leaving home, aging parents, the death of a mate, and personal health problems, characterize the middle years, perhaps more so than other life stages (Desmond, 1965, pp. 3-11). The type of control that an individual perceives over his environment is thought to significantly influence personal responses to widowhood, retirement, institutionalization, decision making, the ability to seek out and utilize support services and preparation for death (Kuypers, 1972). There is considerable evidence that the individual who has a strong belief that his own behavior determines his life course is likely to: (1) be more alert to those aspects of the environment which provide useful information for his future behavior; (2) take steps to improve his environmental condition; (3) place greater value on skill or achievement reinforcements and be generally more concerned with his ability, particularly his failure; (4) be resistive to subtle attempts to influence him (Rotter, 1972a, p. 294).

Studies of adults in which the perceived control notion is incorporated can provide important information on personality organization and its relationship to some

of the more salient psychological, physical and social variables (Lefcourt, 1966; Rotter, 1973). If there are attitudinal and behavioral differences among different segments of the population, as predicted by sociological theory, adults would be expected to differ among racial, social, economic, educational and other categories (Kent, Kastensbaum & Sherwood, 1972).

The age group feature of the present study, used in combination with a multiple regression analysis of locus of control, helps to describe generational differences mediated through environmental influences such as religion, education, self concept, health, etc. The incorporation of the age variable into a study of locus of control likewise serves to contribute more information on the importance of age to perceived control, a relatively unresearched area that is presently characterized by some nebulousness. Because of the central notion of the goal setting-expectancy relationship of the locus of control construct, a study incorporating the perceived control variable serves to eliminate criticism aimed at studies coming from social psychology, e.g., a lack of investigations leading to better understanding of personality such as goal setting.

With the exception of recent studies at Duke University (Palmore, 1974), few studies of the locus of control construct in adulthood have provided for the inclusion of

physio-socio and psychological variables into a single investigation. This method closely follows that of a "systems" approach to analyzing correlational type data. The present study allowed for the control of variables in the statistical model, thereby providing control on the "causal ordering" of the independent variables. This technique took into consideration the historical importance of the variables in the lives of the individuals and therefore helped in distinguishing between main effects and mediating effects of the independent variables.

Recent research in religion has considered the intrinsic and extrinsic dimensions of religious motivation (Allport & Ross, 1967; Hoge, 1972). Although the basic concepts behind this religious variable appear to closely parallel the bipolar continuum of the perceived control construct, little research has been conducted on the correspondence between the internal-external, intrinsic-extrinsic notions. The present study provides information on the simple correlations between religious motivation and locus of control orientation as well as the predictive power of the religious variable in locus of control. This information serves to point out commonalities between the two concepts and helps to clarify the importance of religion to personality structure.

A review of the literature showed that the relationship between self concept and locus of control is relatively unclear. Each variable has been linked independently with adjustment or adaptation (Bloom, 1961; Rotter, 1973). Results from this study show the relative importance of self concept to the type of control that the middle aged perceive over their environment.

In summation, since new experience is thought to modify expectancy and behavior, information from the present study in regard to the correlates of locus of control is useful in the possible modification of perceived control and in better understanding those physical, social and psychological variables that characterize types of perceived control among adults. This information is of value to adult educators, counselors (mental health and vocational), theologians, and gerontologists in particular.

Assumptions and Limitations

Assumptions

The major assumptions of the present study were that the personality construct locus of control is relatively stable over time and that it can be isolated and measured within a middle aged population. Perceived control (locus of control) was assumed to be a generalized belief held by most adults as to the extent that rewards or reinforcements from the environment are controlled by outside forces

(external) or from forces within themselves (internal). Furthermore, it was assumed that several variables that are either physical, social or psychological in nature are important to perceived control, and they can be more or less predictive of the type of perceived control found among a middle aged population. One of these variables, self concept, is cognitive in type, multidimensional, can be measured and is relatively stable over time.

With respect to the religious motivation variable, it was assumed that the variable is one of motivation, not behavior, cognitive style, or perception. Religious motivation as reported here is a measure of ultimate versus instrumental motivation. Individuals labeled as instrumental (extrinsic) find religion useful in providing security, solace, sociability and distraction, status and self justification. The embraced creed is lightly held and is secondary to more primary needs. In contrast, the ultimately motivated or intrinsic type find their master motive in religion. Having embraced a creed, other needs are secondary. The "religion" in question was organized American Christian, e.g., the height of intrinsic motivation. Strong religious motivation (Christian) is at one end of the dimension and at the other the absence of any (extrinsic motivation). The relationship between physical, psychological and social variables and locus

of control was assumed to be linear with normal distributions and equal variances among variables.

Limitations

Several limitations of the study are acknowledged. As is the case with most studies involving adult samples, representativeness is a concern. Generalizations coming from the study are relative to a statistical treatment of shrinkage of the R^2 of a predictive equation and are restricted to a population similar to that which formed the sample pool for the study. An important limitation that may have been incurred because of the use of regression analysis is the possibility that other independent variables not included in the prediction equation could have accounted for more unexplained variance in the dependent variable, locus of control. Other possible limitations to the study include the problem of insuring comparability of measurements when large segments of the life span (age intervals) are investigated, the relatively unreliability of certain instruments of measurement, and obtaining comparable samples at different age levels. It is recognized that there may have been slight correlations between an extraneous social desirability variable and locus of control as well as between social desirability and religious motivation. Some multicollinearity among several independent variables is likewise acknowledged.

Definition of Terms

The following definitions of key terms are provided for clarity. Other concise and specific definitions of the variables are included in Chapter III under description of the instruments. References following the definition of independent variables refer to other studies that have incorporated the respective variable into locus of control investigations.

Locus of Control (Perceived Control)

A generalized belief as to the degree that rewards received from the environment are controlled by the self or are controlled by such external forces as luck, fate, destiny, or powerful others; a continuum of perception, from feelings of complete powerlessness over the control of rewards to feelings of complete control and responsibility for receiving reinforcement. Twenty-three pairs of statements as found on Rotter's Internal-External Scale were scored either (0) for internal items or (1) for external items. Six filler items on this scale did not contribute to the score. A perception that rewards are controlled by the self, or belief in internal control, resulted in low scores on the I.E. scale. A belief in external control, or a belief that rewards are controlled by fate or powers beyond those of the individual, resulted in high scores on the scale.

Middle Age

That segment of the life span that covered the years between the forty-fifth and sixty-fifth years (Luikart, 1971; Palmore & Luikart, 1974, pp. 185-201).

Category I

A grouping of variables that were physical in type and included self rated health, age, race and sex.

Self rated health. A rating assigned by the respondent to himself after being asked, "How do you rate your overall health in comparison to others your age?" The basic response categories were excellent, good, fair and poor. A score of (4) was given to a rating of poor, (3) to fair, (2) to good and (1) to excellent. High scores represented poorer health and low scores were indicative of better health (Luikart, 1971; Palmore & Luikart, 1974, pp. 185-201).

Race. A categorical variable based upon whether the subject was black or white. Whites received a coding of (1), blacks received a coding of (2) (Battle & Rotter, 1963; Lefcourt & Ladwig, 1966).

Sex. A dichotomous variable for which male subjects received a code of (1) and females a code of (2) (Luikart, 1971; Palmore & Kivett, Note 1; Palmore & Luikart, 1974).

Age. A variable that denoted the age of an individual at the time of the survey (Luikart, 1971; Palmore & Kivett, Note 1; Palmore & Luikart, 1974).

Category II

A grouping of variables that were psychological in type and included three concepts of a cognitive measure of self concept. Each of the three concepts was measured by a semantic differential scale. Subjects were presented with seven bipolar adjective scales and asked to rate themselves from one to seven on each of three self concept measures. The scales for each of the three concepts of self were: (1) busy-inactive; (2) useful-useless; (3) effective-ineffective; (4) respected-not respected; (5) satisfied with life-unsatisfied with life; (6) look to the future-look to the past; and (7) free to do things-not free to do things (Breytspraak, 1974). A total score for each of the three self concept types represented the extent to which the self concept was positive (higher scores) or negative (lower scores) as reflected through three dimensions: activity level, extent of optimism or pessimism and perception of autonomy. The three concepts of self were:

Self concept (actual). A self image based upon "what I really am."

Self concept (ideal). A self image based upon "what I would like to be."

Self concept (appearance). A self image based upon "what I appear to others."

Category III

A grouping of variables that were social in type and included occupation, education and religious motivation.

Education. The number of years of schooling completed (Kuypers, 1972; Palmore & Kivett, Note 1; Palmore & Luikart, 1974, pp. 185-201).

Occupation. Occupation at the time of the survey, or, if the individual was retired, the main life occupation of the respondent. Occupational groups followed those used by the U.S. Bureau of the Census (1973) and included professional, technical, and kindred workers; managers and administrators; sales workers; clerical and kindred workers; craftsmen and kindred workers; operatives; laborers except farm; and service workers. An additional category was added which contained retired persons and housewives. For statistical purposes, service workers were regrouped with laborers. An original category, farm laborers, was dropped because of no frequencies.

Religious motivation. A measure of religious motivation that distinguished between intrinsically (ultimate) and extrinsically (instrumental) motivated individuals. Measurement was based upon a 10 item Likert type scale with

high scores representing an extrinsically motivated individual for whom religion was mainly useful in providing security, solace, sociability, distraction, status and self justification (Hoge, 1972). Low scores, in contrast, characterized individuals among whom religion preceded other primary needs, and the religious creed was internalized and strongly embraced.

Organization of the Dissertation

Chapter II of this presentation provides a review of the literature for the variables used in the present study. Methodology was the major focus in Chapter III: the design used for the study, the sample selection, instrument descriptions and interviewing procedures. Statistical procedures utilized in the testing of the three hypotheses of the study were also described. Chapter IV presents the results of the analysis of the data in both verbal and tabular forms. Chapter V summarizes the findings and presents conclusions and recommendations of the study.

CHAPTER II

REVIEW OF THE LITERATURE

The period of time that roughly spans the forty-fifth to the sixty-fifth years of life is a significant period that is generally believed to set the course for physical, psychological and social adjustments that will follow in old age (Butler & Lewis, 1973, p. 27). Relatively little is known regarding the characteristics and continuities of middle adulthood, especially in the area of personality. Gerontologists and other social scientists are just beginning to contribute to a slowly growing body of information on the nature and status of the middle aged individual (Back, 1974, pp. 207-216; Breyspraak, 1974, pp. 221-231; Neugarten, 1973, pp. 311-335; Palmore & Luikart, 1974, pp. 185-201).

Riley and Foner (1968) in an extensive review of research on aging reported that research on the aging process has focused mainly upon cross sectional comparisons of selected personality variables commonly assumed to change with age. The discrete dimensions of personality such as rigidity have received more attention than the possible modifications of the overall structure of the personality that may occur throughout life. Neugarten

(1964) after conducting numerous descriptive studies of personality in middle age concluded that a developmental theory of adult personality is likely to emerge only after more studies are available, particularly those that will uncover relevant, measurable dimensions of the personality. The present study investigated one such dimension, locus of control.

The scope of the literature as reviewed here includes an overview of important theoretical views underlying personality research in the area of middle age. This section is followed by a discussion of social learning theory, out of which the dependent variable for the present study, locus of control, evolved. The final sections deal with perceived control as a research variable and reviews on the independent variables of interest to the study.

Theoretical Background for Personality Studies

Two bodies of theory have been a major influence in studies of adult personality: psychoanalysis and ego psychology, and social psychology (Neugarten 1973, p. 314). Psychoanalysis comes from a developmental theory but it places emphasis on a biologically determined sequence in the maturation of drives. While the ego becomes an increasingly important and autonomous agent of change, the essential nature of the personality remains stable after

adolescence. Generally speaking, few concepts in psychoanalytic theory consider normal change after adolescence. A few important differences, however, are found within the psychoanalytic viewpoint. Jung (1933), for example, delineated stages of development in adulthood. He described middle and late adulthood as being characterized by an increase in introversion and a reorganization of value systems. Erikson (1959, 1963), with respect to personality change, classified the whole life cycle into eight stages, each representing a choice or a crisis for the expanding ego. The last three stages relate to early, middle and late adulthood and include the period of intimacy, the crisis of generativity, and ego integrity. Other theorists have also indicated that the consistency and organization of behavior in adulthood may be systematically affected through profound changes (Fromm, 1941; Maslow, 1954).

In contrast to the psychoanalytic viewpoint is that of the social psychologists and role theorists (Brim & Wheeler, 1966; Rotter, 1972a, pp. 260-306; Sarbin, 1964). Among this group, the personality is defined as the sum of social experiences and social roles with few, if any, personality dispositions that are persistent across situations. As found among the psychoanalytic theorists, social psychologists also vary in their concepts of personality formation and stability. The viewpoint which is of major

interest to and undergirds the present study is that of social learning.

Social Learning Theory

Rotter (1954, 1966, 1972a) termed his theory of personality "social learning theory" because of the belief that all behavior is learning through social interaction. The term "learning" in the title of his theory indicates that gradual adaptation or change of behavior is not only a mechanical modification of responses, but an intelligent and flexible process of coping with new experiences. Social learning theory emphasizes the meaningful environment as perceived and interpreted by the individual rather than objective environment. In this way the theory is similar to field theory (Lewin, 1946, pp. 791-844), symbolic interactionism (Blumer, 1969) and transactional analysis (Cantril, 1957, 1965).

According to Rotter, human behavior is explained by some mediational process between stimulus and response. Usually on the basis of past experience, individuals recognize a stimulus, mediate on it, and then decide on a plan of action. The behavior that results is directly related to the individual's past experience. Human thought forms a perceptual framework for the theory, and behavior is assumed to be goal directed. The effect of reinforcing conditions is directly related to the value or meaning placed on the

reinforcement by the individual, e.g., the higher the value placed on a reinforcement, the greater the reinforcing effect on behavior. Aside from the nature and value of goals and reinforcement, the probable occurrence of a behavior is also determined by the individual's expectation that these reinforcements will come. The continuous interaction between the individual and his meaningful environment creates and modifies anticipation or expectancy.

Using the concepts of value and expectancy, Rotter (1972b, pp. 213-228) developed a predictive formula for the occurrence of a behavior:

$$\text{Need Potential} = \frac{f}{\text{Need Values}} (\text{Freedom of Movement} \times \text{Need Values})$$

Where: Need Potential = the potentiality of occurrence of a set of behaviors that lead to the satisfaction of some need

Freedom of Movement = expectancies

Need Values = reinforcements

Changes in freedom of movement or need values that produce large discrepancies between the two variables are thought to explain some deviant behavior or problems in adaptation (Rotter, 1967, pp. 461-498). Expectancy is the component of social learning theory that is used in the present study.

Expectancy and Perceived Control

Some measure of expectancy has been a crucial variable in much of the research conducted within Rotter's theoretical framework. Expectancy is viewed as a mediating process which in part determines behavior and value and which in turn is modified and reorganized by the results of behavior (Rotter, 1973). According to Rotter, an event regarded by some individuals as a reward or reinforcement may be differently perceived and reacted to by others. A person's reaction to an event is determined, in part, by the extent to which he perceives that the reward is contingent upon his own behavior or attributes versus the degree to which he feels that he has no control. Whether or not the person perceives a causal relationship between his own behavior and the reward depends upon the effect of a reinforcement.

A perception of causal relationship can vary in degree. When an individual perceives a reinforcement as following some action of his own, but not being entirely contingent upon his action, such as attributable to fate, luck, or under the control of powerful others, that person is labeled as having a belief in external control. On the other hand, if the individual feels that his own behavior is responsible for an event, he is characterized by a belief in internal control.

Social learning theorists maintain that although there is an essential stability to personality, new experience can modify expectancy and behavior. This important quality of perceived control suggests its importance in the modification of behavior. An indication of the growing recognition of the importance of the I.E. construct as a research variable is reflected in the 474 references to works conducted with it through 1970, 30% of which were conducted in 1970 (MacDonald, 1972; Throop & MacDonald, 1971).

Perceived Control as a Research Variable

Most of the early research on the perceived control variable began to appear in the early sixties despite the fact that the first attempt to measure the internal-external control dimension as a personality variable in social learning theory was reported in a doctoral dissertation by Phares in 1955. The first expository paper dealing with the control construct reported that individuals could be distributed according to the degree to which they accepted personal responsibility (Rotter, Seeman & Liverant, 1962).

Beginning in the mid sixties, a rash of studies began to be conducted on the locus of control variable. Most of the studies were conducted with elementary school children and college undergraduates. Little research is

available on perceived control in relation to the nature of the adult personality.

The relative importance of the locus of control variable in mental health and in adjustment has been reiterated many times during the past decade. More recently, Lefcourt (1973) conducted a review of the literature on perceived control among animals and humans and, as a result, reported that the sense of control over impending reinforcements serves to mitigate the aversive consequences of negative reinforcements. This suggested that a sense of internal control assists the individual in coping with life's inevitable crises. From his review, Lefcourt reported that symptoms varying from distractibility to ulcers (p. 424) and even sudden death in animals (p. 421) have been associated with a loss of perceived control. Lefcourt concluded that the sense of control, or the perception that one can exercise personal choice, probably has a definite and a positive role in sustaining life. In contrast, Kahana and Felton (Note 3) studied locus of control as a strategy of adaptation and morale before and after institutionalization. They provided evidence that external rather than internal control is related to well-being among institutionalized groups of older people.

Relatively few studies have been conducted to determine the origin of type of control that is perceived by an

individual. Among the studies found, experience appeared to play an important role in locus of control orientation. Lao (1973) studied the crucial factors in internal-external expectancy for male adults. A questionnaire consisting of information on the subjects' background, childhood and college experience, and the Rotter's (I.E.) Scale were administered to 99 white male upperclassmen. Two hypotheses were advanced: (1) An adult's personal experiences are more important than his background in his I.E. belief; and (2) An adult's later experiences are more important than his earlier experiences in his I.E. belief. Both hypotheses were supported by the data. Regression analysis indicated background variables (family income, parents' education, number of siblings and geographic mobility) were not related to I.E. control. Four out of five college experience variables significantly related to I.E. control ($p < .05$).

Lao's study showed that the higher the SAT score, the more active the student was; the more he felt that courses were interesting and extracurricula life was meaningful, the more internally oriented he was ($r = .20, .17, .26, .17$, respectively). A multiple R between I.E. and childhood experiences (recollection of childhood experiences including parental permissiveness, supportiveness and concern, family atmosphere and consistency in child rearing) was

nonsignificant. Lao concluded that an adult's personal experience, and in particular his later experiences, are more important to perceived control than earlier background factors.

A study by Palmore and Luikart (1974, pp. 185-201) suggested the importance of experience in the etiology of locus of control. The research dealt with the life satisfaction and perceived control, among several variables, of 502 normative persons aged 45 years to 69 years of age (Duke Adaptation Study). A multiple regression analysis showed a significant multiple correlation ($\underline{R} = .26, p < .05$) between locus of control and organizational activity (number of club meetings and other meetings each month) and locus of control and productive hours (per week) ($\underline{R} = .24, p < .05$). The investigators concluded that more active and productive people probably have had more experiences that encourage them to believe more in their ability to control their life, and those who believe more in their control over their fate may tend to become more active and productive.

The measurability of the locus of control variable allows for its inclusion in many different types of research designs that utilize a variety of other variables. Few of these variables are of major interest to the present study, but they are presented in order to provide a

broad overview of the use of the locus of control variable in previous research. They include child rearing attitudes (Johnson, 1973; Nowicki & Segal, 1974); alcoholism (Butts & Chotlos, 1973); self-righteous attitudes (Powell & Gable, 1973); feminists (Sanger & Alker, 1972); nonconformity and social desirability (Lefcourt, 1973); ego functioning (Kuypers, 1972); self esteem (Heaton & Duerfeldt, 1973); moves (residential--in past 10 years) and intelligence (Palmore & Luikart, 1974, pp. 185-201).

Most of the studies show those traits generally perceived as "more desirable" to be associated with internality. A recent study which predicted adults' perceived control from Thematic Apperception Test scores showed that persons who score within the moderate range on the Rotter Scale may represent the better adjusted individuals (Johnson, 1973). Rotter (1973) expressed the opinion that seriously maladjusted groups could be expected to have more variability on I.E. scores and probably more frequently to have high scores in the direction of externality.

In summary, the locus of control variable is a relatively new personality construct founded in social learning theory that has been found to relate to several important sociological and psychological factors significant to adaptation in middle and late life. Experience is thought to be a primary factor in orientation of control. Research

is so scant relative to middle age groups as to prohibit many generalizations regarding perceived control in adults. A review of some of the studies relevant to the focus of the present study follows.

Perceived Control and Physical Variables

Health

Health has been viewed as a basic variable in any study of aging as a biosocial process (Maddox & Douglass, 1974, pp. 55-63). Objective assessment of health (physician's rating) is difficult to obtain when working with samples outside of a laboratory setting. For this reason, health seldom has been included as a variable in large studies of human aging. Maddox and Douglass (1974) recommended a self rating technique as a reliable and efficient method of obtaining health evaluations from adult groups. Riley and Foner's reviews (1968, p. 346) supported Maddox and Douglass in their viewpoint that it is the individual's own beliefs about his health (in contrast to medical assessments) that are most clearly associated with life satisfaction. Riley and Foner reported that adults who rated their health as unfavorable were more likely than others to feel unhappy or dejected, to cut down on activities, and to show evidence of depression. Maddox and Douglass (1974) in their studies of normal aging found general congruence

between adults' ratings of their overall health and a physician's rating.

Palmore and Luikart (1974, pp. 185-201) studied the health and social factors related to life satisfaction. Their study found the strongest correlate of life satisfaction to be self rated health ($R = .43$, $p < .05$). The third strongest predictor was perceived control ($R = .47$, $p < .05$). The investigators also examined the multiple regression of perceived control which showed no correlation between self rated health and I.E. for the total group, but among women, health was the third strongest predictor of perceived control ($R = .29$, $p < .05$).

Levinson (Note 2) studied the correlates of Rotter's Scale with 200 rural adults who were 65 years or older. She found health to be a highly significant correlate of perceived control ($r = .30$, $p < .001$). Adults who received high health ratings perceived more control over the rewards from their environment than others.

Sex

There were no consistent sex differences in perceived control reported for most adolescent, college or adult samples (Jessor et al., 1968; Rotter, 1966; Thurnher & Pierce, Note 4). Rotter (1973) found females more external than males in a sample of university students; however, he

attributed the differences to factors of selection or testing (p. 279). One major exception to no sex differences was reported by Palmore and Luikart (1974). Their study of middle class adults showed the difference between men and women was the primary variable among 18 activity, social-psychological, health and socioeconomic variables related to locus of control. Men were observed as having more internal control orientation than women ($p < .001$). The investigators explained that this difference appeared to coincide with the traditional assumptions in our society that men have a more "active-mastery" approach to life and women a more "passive-dependent" approach.

Race

Racial differences according to control orientation appeared early in research reports. Lefcourt (1973) in his review of research on locus of control reported that all ethnic studies in the late fifties and early sixties showed that groups whose social position was of minimal power, as determined through race or class, exhibited higher external control scores. Lefcourt concluded that the apathy and lack of motivation to achieve that is frequently observed among lower class groups may be explained as a result of the disbelief that effort pays off. Several studies reported significant low perceived control (external) for blacks (Coleman, Hobson, McPartland, Mood, Weinfeld &

York, 1966; Lefcourt & Ladwig, 1966; Rotter, 1966, 1973). A study by Lefcourt and Ladwig (1966) which used 60 white and 60 Negro inmates from two correctional institutes found Negroes' mean (8.97) significantly more external than white offenders' mean (7.87). Most of the variance, however, was accounted for by an interaction between race and social class. This study and that of Coleman et al. (1966) indicated the importance of controlling for socioeconomic factors when using race as a variable.

Age

Three different kinds of models for age functions appear to underlie most empirical investigations (Schaie, 1973, p. 259). The first model is based upon the stability of adult behavior once maturity is reached. The second model postulates that aging in adults is accompanied by decrement phenomena of the irreversible type. The third model also suggests decrement with aging, but qualifies the "irreversibility" assumption by recognizing the effects of cumulative environmental compensation.

The "stability" model is suitable in the main for studies of those few behaviors which are primarily biologically mediated, but whose biological base shows marked stability from maturity to death. Therefore, the variables of interest must be uncorrelated with pathology. An example of a variable appropriate to this model might be

intelligence. The "irreversible decrement" model has the most useful application for those variables of interest such as reaction time where performance seems significantly dominated by peripheral sensory functions and psychomotor speed (Riley & Foner, 1968). This model is based upon the premise that age changes will occur as a function of maturational events, regardless of environmental input. Changes in reaction time might be placed into this model, for example. Schaie (1973) reported that the "decrement with compensation" model would seem to be a more reasonable position than the irreversible decrement model in that it is appropriate for variables where age changes during the adult period must be expected, but where environmental input such as experience may be compensating to such losses. Of the three models described, age function in perceived control would seem to fit most appropriately into the decrement with compensation model. In social learning theory, the role of experience (via environment) is primary to changes or modifications in expectancies, which in turn affect perceived control.

The literature is sparse with respect to the relationship between age and perceived control. Most discussions are speculative, based upon generalizations from other related variables. For example, Luikart (1971, p. 37) postulated that a lack of perceived control over

events and rewards in older adults' environment might explain the tendency of increased psychological interiority and reduced affective involvement previously observed among the aged. He further noted a tendency to increasing externality of control among adults may be found in the well known response of the elderly under conditions of ambiguity or stress as shown by Eisdorfer (1965) and Eisdorfer, Axelrod and Wilkie (1963). These studies showed that while intelligence seems stable over time, older adults, because of higher arousal and levels of anxiety than younger subjects, were poorer performers. Older subjects under timed learning conditions showed a tendency to withhold responses even though they knew the answers.

Other research of relevance to the function of age in perceived control was a study by Coleman et al. (1966) which suggested that perceived control probably becomes established quite early in life and remains unchanged with age. These data were inconsistent with those of Lao (1973) which indicated that later experiences rather than early experiences are more important in I.E. belief.

The literature showed that few of the physical variables of interest to this study have shown a consistent pattern of relationship with perceived control. Race has been a frequently observed correlate of perceived control with externality being higher among minority groups. No

consistent differences in locus of control have been observed for the variables of sex and age, while there is little known regarding the relationship of health and perceived control.

Perceived Control and Psychological Variables

Self Concept

The middle and later years have been observed as a time when most individuals undergo a period of serious self examination, self assessment and life review (Bühler & Massarik, 1968; Butler, 1968, pp. 486-496; Erikson, 1959; Frenkel-Brunswick, 1968, pp. 77-84; Neugarten, 1968, pp. 137-147). One of the more articulate statements of this view is that by Erikson (1959) which asserted that the final life crisis is that of ego integrity versus despair. The person at this eighth stage in life comes to grips with whether he can accept the appropriateness and meaningfulness of his life. The importance of the flexibility of self concept was also expressed by Kimmel (1974, p. 59). He viewed the concept of self as exhibiting stability with change coming about as the I selects a new me in its spontaneous response to situations or timing events, e.g., children leaving the home, the death of a spouse.

Mead (1964) stressed the importance of the interaction process in self concept. He argued that one aspect of the self consists of the way we see ourselves and the

way others see us and this process is crucial for the development and change of the self. Similarly, Neugarten (1968) pointed out the central importance of personality in middle age-- self awareness, selectivity, manipulation and control of the environment, mastery, competence--the wide array of cognitive strategies. This process, according to Neugarten, is a striking characteristic of the mental life of middle aged adults, e.g., the stock taking, heightened introspection, and above all, the structuring and restructuring of experience. In opposition to Mead and other symbolic interactionists, Ralph Turner (1968, pp. 93-106) concluded that self concept does not develop in a fundamentally social context but is a relatively stable quality which is based on the feelings the individual has about his capacities and potential for desired accomplishments.

Inconsistencies were found in the literature with reference to the relationship between age and self concept. Thompson (1972) in a monograph reviewing the correlates of self concept found considerable support for a more positive concept with increasing age (especially among persons over 60 years of age). Available denial scores, however, suggested that increases may have been a function of denial rather than an actual increase in self concept. In contrast, Bloom (1961), in a study of age and self concept

with 83 white males aged 21 to 66 years who were patients in a veteran's hospital, found a significant curvilinear relationship between chronological age and self concept ($F = 2.76$; $p < .05$). The results suggested that self concept increases from age 20, reaches a peak during the 50-59 year decade, and then begins to decline.

Back (1974, pp. 207-216), using a panel of 502 persons 45 to 70 years of age (Duke Adaptation Study), sought to determine the contrast between what a person really feels about himself and the image that he presents to others. The panel was administered a semantic differential scale that measured the real self, the apparent self, and the desired self. Differences between the real self and the apparent self were analyzed. An important age difference was observed for men and women ($F = 3.32$, $p < .05$). Discrepancies were significant for men 50 to 54 years of age and for women 45 to 49 and 60 years and older. The data suggested that the age difference in the discrepancy was due mainly to the departure of the children from the home among women, but not for men. Retirement or nonworking affected both sexes, but especially men, in terms of increases in discrepancy scores.

A recent study of 216 men and women largely representative of middle and lower middle class backgrounds in a large metropolitan area compared four age groups facing

transitions, i.e., high school, newly wed, middle aged and preretirement (Lowenthal, Thurnher & Chiriboga, 1975).

Data showed that the developmental pattern of self concept formation differs for men and women. Men showed sharper differentiations and fluctuations through successive life stages than did women.

Thompson (1972) in his review of the correlates of self concept presented evidence of a number of important predictors of self concept. His review showed self concept to be related to measures of dogmatism, anxiety, self disclosure and interpersonal functioning. Thompson found a slight negative relationship between self concept and dogmatism and a substantial, linear relationship between self concept and anxiety. The relationship between self concept and self disclosure appeared to be complex, and findings indicated that self disclosing behavior was a factor in positive self concept change.

Studies investigating interpersonal functioning (as reviewed by Thompson) showed that persons with healthy self concepts were more active in behavior which involved expressing affection, inclusion and control toward others than they were in seeking these behaviors from others. Good interpersonal communication was associated with a well integrated self concept. Thompson was able to conclude

from the literature that the self concept is an index to numerous aspects of personality and behavior.

Self Concept and Perceived Control

Social learning theory does not utilize a construct of the self or self concept; however, it does make use of some of the implications of these constructs (Rotter, 1973, p. 240). One of the major predictors of behavior, according to social learning theory, is the individual's expectancy regarding the outcome of his behavior in a given situation. In this sense, expectancies may be synonymous with self concept.

Only one study was found in the literature that dealt with perceived control and self concept in middle age. Breytspraak (1974, pp. 221-231), in a study utilizing the 502 panel members of the Duke Longitudinal Study, investigated whether or not differences in cognitive and affective dimensions of the self concept could be partially accounted for by differences in orientation toward achievement, in the extent of previous achievements, and in possibilities for yet achievement. A dual measure of self concept was utilized: a cognitive component which was measured by a semantic differential scale score and an affective component measure by a shortened form of the Affect Balance Scale.

Locus of control was one of 16 variables incorporated into a multiple discriminant function analysis. The perceived control variable was the third most significant discriminator of subjects into four self concept types according to their achievement, orientation to achievement and resources relating to possibilities for future achievement ($F = 4.11, p < .01$). Categories of self concept dealing with high discrepancy scores and negative feelings were characterized by externally perceiving adults.

In brief, the self concept variable has been found to have a significant relationship with a number of other psychological variables ranging from anxiety to interpersonal functioning. The paucity of research that exists on the relationship of self concept and perceived control shows self concept to be an important function of the type of control that the individual perceives over his environment.

Perceived Control and Social Variables

Education and Occupation

Most studies having utilized a social class variable have incorporated the education and/or occupation variable into a composite measure. Lefcourt (1973) reported that most early studies with minority groups or classes showed these groups to be associated with externally perceived control. Rotter (1973) reported that studies involving college students generally did not show a relationship

between social class and perceived control. He attributed this consistency in findings to the generally homogeneous groupings of college students. Studies with younger or noncollege age samples, however, showed differentiation with higher social class groups exhibiting more internality (Rotter, 1973). Palmore and Luikart (1974, pp. 185-201), in their study of life satisfaction among white, middle class, middle aged adults, found that education was not predictive of locus of control orientation. In general, the findings of the few studies having dealt with the relationship between perceived control and education are incongruent.

Religious Motivation

Dittes (1969, p. 602) in a review of the psychology of religion pointed out that studies of religion offer dramatic instances of key psychological processes such as the development and change of attitudes and belief, the arousal and reduction of anxiety and guilt, personality change, and above all, many instances of the interrelation between cognitive and motivational variables. According to Dittes, the same complexity and intensity of important processes which attract investigators to religion as a research variable also frustrate them, e.g., its components and measurability. There is little research on religion, and, according to Dittes, the chief problem appears to be in the realm of

theory, in the theoretical relevance of the data, and in weaknesses in scale construction.

Allport's concepts of "intrinsic religion and extrinsic religion" have been widely used in recent research on religion and prejudice (Allport & Ross, 1967). Allport and Ross explained the extrinsic person as one predisposed to use religion for his own ends. Extrinsic values are viewed by these investigators as always instrumental and utilitarian. The embraced creed is lightly held or else selectively shaped to fit more primary needs. On the other hand, an intrinsic individual finds his master motive in religion and other needs are of less ultimate significance. Allport and Ross (1967) have argued strongly that social scientists who employ the variable "religion" or "religiosity" should keep in mind the crucial distinction between religious attitudes that are intrinsic and extrinsic in order to determine the role religion plays in the economy of the individual's life.

Studies have shown that adults can be categorized as being intrinsically or extrinsically motivated according to several characteristics. Intrinsic-extrinsic characteristics have been found to be associated with sex, age, education and church attendance (Shrauger & Silverman, 1971; Strickland & Shaffer, 1971) and prejudice (Allport & Ross, 1967). Persons who are intrinsically motivated tend to be

better educated, female, older, frequent church attenders and less prejudiced.

Shrauger and Silverman (1971) studied the relationship of religious background and participation of college students to locus of control. They found that persons who were more involved in religious activities perceived themselves as having more control over what happens to them. This relationship was mediated, however, by sex, i.e., females who were involved in religious activities perceived more control over their life events. The authors explained this sex difference as being related to more general differences in the significance of religious participation for males and females. They suggested that perhaps females focus on those aspects of religious training which emphasize injunctions to behave desirably in order to achieve favorable ends, whereas males' focus could be toward doctrines which emphasize the significance of external forces as determiners of one's outcomes.

Strickland and Shaffer (1971) investigated the relationship between religious motivation and locus of control. A significant positive relationship was observed between an intrinsic religious stance and a belief in internal control of reinforcement. They concluded that those persons for whom religion is very personal and meaningful are also likely to be individuals who believe that their behavior will have

an impact on their life situation. Another finding of significance was the observation that religiously intrinsic subjects were significantly more likely to be female ($r = -.22, p < .05$).

Several attempts have been made to improve upon the weaknesses of the important Allport-Ross religious scale (Feagin, 1964; Hoge, 1972, Wilson, 1960). Hoge's effort produced the Intrinsic Religious Motivation Scale (I.R.M.), the instrument of interest to the present study. Although the intrinsic-extrinsic concepts of religious motivation appear to relate in a syntactical way to the notion of internal-external control, there are few studies to support their relationship.

In summation, studies of perceived control that have utilized the education and occupation variables have generally used them as part of a social class composite. In this structure, many investigators have found both variables to be consistently related to perceived control. When studied as a single entity, education has shown little relationship to locus of control. Few studies have incorporated the occupation variable in studies of perceived control. Another social factor, religion, is thought to be involved in the personality structure at its deepest levels and probably in multiple ways (Hunt & King, 1971, p. 355). It is the motivation dimension of religion that

is of research interest and most religious motivation is thought to be either intrinsic or extrinsic in form. There is some evidence of a positive relationship between intrinsic religious motivation and internal locus of control.

Conclusions

Research efforts in the area of middle age have been scattered and generally conducted with narrowly defined groups of adults. Two major exceptions are the Kansas City Studies of Adult Life (Neugarten, 1964) and the Duke Longitudinal Studies (Palmore, 1974). The literature indicated that cross-sectional studies on large representative groups of adults as well as experimental investigations are needed.

The recognition of problems in old age has pointed up the need for a more thorough investigation of the years prior to senescence. Due to research emphasis on the two extreme ends of the life cycle, childhood and old age, little theory has emerged regarding the middle years of life. As a result, there are substantial voids in information on middle age and notably in the areas of psychological and social development. Increased research activities in these areas could make valuable contributions to theory development as well as increase knowledge of the nature and continuity of behavior of the middle age population.

Most personality studies of adults have been founded in psychoanalytic theory or social psychology. As a result, there is considerable disagreement as to whether the personality becomes fixed in early life or whether environmental influences have a constantly modifying effect upon this dimension. Social learning theory, out of which the dependent variable for the present study, locus of control, evolved, recognizes the constantly modifying effects of the environment upon learning. Expectancy, or the individual's expectation regarding the reinforcement that he will receive from his reaction to an event, plays a key role in behavior. The extent to which an individual perceives that his reward or reinforcement is contingent upon his own behavior, or to luck, chance or other powers determines his internal or external orientation. Type of perceived control has been found to be predictive of adjustment, asocial behavior, social attitudes, achievement, the acquisition and performance of skills and knowledge and other important psychological and social variables. For this reason, locus of control is seen as a powerful force operating within the individual and a variable of considerable research interest.

Although there is some disagreement as to the stability of locus of control, there is more support for the notion that change does occur and that experience plays a

major part in perceived control. This concept lends the perceived control variable considerable flexibility, a necessary quality to cope with an ever changing world.

Among several physical variables, race would seem to be the most important predictor of perceived control. Externality has been found to be higher among minority groups than among other groups. Inconsistencies appear in the literature regarding the relationship of sex to locus of control. More support in terms of number of studies would seem to be in the direction of no differences in perceived control according to sex. It appears that age is infrequently associated with perceived control. There is some evidence that self rated health is associated with the type of control that individuals perceive over their environment.

A review of the literature showed that research on the relationship of self concept to perceived control is generally lacking. Several studies showed that self concept may fluctuate according to the sex and age of adults--a phenomenon thought to be timed to a number of role changing events. The relationship between religious motivation and locus of control has not been clearly established.

CHAPTER III
METHOD AND PROCEDURES

Sample Selection

The sample for this study was composed of 337 men and women between the ages of 45 and 65 years who were in attendance at time of interview in a church school class of the Greensboro District of a United Methodist Church. The Greensboro District encompasses one large city (Greensboro) and several small towns or villages and rural adjacent areas. The general area is classified as a Standard Metropolitan Statistical Area (U.S. Bureau of the Census, 1973).

The sampling procedure followed was a stratified random type (Kerlinger, 1973, p. 130). Initial contact for approval of the research study was made with the Greensboro District Superintendent of the United Methodist Church. The population consisted of 50 churches containing approximately 26,000 members. All churches, including each of 18 circuits, were grouped into one of four classes according to size of church membership (Table 1). Sampling rates for each class were based upon a ratio of $\frac{m}{M}$, where \underline{m} = the total church membership within a class (category) and \underline{M} = the total United Methodist Church

Table 1

Population and Sample Characteristics of Churches
 Falling Under the Greensboro, North Carolina
 District of the United Methodist Church
 (Expected Yield)

Class type ^a	Church size	\bar{N} (pop.)	Total membership ^b	Sampling rate	Yield	\bar{N} (sample)
A	3,700-1,000	4	7,006	.27	78	1
B	999- 600	7	5,238	.20	60	2
C	599- 400	15	7,463	.29	87	3
D	399- 21	24	6,473	.24	75	4
Totals		50	26,180	1.00	300	10

^aArbitrarily assigned according to centrality to urban center or church size.

^bMembership as of December 1973, Greensboro District of the United Methodist Church roster, 1974-75.

membership in the Greensboro District. The yield per classification type was based upon the total desired N (300) multiplied by the sampling rate. The number of churches to be included in the study was based on the ratio between church size and probable yield. It became necessary, because of lowered summer attendance at the church schools, to select a second sample (Sample II) of churches using identical procedures established for the initial sampling process (Sample I). Table 2 shows the expected versus the actual yield for both Samples I and II. The sample size ($N = 337$) met that number recommended for a regression equation with 10 independent variables (Kerlinger & Pedhazur, 1973).

The name of each church was placed on an index card with other information such as church size and minister. Cards were sorted into four groups according to church size. Cards within each class were alphabetically arranged, beginning with class type A and numbered consecutively. The 18 circuits that ranged in number of churches from two to four and in membership from 218 to 489 were treated as single units and all churches within a selected circuit were sampled. A table of random numbers was used within each class of churches and the predetermined number selected. Order of visit to each church was established when possible by the order of their random selection.

Table 2
Expected and Actual Sizes of Sample I and Sample II

Church class type	Sample I			Sample II			Total inter-viewed	Final yield		
	<u>Na</u>	Expected yield	Actual (Adults) yield dropped ^b	<u>Na</u>	Expected yield	Actual (Adults) yield dropped ^b				
A	1	78	23	46	1	78	34	5	108	57
B	2	60	55	21	2	60	42	25	143	97
C	3	87	63	36	3	87	24	9	132	87
D	4	75	42	39	4	75	54	36	171	96
Total	10	300	183	142	10	300	154	75	554	337

^aRefers to churches.

^bReflects individuals younger than 45 years, older than 65 years, and incomplete questionnaires.

Following the selection of the churches, two meetings were set up with the assistance of the District Superintendent for the purposes of explaining the objectives of the study to the ministers and to solicit their approval. After obtaining consent from the ministers to include each of the selected churches, ministers were asked to provide the researcher with the name of a contact person within their church school with whom further arrangements could be made. Consent for participation was obtained from 14 of the ministers during the two group meetings. Consent of the remaining six ministers was obtained through personal contacts.

Contact persons within each of the selected churches were telephoned and asked for their cooperation in establishing a date with church school class leaders at which time an interviewer could administer questionnaires to all eligible classes. Letters containing information on the nature and purposes of the study were sent to the contact person (Appendix C). It was necessary to make two or more visits to churches with groups exceeding 40 adults. With the exception of one group of adults in class type D (church membership less than 400), all church school classes agreed to cooperate in the study.

A compact sampling procedure was used; therefore, all church school classes containing adults 45 to 65 years

of age within a selected church were sampled and all adults within a given classroom surveyed. The questionnaires of persons whose age fell outside of the range of research interest were excluded from the study but maintained for later analysis. Each church group was interviewed by one of six female adults, including the project director. Interviewers were individually trained for the procedure. Instructions for the administration of the questionnaires were carefully standardized. The study provided for a system of reciprocity, in that, following the analysis of the data, the results were made available to ministers, church school classes and other interested persons.

The sampling methods employed contributed to the external validity of the study through the elimination of selection factors by the randomization of churches and the use of a sampling rate (Campbell & Stanley, 1971). The stratification of churches according to size in combination with the use of a sampling rate and randomization assisted in the elimination of the effects of statistical regression. Generalizations from the study were subject to a statistical shrinkage treatment of R^2 and were relative to adults 45 to 65 years of age who might be found in attendance in a United Methodist Church school class on any given Sunday morning within the Greensboro District.

Subjects

Among the adults participating in the study, 88.4% were white and 11.6% were black. These proportions were similar to those found for white and black Methodists in the Greensboro District (approximately 91% and 9%, respectively). The largest percentages of white males and females were in the 45 to 55 year group and there was a rather abrupt decline in percentages after age 55 (Table 3). For black males and females, ages were more equally divided between the 45-55 and the 61-65 age groups. This characteristic contributed to a higher mean age for black females and males than for the two white sex groups.

The educational range for the subjects was from two to 20 years with similar means for white males and females and black females (12.6 years, 12.7 years and 12.8 years, respectively). The mean educational level of black males (10.4 years) was more than two years below the mean of the other sex groups.

White males were usually married (98.0%) and 55.4% of all adults held occupations falling into either the clerical, sales, administrative or professional categories. The 60% of white females who reported an occupation most frequently reported holding clerical or professional positions. Approximately 84% of the white females were married. One half of the black males held positions of the clerical,

Table 3
Age and Education of Middle Aged Adults
According to Race and Sex
(Percentages)

Age	Race			
	White		Black	
	Males %	Females %	Males %	Females %
45 - 55	64.9	62.0	46.2	50.0
56 - 60	23.6	22.0	15.3	15.4
61 - 65	11.5	16.0	38.5	34.6
Totals	100.0	100.0	100.0	100.0
Mean	53.3	54.0	56.1	55.1
Education	%	%	%	%
0 - 4 years	1.4	.7	7.7	.0
5 - 8 years	5.4	2.0	23.1	11.5
9 - 12 years	56.9	60.4	53.8	50.0
1 - 3 years college	15.8	18.1	.0	19.3
College graduate	15.0	14.8	7.7	7.7
Postgraduate work	5.5	4.0	7.7	11.5
Totals	100.0	100.0	100.0	100.0
Mean	12.6	12.7	10.4	12.8

managerial or professional types and all were married. Fewer black females worked (42.3%) than white females and the most frequently mentioned job types were professional and service workers. Married women constituted 76.9% of the black female group. Approximately 88% of the sample rated their health as good or excellent.

Research Design

The study was ex post facto in type (Kerlinger, 1973) and multivariate in method (Kerlinger & Pedhazur, 1973). Three hypotheses were tested by a multiple regression equation containing one dependent variable, locus of control, and 10 independent variables each of which was grouped into one of three categories of variables. Category I consisted of the physical variables of self rated health, race, sex, and age. Category II consisted of three components of a psychological variable, self concept (actual, ideal and appearance), and Category III contained the social variables of religious motivation, education and occupation.

Kerlinger (1973, p. 631) singled out multiple regression as an efficient and powerful hypothesis testing and inference making technique because of its control of variance. Multiple regression analysis has been applied in several important nonexperimental studies for both analytic and predictive purposes (Coleman, Hobson, McPartland, Mood, Weinfeld & York, 1966; Palmore & Luikart, 1974;

Wallach & Kogan, 1965). Some recent studies have also utilized multiple regression to determine interactions between independent variables, one of the important purposes of the present study (Anderson, 1970; Cleary, 1968).

Research Instruments

The overall research instrument was a self administering questionnaire which consisted of four parts: (a) a face sheet for the recording of demographic data and a self rating health scale, (b) Rotter's Internal-External Scale, (c) a semantic differential self concept scale, and (d) an Intrinsic Religious Motivation Scale. Minor revisions were made on the instrument following its pretest on a group of 10 middle age adults who were representative of the population from which the sample was selected. A description of each instrument follows.

Locus of Control

Locus of control orientation was measured by Rotter's 29 item Internal-External Scale (I.E. Scale). The test format was forced choice. Subjects were asked which one of a pair of statements they believed was more true. The total score was the total number of external choices. A belief in external control was demonstrated by high scores on the scale while a belief in internal control was characterized by low scores.

Rotter's I.E. Scale evolved from an earlier work by Phares (1955) in his study of chance and skill effects on expectancies for reinforcement. The Likert type scale consisted of 26 items (13 stated as external and 13 stated as internal). This work was followed by James (1957) who revised Phares' test by writing 26 items plus filler items based on the items which appeared to be most successful in the Phares study (Rotter, 1972a, pp. 260-306).

The James-Phares Scale has been utilized in several studies involving the correlates of individual differences in a generalized expectancy for internal-external control. Later, Rotter, Liverant, and Seeman attempted to broaden James' test by developing subscales for different areas such as achievement, affection, and general social and political attitudes. They also attempted to control for social desirability by changing the scale to a 100 forced-choice item questionnaire. This scale was reduced to a 60 item instrument by Liverant on the basis of internal consistency criteria. Studies with the revised scale indicated that aspects of the scale were still undesirable in terms of predictability and moderately high correlations with the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964). These observations resulted in a reduction and purification of the 60 item scale by Liverant and Rotter

(Rotter, 1973). The new scale was referred to as Rotter's I.E. Scale.

Test data on the I.E. scale have been collected on a number of samples. Internal consistency estimates (\underline{r}) have been relatively stable, ranging from .65 (split-half techniques) to .79 (Spearman-Brown formula) (Rotter, 1973, p. 277). Reliability coefficients using the Kuder-Richardson formula have ranged from .70 to .76. The samples on which the internal consistency studies have been conducted have included college and high school students as well as a national stratified sample of adults. Test-retest reliability at one month showed ranges from .60 to .83. Ranges in correlations with the Marlowe-Crowne Social Desirability Scale are from -.07 to -.35. The -.35 correlation was found for a prison sample. Correlations with intelligence are low, generally negative and less than .10. Sex differences appear to be minimal. Two factor analyses, each based on 400 males and females, indicated much of the variance in the locus of control measure was included in a general factor. All of the items loaded significantly on the general factor which accounted for 53% of the total scale variance.

The unidimensional assumption of Rotter's I.E. Scale has been questioned. Thurnher and Pierce (Note 4) studied the dimensions of locus of control among young and

old adults. Through a cluster analysis of the I.E. scale they extracted three dimensions: Belief in Luck, Control over Politics, and Responsibility for Achievement. The dimensions were similar to the three factors isolated by Kleiber, Veldman and Menaker (1973). These studies suggested that the Rotter Scale is probably not unidimensional but relative to different areas of control, each with theoretically different psychological and behavioral implications for the individual. While these and other studies lead to a growing belief that there is more than one factor associated with the I.E. scale, a factor structure that is clearly definitive has not yet emerged (Kleiber et al., 1973).

In brief, the I.E. scale has been demonstrated to have adequate internal consistency, test-retest reliability, and construct validity. Within the samples studied, correlations with intelligence tests are relatively low or insignificant; correlations with the Marlowe-Crowne Desirability Scale tend to be significant but low; and means for males and females are quite similar (Rotter, 1967, pp. 461-498). There is increasing evidence that the I.E. scale may be multidimensional, but research findings are inconsistent with respect to the number and type of dimensions that are being measured (Kleiber et al., 1973).

Self Rated Health

Health has been pointed out as a basic variable in the study of aging as a biosocial process (Maddox & Douglass, 1974, pp. 55-63; Riley & Foner, 1968). As a result, it has been strongly recommended that studies of adults uniformly measure health or control for it. Self and physicians' ratings of health have been found to be predominately congruous (Maddox & Douglass, 1974; Maddox, 1964; Riley & Foner, 1968). Maddox and Douglass (1974, p. 57) studied 83 panelists from the Duke University Longitudinal Study and confirmed their hypothesis that a positive relationship persists over time (15 years) between self and physicians' ratings of health. During six observations spanning 15 years, more than 58% of the panelists had congruent health ratings in at least four of the observations. The self rating health variable has been incorporated into a number of studies dealing with adults (Palmore & Luikart, 1974; Breytspraak, 1974; Palmore, 1974).

The present study included a self rating health measure patterned after that used in the Duke Adaptation and Longitudinal Studies (Palmore, 1974). A self rating health item was included on the face sheet of the survey questionnaire. The question, "How do you rate your overall health in comparison to others your age?", had four categories, only one of which was checked by the subject as excellent, good, fair or poor.

Self Concept

The self concept instrument used in the study measured a cognitive component of the self by the use of a semantic differential technique. The semantic differential is a rating procedure introduced by Osgood (1957) for the measurement of meaning. The instrument used consisted of a list of seven bipolar scales, each scored from one to seven and each of which rated three concepts: "What I really am" (actual); "What I would like to be" (desired); and "How I appear to others" (appearance). The seven bipolar scales were: (a) busy-inactive, (b) useful-useless, (c) effective-ineffective, (d) respected-not respected, (e) satisfied with life-dissatisfied with life, (f) look to the future-look to the past, and (g) free to do things-not free to do things. The busy, useful, and effective scales were summarized as the activity factor; the respected, satisfied with life, and look to the future components were categorized as the optimism factor; and the remaining scale, free to do things, was categorized as the autonomy factor.

A total score was computed for each of the three concepts of self. High scores were reflective of individuals with positive self concepts as observed through high levels of activity, optimism and autonomy. Low scores were reflective of adults characterized by negative self concepts

as viewed through low levels of activity, optimism and autonomy (Back, 1974, pp. 207-216).

Osgood developed the semantic differential technique on the assumption that the scales are mutually orthogonal, with a common unit and zero point. The scale values are treated as coordinates of a point representing the concept in the space defined by the scales (Messick, 1969, pp. 161-167). The degree of similarity between a pair of concepts is inversely proportional to the distance between them. Jenkins, Russell and Suci (1958) prepared an atlas of semantic differential profiles on a set of 360 concepts and data on interrelationships among the 360 words. A set of 64,620 D-values (measures of the degree of meaningful similarity between any two concepts) are also available (Jenkins, et al., 1958).

The stability of the semantic differential over time was studied by Norman (1969, pp. 168-171). The original set of 360 words for the atlas was grouped into sets of 20 for purposes of reducing the amount of time required for each of 30 men and women in the sample. The sample was asked to rate a single set of 20 concepts chosen at random. The same task was performed after a four week interval. The number of unit discrepancies actually appearing in a second administration was expressed as a proportion of the maximum (% MUD). Results showed considerable stability in

response: 40% of the ratings remained the same, 35% shifted by one unit, and 25% changed by two or more units on the seven point scales. The range of percent MUD values for concept consistency was similar for men and women. A rather high degree of time lapse and sample stability existed for the semantic differential for the undergraduate population ($\underline{r} = .97$ for \underline{D} -values between first and second administration).

Religious Motivation

In the religious literature, intrinsic orientation (ultimate) is one in which individuals find their master motive in religion (Allport & Ross, 1967). Other needs, although they are strong, are regarded as of less ultimate significance, and as is feasible, are brought into harmony with the individual's religious beliefs and prescriptions. Having embraced a creed, the individual endeavors to internalize it and follows it carefully. On the other hand, the extrinsically oriented individual (instrumental) uses religion for his own ends. Values that are extrinsic are always instrumental and utilitarian. Persons with this orientation use religion to provide security and solace, sociability and distraction, status and self justification.

The independent variable, religious motivation, in the present study was measured by the Intrinsic Religious Motivation Scale (I.R.M.) (Hoge, 1972). This variable was

one of motivation, not behavior, cognitive style or perception. The instrument was a 10 item scale set up in Likert form and measured a single dimension, ultimate versus instrumental religious motivation. Extrinsically motivated individuals were characterized by high scores while intrinsic individuals reflected low scores.

In an effort to circumvent Wilson's 15 item scale's weakness of response set bias, Feagin's item to scale low correlations, and Allport's multidimensional scale, Hoge (1972) created the Intrinsic Religious Motivation Scale. Combinations of items from Feagin and Allport's instruments and 22 new items were administered to a sample of 32 persons apriorily defined by ministers as either extrinsically or intrinsically motivated. Correlations were calculated between each item and the subjects' classification type. This process was carried out twice; each time the items were varied according to type. From the final validation study, items were sought out that would produce the single score having highest validity, reliability, item to item correlation, and item to scale correlation. These items constituted the new 10 item I.R.M. Scale. The scale was shown to have a correlation of .59 with the ministers' judgments (all r 's significant at .03 or .02 level). The scale's reliability as measured by the Kuder-Richardson formula 20 was .90. Item to scale correlations

ranged from .55 to .80 (Hoge, 1972, p. 374). Of interest is the I.R.M. Scale's correlations with some of the earlier frequently used religious instruments (Table 4).

Table 4
Correlations Between Earlier Scales, the I.R.M. Scale, and Ministers' Judgments

Earlier scales	I.R.M. scale	Ministers' judgments
Feagin Total Int-Ext. Scale	.85	.39
Feagin Factor I Scale (Int.)	.87	.39
Feagin Factor II Scale (Ext.)	.39	.07
Allport-Ross Total Scale	.87	.36
Allport-Ross Intrinsic Subscale	.86	.35
Allport-Ross Extrinsic Subscale	.71	.27

Procedures

After receiving approval for the inclusion of a given church in the study, the selection of a contact person at the church and prearrangement for a church school visit, an interviewer met with the church school group. Approximately 45 to 60 minutes were usually available for the presentation of an overview of the study and for administration of the questionnaires. In approximately 15 cases, questionnaires were taken home, completed and returned by mail.

At the time of the interview, the adults were told:

There is much that we do not know about family members, or other individuals, who fall into the "middle years of life." Since these years are being viewed as more and more important to the adjustment that adults make in later life, it would be very helpful to know some of your views on life. We need to know, for example, more about the way in which adults see their world, and in particular, the role of religion in their viewpoint. I think that you will enjoy participating, especially since there are no right or wrong answers and your answers will remain anonymous. If you would like, someone will return at a later date and discuss the outcome of the study with you.

I have with me a short questionnaire which can be filled out by you in approximately 30 minutes. The first part of the form deals with general information. The second part will ask questions relating to how you feel about directions your life has taken. The third section will ask how you feel about yourself, or your self concept, and the last part will relate to certain religious feelings that you may or may not have. We will go over each section briefly to clarify directions and then you may continue at your own speed. Remember, there are no right or wrong answers. Just check that answer that is right for you. Please do not discuss or compare ideas until the questionnaires have been collected. Please check over your questionnaire before you return it to me. It is very important that every question be answered. Are there any questions? Raise your hand if a question arises and I will come to you.

Following the survey at each church, the subjects were thanked for their cooperation and a letter was sent to the minister thanking him for that church's contribution to the study.

Data Analysis

Items on the questionnaire were numerically coded according to a predetermined scheme. Questionnaires were dropped from the analysis if more than one item on the self concept scales or two items on the I.E. scale were omitted. Questionnaires were also dropped in cases of excess omission of demographic data (Table 2). Data were transferred to coding sheets in order to facilitate data card preparation. Data on the take off sheets were checked against the original questionnaires. All data cards were verified against the data sheets. Spearman rank order and multiple regression procedures available through The Statistical Analysis System - SAS (Barr & Goodnight, 1972) were utilized. Rank order correlations were used because all variables were not measured on continuous metric scales.

Dummy variables were created for the classification variables of sex, race and work type. Work categories included professional, administrative, sales workers, clerical, retired/housewives, craftsmen, operatives and laborers/service. The laborers/service group was selected as the reference group against which all other groups were compared because of its distinctive characteristics, i.e., a general lack of an educational or skill requirement. It was thought that individuals in this group probably exhibit more feelings of powerlessness over their environment than

persons in work types representing higher educational levels and skills. Listwise deletion was employed in the case of missing values.

Since the multiple regression analysis provides a measure of the relative effects of each successively introduced independent variable in the prediction of the dependent variable, control was maintained over the inclusion level of each of the independent variables to be entered into the equation. Rotter (1972b, p. 227) suggested that dispositional and situational variables must be ordered and studied systematically in order that predictions be made regarding behavior. In order of entry, based upon dispositional or situational characteristics was as follows: health, race, sex, age, self concept (actual, appearance, desired), education, occupation and religion. Entry order of the first variable, self rated health, served a control function which has been suggested by Maddox and Douglass (1974); Lefcourt (1973); and Kerlinger and Pedhazur (1973). The analysis of data plan is presented according to the hypotheses that were tested.

H₁ A composite of 10 or fewer independent variables which are either physical (Category I), psychological (Category II), or social (Category III) in type will account for a significant proportion of the explained variance in

the locus of control scores of middle aged adults.

This hypothesis was tested by the overall \underline{R}^2 of the regression equation. The \underline{R}^2 was an estimate of the proportion of the variance in locus of control accounted for by all 10 independent variables in the equation. The significance of \underline{R}^2 was tested by an overall \underline{F} value of the regression equation.

H₂ Among 10 independent variables, a physical factor, self rated health, will have the highest normalized regression coefficient expressed by a prediction equation for locus of control scores.

Hypothesis two was tested through the transformation of regular regression coefficients to normalized regression coefficients (BETA). Significance of the BETA was determined by the \underline{t} test. The most important predictor of locus of control was interpreted as that variable having the highest BETA coefficient at the summary table level.

H₃ There will be a significant interaction between education and race with respect to locus of control among middle aged adults.

Lefcourt and Ladwig (1966) and Coleman et al. (1966) found that a significant proportion of the variance in locus of control scores was accounted for by an interaction

between race and social class (of which education is a major component). Hypothesis three was tested by a cross-classification regression procedure available through the SAS program (Barr & Goodnight, 1972, p. 100).

Control of Shrinkage

A recognized weakness of multiple regression analysis is the instability of regression weights (Kerlinger & Pedhazur, 1973). This condition is usually not severe when large samples (approximately 400) and a relatively few independent variables are used. Although this study approaches these criteria, interest remains in the multiple correlation "shrinkage phenomenon" that is relatively common when applying a set of weights derived in one sample to the predictor scores of another sample. In some cases, generalizations are greatly reduced. For this reason, the \underline{R}^2 for the present study was adjusted for shrinkage according to a formula recommended by Kerlinger and Pedhazur (1973, p. 283). Generalizations from the study were based upon the adjusted \underline{R}^2 (\hat{R}^2). The formula and computations for shrinkage are found in Appendix B.

CHAPTER IV

ANALYSIS OF THE DATA

This chapter reports findings from the testing of the three hypotheses of the investigation and related information supportive to the discussion section of Chapter V. Comparisons of measurement variation are shown in Table 5. Among five measures which included locus of control, self concept and religious motivation, less variation in scores was found on the I.E. scale (SD = 4.1). Religious motivation scores showed the second lowest amount of variation with a SD of 4.6. Scores on the self concept (ideal) scale showed less variation among subjects than the two other measures of actual and appearance self concepts (SD = 5.6; 6.3; and 6.2, respectively).

A preliminary examination was made of the data to determine if three main assumptions underlying multiple regression analysis had been met: (1) every array of the dependent variable, locus of control, for a given combination of the independent variables followed the normal distribution; (2) the regression of the dependent variable and independent variables was linear; and (3) all independent arrays had the same variance (Nie, Bent & Hull, 1975).

Table 5
 Mean, Range and Standard Deviations
 for Continuous Predictor Variables
 and Locus of Control

Variable	<u>N</u>	Mean	Range	<u>SD</u>
Age	337	53.9	45-65	5.5
Education	334	12.6	2-20	2.7
Self concept (actual)	320	39.4	15-49	6.3
Self concept (ideal)	315	43.6	23-49	5.6
Self concept (appearance)	316	38.7	22-49	6.2
Religious motivation	334	19.0	10-36	4.6
Locus of control	331	8.5	0-21	4.1

The assumption of normal distribution was considered met because of the size of the sample ($N = 337$) and the use of a random sampling procedure. There is general agreement that this assumption may be relaxed if the sample size is large (Kerlinger & Pedhazur, 1973; Nie, Bent & Hull, 1975). Cronbach (1968, p. 497) reported that regression analysis like the F test is reasonably robust with respect to the assumption that the joint distribution of each predictor with the dependent variable is normal.

A direct examination of the residuals, or error components, showed that the following assumptions had been met: (1) the regression of the dependent variable and the independent variables was linear; and (2) the independent variable arrays had the same variance. A scatterplot of values of the dependent variable and residuals was computed. Examination of the scatterplot indicated general linearity of the data with few "outliers" or deviant cases. A visual scan of the error components showed them, in general, to have a mean within the zero range and the same variance throughout the range of dependent values.

Interrelationships Among Variables

Spearman rank-order correlations were produced between each pair of numeric variables (Table 6). Included in this analysis were 10 predictor variables: sex, race, education, self rated health, occupation, three measures

Table 6

Spearman Rank-Order Correlations for Predictor
Variables and Locus of Control

Variable	2	3	4	5	6	7	8	9	10	11
1. Sex	.11*	.05	.04	.09	.26***	-.07	-.01	-.08	-.19***	.23***
2. Race		.09	-.09	.15**	.17**	.08	-.02	.11*	.08	.01
3. Age			-.15**	.14**	.02	-.02	-.02	.03	-.08	-.10
4. Education				-.13*	-.53***	-.05	-.01	-.15**	-.13*	-.07
5. Self rated health					.07	-.13*	-.04	-.15**	.04	.09
6. Occupation						-.02	-.07	-.06	.09	.25***
7. Self concept (appearance)							.56***	.70***	.00	-.15**
8. Self concept (ideal)								.48***	-.08	-.02
9. Self concept (actual)									-.02	-.20***
10. Religious motivation										.14**
11. Locus of control (I.E.)										

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

of self concept (actual, ideal and appearance), religious motivation, and the dependent variable, locus of control.

Predictor Variables

Some collinearity among variables was observed (Table 6). Relatively small correlations ($p < .05$) were found between race and actual self concept; education and self rated health and religious motivation; and health and appearance self concept. Blacks had more positive actual self concepts than whites, and health ratings increased with educational level (as did intrinsic religious motivation) and with positive appearance self concept.

Moderate relationships ($p < .01$) were observed between race and self rated health and occupation; age and education and self rated health; and between actual self concept and education and health. Blacks more frequently rated their health poorer and reported being in occupations requiring less education or skill than did white adults. Educational levels declined with age as did positive health ratings. Actual self concept became more positive as health ratings increased but decreased as education level increased.

High correlations ($p < .001$) were found between sex and religious motivation and occupation. Education was associated with occupation, and actual self concept was

positively related to both ideal and appearance self concepts. Educational levels were higher among adults in job types requiring skill and educational preparation. Males were more extrinsically motivated (instrumental) in their religious behavior and were more likely to be in occupations requiring skill or education than females.

Predictor Variables and Dependent Variable

Table 6 also shows the correlations of the predictor variables with the dependent measure, locus of control. A moderate correlation ($p < .01$) was found between perceived control and appearance self concept. Adults viewing themselves positively in the eyes of other persons perceived more control over their environment than others. High correlations ($p < .001$) occurred between locus of control and the variables of sex, occupation and actual self concept. More perceived control over environmental rewards was reported by males than females, by persons in occupations requiring more skill or educational attainment and by adults exhibiting more positive actual self concepts.

The Prediction of Locus of Control

Multiple regression analysis, as described in Chapter III, was used to examine the predictor variables self rated health, race, sex, age, self concept (actual), self concept (appearance), self concept (ideal), education,

occupation and religious motivation and their relationship to locus of control. Listwise deletion was used in the case of missing values. The results of this analysis are now presented in relation to the three hypotheses of the investigation.

Hypothesis I

The first hypothesis was tested by the overall \underline{R}^2 of the regression equation.

H₁ A composite of 10 or fewer independent variables which are either physical, psychological, or social in type will account for a significant proportion of the explained variance in the locus of control scores of middle aged adults.

Table 7 shows that the \underline{R} for the regression equation was .44 ($R^2 = .19$). The $\underline{\hat{R}}^2 = .14$ (adjustment for shrinkage) was statistically significant beyond the .001 level of significance. (Appendix B contains computations for $\underline{\hat{R}}^2$.) The $\underline{\hat{R}}^2$ for the regression equation supported H₁: A significant proportion of the variance in locus of control scores was explained by a linear least squares combination of physical, psychological and social variables.

Approximately 19% of the variance in locus of control scores was accounted for by the 10 variables. Successive \underline{t} tests were computed to test the statistical significance of

Table 7
 Analysis of Variance Table of the Sources of Variation
 in Locus of Control Scores Comprising Regression

Source	<u>DF</u>	Sequential <u>SS</u>	<u>F</u> value (unadjusted)	Partial <u>SS</u>	<u>F</u> value (adjusted)
Self rated health	1	66.56	4.68*	26.42	1.86
Race	1	.03	.00	.09	.01
Sex	1	278.31	19.57***	44.99	3.16
Age	1	95.21	6.70**	39.50	2.78
Self concept (actual)	1	160.82	11.31***	65.81	4.63*
Self concept (appearance)	1	3.55	.25	6.15	.43
Self concept (ideal)	1	20.77	1.46	54.55	3.84*
Education	1	46.80	3.29	.17	.01
Occupation	7	202.58	2.04*	205.96	2.07*
Religious motivation	1	63.78	4.49*	63.85	4.49*
Race x education	1	.07	.01	.07	.01
$\underline{R} = .44$ $\underline{R}^2 = .19$ $\underline{DF} = 17, 283$ $\underline{F} = 3.88***$ $\underline{R}^2 = .14***$					

Note. $\underline{N} = 300.$

* $p < .05.$

** $p < .01.$

*** $p < .001.$

the increment added to the variance by each variable according to its predetermined entry into the equation. No statistically significant increments were added by the physical variables, Category I. As observed in Table 8 under the column, Semipartial correlations squared, the physical variables of self rated health, sex, race and age accounted for only 3% of the variance in I.E. scores, e.g., $.00 + .00 + .02 + .01 = .03$.

The second category of variables, psychological as measured by self concept, accounted for 5% of the variance in the criterion measure. Both actual self concept and ideal self concept added increments in variance that were significant at the .05 level of significance.

Category III, or the social variables, added the largest variance increment (11%) to locus of control scores of all three categories investigated (Table 8). Two of the three social variables, occupation and religious motivation, added statistically significant increments ($p < .05$). Education was not important.

Occupation was coded into eight dummy variables with the laborers/service workers combination serving as a reference group for all other categories. As observed in Table 8, three of the seven occupational variables: administrators vs laborers, clerical vs laborers, and operatives vs laborers added significant increments (9%) to

Table 8

Beta Weights, Semipartial Correlations, Squared Semipartial
Correlations and Standard Error of Independent Variables
in Locus of Control Prediction

Variable	b value	Semipartial correlations <u>B</u> (standardized)	Semipartial correlations squared	<u>t</u>	Standard error semipartial correlations
Self rated health	.48	.08	.00	1.36	.36
Male vs female	- .11	-.02	.00	- .08	1.33
White vs black	- .50	-.13	.02	-1.78	.28
Age	- .07	-.10	.01	-1.77	.04
Self concept (actual)	- .11	-.17	.03	-2.15*	.05
Self concept (appearance)	- .04	-.06	.00	- .66	.06
Self concept (ideal)	.10	.14	.02	1.96*	.05
Education	- .03	-.02	.00	- .11	.28
Occupation ^a					
Professional vs. laborers	- .45	-.05	.00	- .65	.69
Administrators vs. laborers	-1.14	-.13	.02	-1.94*	.59
Sales workers vs. laborers	-1.08	-.11	.01	-1.48	.73

Table 8 (continued)

Beta Weights, Semipartial Correlations, Squared Semipartial Correlations and Standard Error of Independent Variables in Locus of Control Prediction

Variables	b value	Semipartial correlations <u>B</u> (standardized)	Semipartial correlations squared	<u>t</u>	Standard error semipartial correlations
Clerical vs laborers	1.19	.15	.02	2.12*	.56
Retired/housewives vs. laborers	.02	.00	.00	.02	.72
Craftsmen vs. laborers	- .88	-.07	.00	- .74	1.19
Operatives vs. laborers	1.49	.19	.04	2.68*	.56
Religious motivation	.11	.12	.02	2.12*	.05
Race x education	- .01	-.02	.00	- .07	.21

^aThe occupational category Laborers also contained service workers.

*p < .05.

the variance in I.E. scores. Religious motivation accounted for 2% of the variance, a proportion significant at the .05 level.

The direction of the relationship of each of the significant predictors with the criterion measure is shown in Table 8. High religious motivation scores (extrinsic) and ideal self concept scores were predictive of high I.E. scores (external) while high actual self concept scores predicted low I.E. scores (internal).

With respect to the occupational categories, being in an administrative position or in an operative job type as opposed to that of a laborer or service worker was predictive of low I.E. scores (internal). Clerical workers as opposed to laborers or service workers were predictive of high locus of control scores (external). As observed from a comparison of the mean scores for the occupational groups in Table 9, administrators showed more internality of control than other occupational groups. Next in order of perception of internal control were sales workers, operatives, professionals, craftsmen, laborers and clerical workers. The heterogeneity of the retired/housewives category contributed to a large range in scores, and subsequently, a higher mean than for other groupings.

Three other variables initially accounted for a significant amount of variance in I.E. scores, but after

Table 9
 Mean, Range and Standard Deviations
 for Locus of Control Scores
 of Occupational Groups

Occupational group	<u>N</u>	Mean	Range	<u>SD</u>
Professional workers	53	7.6	0-18	4.1
Administrative workers	50	6.3	0-16	3.7
Sales workers	27	7.0	0-17	4.8
Clerical workers	57	9.8	1-18	4.0
Retired/housewives	79	10.2	2-21	4.1
Craftsmen	31	7.8	2-16	3.7
Operatives	11	7.3	0-11	3.1
Laborers/service workers	29	9.3	4-15	2.7

adjustment for the other effects in the model, their contributions were found to be spurious. These variables were self rated health (discussed under Hypothesis II), sex and age.

Hypothesis II

The second hypothesis of the investigation was tested through an observation of the semipartial correlations of the regression equation (Table 8).

H₂ Among 10 independent variables, a physical factor, self rated health, will have the highest normalized regression coefficient expressed by a prediction equation for locus of control scores.

As observed in Table 8, the highest normalized regression coefficient (semipartial correlation) was produced by a social variable, occupation--operatives vs. laborers ($B = .19$, $p < .05$)--rather than the physical variable of health. Therefore, H₂ was not supported by the data: Self rated health did not account for more of the variance in locus of control scores than any one of nine other variables.

Self rated health showed an initial relationship with perceived control, but this association became unimportant following adjustments for other physical, psychological and social factors in the model. Predictors in

the order of their contribution to explained variance in I.E. scores were occupation (operatives vs. laborers), self concept (actual), occupation (clerical vs. laborers), self concept (ideal), occupation (administrators vs. laborers) and religious motivation.

Hypothesis III

The final hypothesis dealt with an interaction which was tested by a cross-classification regression procedure.

H₃ There will be a significant interaction between education and race with respect to locus of control among middle aged adults.

The influence of education on locus of control scores was the same for black and for white adults (Table 8). Therefore, it was concluded that H₃ was not supported by the data: Race did not interact with education to produce significant differences in locus of control scores. A computer produced array showing a confounding pattern of effects in the regression equation illustrated, however, that the relationship between race and education was not orthogonal with respect to locus of control.

The findings and analysis of the data in this chapter are followed by a discussion and summary of the results. Conclusions are drawn and recommendations are made for further research.

CHAPTER V
SUMMARY AND CONCLUSIONS

Crises occurring in mid life precipitated by children leaving the home, aging parents, self awareness of aging, the death of a mate and personal health problems have considerable impact upon the adult in both middle and late life. The type of control that the individual perceives over his environment significantly influences personal responses to these crises. This investigation attempted to elucidate through a systematic approach some of the more salient physical, psychological and social variables in locus of control orientation in middle adulthood.

Multivariate procedures were employed to clarify the importance of several personality dimensions and demographic factors to perceived control. Self concept, religious motivation and other variables such as sex, race and age have been independently linked to adjustment or adaptation. Few studies, however, have sought to investigate the interrelationships of these factors and personality structure.

A main purpose of this study was to identify from the multivariate environment those attributes that are predictive of perceived control in adulthood. Central to this

purpose was the notion that, given the correlates of perceived control, adult educators, mental health counselors, theologians and gerontologists, among others, can prepare adults to work more effectively through life crises. This information is especially valuable in intervention processes involving procedures of behavior modification or self understanding.

The sample for the study consisted of 337 adults from 22 churches selected at random from the Greensboro District of the United Methodist Church. The adults, aged 45 to 65 years, were administered questionnaires by a trained interviewer in church school classes during a regular Sunday morning meeting. Multiple regression was the main statistical procedure utilized.

Discussion

Locus of Control and Physical Variables

Self rated health. Considerable emphasis has been given in the literature to the important correspondence between self ratings of health and life satisfaction in adulthood. Significant interrelationships have also been pointed out between life satisfaction, self rated health and locus of control (Palmore & Luikart, 1974; Riley & Foner, 1968). The strongest support for the importance of health to perceived control came from Levinson (Note 2).

Her work with older adults showed health to be a highly significant correlate of locus of control orientation.

Data from the present study do not support the findings of other investigators with respect to the importance of self rated health to perceived control. Health was a significant influence only before adjustment for the effects of several physical, psychological and social factors. Levinson's study (Note 2) utilized zero order correlations which did not allow for the control of interactions between health and other environmental factors. The lack of an association between self rated health and I.E. in the present study may have been relative to the small amount of variation in health ratings. On a possible four point scale ranging from poor to excellent, approximately 88% of the adults rated their health as good or excellent. This left only 12% in the mid to lower range. It is likewise acknowledged that if church attendance is a measure of activity level, adults in attendance would represent a rather select group in terms of good general health and physical mobility.

Sex. The literature has shown no consistent sex differences in perceived control for either adolescent or adult samples. Some of this inconsistency may be related to the majority of the studies having been univariate in method. In the present study, for example, sex was found

to have an initial relationship with locus of control. After controlling for the effects of age, self concept, education, occupation and religious motivation, however, sex was not a function of variation in I.E. scores.

This finding of no differences according to sex was in opposition to that of Palmore and Luikart (1974), who, while controlling for numerous intervening variables through the use of multiple regression, still found significant sex differences in perceived control. Their study included adults who were mainly representative of middle and upper middle class backgrounds. Adults in the present study, on the other hand, were a more representative group with respect to socioeconomic characteristics. The "active-mastery" approach to life on behalf of the males in the Palmore and Luikart study may be a more pronounced characteristic among upper socioeconomic life styles and orientations than among a representative group.

Race. Differences in locus of control according to race have been reported more often in the literature than other sources of variation (Lefcourt, 1973). Minority groups have generally shown less perceived control over their environment. This finding has been explained through the apathy and lack of motivation to achieve that is frequently observed among lower class groups.

No differences were found in perceived control according to race in the present study. This finding is in contrast to most other studies (Lefcourt & Ladwig, 1966; Rotter, 1966, 1973). Unlike the findings of Coleman et al. (1966), race did not interact with education. Neither did it have a significant zero order correlation with perceived control. Most studies that have incorporated the race variable have used extreme samples such as delinquents and impoverished groups which may have accounted for racial differences.

Age. Age appeared to be a function of locus of control orientation before other factors were considered. This relationship was found to be spurious after controlling for the effects of self concept, education, occupation and religious motivation. The main confounding factor with age appeared to be education, i.e., the important zero order correlation that existed between them. This observation pointed out that, given the educational differences that existed between younger and older adults, age did not influence perceived control.

Results from the study revealed little variation in mean I.E. scores over an age range of 25 years. This finding supports an overall finding of Palmore and Luikart (1974) of no differences in perceived control with age and an observation by Coleman et al. (1966) that perceived

control probably becomes established quite early in life and remains unchanged with age. It also lends support to a notion expressed by Luikart (1971) that the generalized expectancy for control is a personality characteristic which is acquired before middle age even in very early childhood, and it is not modified by the acquired status of adult experience, at least through the age of 65. The finding does not confirm the theoretical position of Rotter (1967): that perceived control is a flexible personality variable modifiable by experience even in adulthood.

Perceived Control and Psychological Variables

Most personality theories of adulthood give mention to a type of heightened introspection that occurs in mid age (Bühlen & Massarik, 1968; Butler, 1968; Neugarten, 1968). Mead (1964) stressed the multidimensional self concept, the way we see ourselves and the way others see us (the appearance self). The present study incorporated three measures of self concept, two similar to those recognized by Mead and an "ideal" self concept. Two of the self concept types, actual and ideal, were significant predictors of locus of control. The observation that the appearance self concept was not important did not support the premise of Mead regarding the significance of the "appearance" self in personality structure.

The finding that adults who viewed themselves through their actual self concept as having high levels of activity, optimism and autonomy also perceived more control over their environmental rewards supports the data of Breytspraak (1974). She found that positive self concepts were characterized by internally perceiving adults. Further support was given to Breytspraak's study through the finding that adults who perceived little control over the rewards from their environment also had higher ideal self concept scores. Breytspraak's investigation showed that high discrepancy scores (actual-ideal discrepancy) were characteristic of adults who perceived little control over environmental rewards.

The relationship found between actual self concept and perceived control lends support to Luikart's (1971) observation that the variable of perceived control appeared to be measuring a perception of usefulness in individuals. The concept of usefulness was contained in the self concept scale utilized in the present investigation. The observation that black adults reflected more positive actual self concepts than white adults was probably related to a higher educational mean for black females than for other groups.

Perceived Control and Social Variables

Education and Occupation. Generally, education has not been found to be a significant factor in perceived control except as it related to a minority group (Lefcourt, 1973). Similarly, education was not important to perceived control in the present study. This finding is compatible with that of Palmore and Luikart (1974). Their finding, however, seemed to be explained through a sample that was more skewed toward middle and upper socioeconomic classes. Such was not the case in the present study. More plausible is the observation that education had a significant zero order correlation with self rated health, occupation and actual self concept. This multicollinearity served to lower the amount of variation in perceived control scores that could be attributed to education alone.

Occupation was the most important predictor of locus of control orientation. The type of occupational contrast was important, however, i.e., whether the job type allowed for the adult's control over salient objects such as persons or machinery as opposed to no conspicuous object of control. For example, persons in administrative jobs which require some form of control, manipulation or direction of other people, and operatives such as textile machine operators, truck and bus drivers or other operators of large

or powerful machinery perceived more control over their environment than laborers or service workers.

The fact that clerical workers perceived less control over their environment than laborers or service workers may be related to the more rigid structure surrounding their job type, i.e., their work hours, restrictive work space, rigid supervision and accountability. By virtue of a willingness to subjugate themselves to the structure of these positions, individuals had to exhibit some characteristic of powerlessness or concession to control. Laborers and service workers, despite the lower social status of their job types, have less structure in their work environment. As a result, they may feel more in control of their life space than clerical workers.

Whether the findings relating occupational type to perceived control are dependent upon a natural selection process that occurs as a result of the qualifications required by the job type or from the fact that individuals achieve feelings of control over their environment through the process of controlling other people or symbolic objects (machines) in their work environ is left to speculation. The limitations exerted by ex post facto research prevent conclusions regarding a causal relationship between occupation and perceived control. The data do suggest, however, that individuals in job types that provide for

opportunities to be positively reinforced through the control of other persons or powerful objects generalize these expectancies to other situations and events in their lives. Similarly, feelings of powerlessness arising from the work experience may be generalized to other aspects of the environment. This notion is compatible with Rotter's theory which conceptualizes the control construct as a generalized expectancy that operates across a large number of situations and relates to whether or not the individual possesses or lacks power over what happens to him.

Religious motivation. Studies have shown that adults can be categorized as extrinsically or intrinsically motivated according to a number of characteristics several of which are age, sex and education (Strickland & Shaffer, 1971). Data from the present study support the findings for sex, but not for age or education. As found by Strickland and Shaffer, males more than females held their embraced creed lightly or selectively shaped it to fit more primary needs. A possible explanation for this finding may be that compliance with religious doctrine is more compatible with the sex-appropriate behavior expected of females than of males. Among the middle aged, early socialization occurred during an era of strict sex role adherence.

Adults who perceived less control over their environment than others were more extrinsically motivated, or, were individuals for whom religion was mainly useful in providing security, solace, sociability, distraction, status and self gratification. Strickland and Shaffer (1971) cautioned against the possible misinterpretation of the relationship between locus of control and religious motivation. An external response suggests that a person's expectancy about the events that happen to him include God or powers beyond his control. One might expect, therefore, that the individual would fall toward the extrinsic end of the religious dimension.

Closer theoretical examination shows, however, that persons who actively use their religious beliefs as bases on which to make decisions in their personal life, who respond to Biblical injunction to behave in a Christian manner, and who utilize their concern for others in daily activities (intrinsic qualities) are more likely to be persons who believe that what happens to them is under their personal control (internal control). In contrast, individuals who use religion as a social tool, look to religion for solace and endorsement of their chosen way of responding to social demands, and do not use their religion in everyday life (extrinsic) probably show a lack of feeling of active mastery over what happens to them (external

control). The results from this study and others suggest that adults who feel little control over the rewards in their "reality world" use religion as a self serving and rather manipulative device to offset inadequacies or feelings of powerlessness in their lives (Strickland & Shaffer, 1971; Shrauger & Silverman, 1971).

In summation, there are several characteristics that are predictive of the type of perceived control that middle aged adults maintain. A knowledge of these attributes provides considerable insight into how adults will adapt to stressful life situations such as role loss, institutionalization, social disengagement and physical and economic decline. Some of the factors associated with feelings of powerlessness or power over the environment have greater visibility and provide more instantaneous clues as to the groups more vulnerable to life stresses, for example, occupational type. Some descriptors, however, are more subtle in their detection such as self concept and religious motivation. The observation of these more intrinsic qualities in adulthood require a closer introspection into the individual's attitudes toward himself and his spiritual orientation.

Although several important predictors were identified by this investigation, the fact remains that most of the factors contributing to locus of control orientation are yet to be distinguished. Some of the difficulty associated

with the identity of these variables is explained through the multicollinearity of social, psychological and physical phenomena, or the difficulty in identifying "pure" variables. Other problems confounding this identity may well be in the multidimensionality of the perceived control construct or in weaknesses of the instruments purporting to measure it.

Summary of the Research Questions, Hypotheses and Findings

The investigation was concerned with four areas of inquiry. Three of the areas dealt with research questions addressed to the data in the form of statistical hypotheses. The fourth area dealt with the interrelationships among the variables of interest. The research questions, hypotheses and results of the analysis of the data follow.

Question 1

What is the relationship between a composite of three categories of variables that are either physical (health, age, sex, race), psychological (self concept) or social (education, occupation, religious motivation) in type and locus of control orientation?

Hypothesis I. A composite of 10 or fewer independent variables which are either physical (Category I), psychological (Category II) or social (Category III) in type

will account for a significant proportion of the explained variance in locus of control scores of middle aged adults.

Finding. Hypothesis I was supported by the data. A significant proportion of the variance in locus of control scores (16% after adjustment for shrinkage) was explained by a linear least squares combination of physical, psychological and social variables. No statistically significant increments in variance were added by the physical variables in Category I.

The second category of variables, psychological, as measured by self concept, was significant in its contribution to the total variance in I.E. scores. High actual self concept scores were predictive of low I.E. scores while high ideal self concept scores were predictive of high I.E. scores. Category III, or the social variables of education, occupation and religious motivation, accounted for the largest amount of variation in perceived control scores (11%).

Three of seven occupational categories and religious motivation added significant increments: administrators vs. laborers and service workers; clerical vs. laborers and service workers; and operatives vs. laborers and service workers. Being in an administrative position or in an operative type job as opposed to that of a laborer or service worker was predictive of low perceived control scores.

Clerical workers as opposed to laborers and service workers were predictive of high locus of control scores. High religious motivation scores were predictive of high I.E. scores.

Question 2.

Will self rated health, a physical variable, account for a greater amount of variance in locus of control scores than any of nine other variables that are either physical, psychological or social in type?

Hypothesis II. Among 10 independent variables, a physical factor, self rated health, will have the highest normalized regression coefficient expressed by a prediction equation for locus of control scores.

Finding. Hypothesis II was not supported by the data. Self rated health did not contribute the largest increment to the variance in I.E. scores, but rather, an occupational variable--operatives as opposed to laborers and service workers. Other important variables in order of the amount of variance explained in the criterion measure were self concept (actual), occupation (clerical vs. laborers), self concept (ideal), occupation (administrators vs. laborers) and religious motivation.

Question 3

Is there an interaction between a social factor (education) and a physical factor (race) with respect to locus of control orientation?

Hypothesis III. There will be a significant interaction between education and race with respect to locus of control among middle aged adults.

Finding. Hypothesis III was not supported by the data. Race did not interact with education to produce significant variation in locus of control scores.

Other Relevant Findings

Spearman rank order correlations were produced between all possible combinations of independent variables and the dependent variable. Several associations were observed. Religious motivation correlated with sex, locus of control and education. High religious motivation scores were found more frequently among males than females and among adults with lower educational levels and persons who produced high (external) I.E. scores.

Locus of control was significantly associated with two measures of self concept (actual and appearance), occupation and sex. High locus of control scores were more frequent among females than males, adults whose job types required less education or skill and persons who also obtained high self concept scores with respect to

how they thought that they appeared to others. High actual concept scores characterized adults who obtained low (internal) I.E. scores. Actual self concept was correlated with the two remaining measures of self concept (ideal and appearance), self rated health, education and race. Actual self concept scores increased (became more positive) with positive health ratings but decreased as educational level increased. Black adults had higher actual self concept scores than white adults. Actual self concept increased with ideal and appearance self concepts.

Occupation was associated with education, race and sex. Job types requiring less skill or education were found more frequently among females, blacks and persons who had low educational backgrounds. Significant correlations were observed among self rated health and the variables of education, age and race. Positive health ratings increased with educational attainment and were more frequent among white than black adults and among younger than older adults. Educational attainment decreased with age, as observed through a significant correlation between age and education.

Conclusions

The following conclusions were drawn from the analysis of the data:

1. Selected psychological, social and physical factors, when observed in relation to each other,

account for a significant amount of variance in the locus of control of middle aged adults.

- a. Differences in perceived control are predictable by the extent to which adults view themselves (actual self concept) through their activity level, their amount of optimism or pessimism and their perception of autonomy. Adults perceiving control over the rewards from their environment (internals) view themselves more positively than adults perceiving less control (externals). The more intense the feeling for an "ideal" self concept, the more likely adults are to exhibit feelings of powerlessness over their environmental rewards.
- b. Certain occupational contrasts are predictive of the way in which adults perceive control over their environment. Adults in job types that are administrative, managerial or operative in nature which allow for perceptions of control through the manipulation of people or machines, as opposed to types that allow for little or no control such as laborer

and service types, perceive more power over their environment. In contrast, adults in occupations that are clerical in type which require considerable submission to a rigid structure as opposed to those in laborer or service worker types, sense less power over their environmental rewards.

c. Adults in whom religion precedes other primary needs and the religious creed is internalized and strongly embraced perceive more control over their environment than adults for whom religion is mainly instrumental. Females internalize the religious creed more strongly than males and are less likely to use religion as a social tool or as an endorsement of behavior when responding to social demands.

2. Specific occupational contrasts show larger differences in the perceived control of adults than other selected physical, psychological and social factors.

a. Operatives as opposed to laborers or service workers perceive more control over their environmental rewards and this contrast is more

important than that for other laborer and service worker group comparisons, age, sex, health, education, self concept and religious motivation.

3. Education has a similar influence upon the way in which black adults and white adults perceive control over the rewards from their environment.
4. Sex, self rated health and age show spurious relationships with perceived control unless the effects of their interrelations as well as the effects of education, occupation, race, self concept and religious motivation are taken into consideration.

Methodological Implications

Results from this investigation have several implications for future research in adulthood.

1. Future research should pursue systematic, multivariate approaches in attempts to isolate salient variables in the aging process. These approaches should take into consideration the "causal ordering" of the variables of interest in order that intervening effects be carefully controlled and spurious results avoided.
2. Research studies employing multiple regression analysis should also obtain optimal sample sizes

in order to insure the stability of regression weights, R^2 and subsequent generalizations coming from the research.

3. Future studies utilizing multiple regression analysis should include prestatistical treatment of the variables of interest in order to ascertain the extent of multicollinearity between independent variables. The elimination of redundant variables as observed through multicollinearity would allow for more explained variance in the criterion measure.
4. Further multivariate studies should be undertaken that utilize large representative groups of adults from the general population in order to increase the applicability of generalizations.

Some of these implications evolved from strengths of the present study. Others were recognized because of weaknesses in the research. Taken together, they should combine to enhance future large multivariate studies of adulthood.

Implications for Future Research

Based upon the procedures, findings and conclusions of this study, the following implications for further research are suggested:

1. Research should be conducted to determine other correlates of perceived control in adulthood, especially variables that are mutually independent and whose composites are representative of the physical, psychological and social dimensions.
2. Longitudinal and/or cross sequential studies are needed to determine the continuity of locus of control over time and the flexibility of this personality dimension at certain stress or crisis periods.
3. The importance of certain occupational types over others in the prediction of perceived control requires further examination. Of particular interest is the stability or persistence of generalized expectancies among clerical, administrative, operative and labor workers following the loss of the work role.
4. More research is needed on the importance of the relationship between perceived control and religious motivation to life satisfaction and adjustment. Of particular interest are the factors related to sex differences in religious motivation in middle age.

5. Studies are needed on the multidimensionality of the I.E. scale as well as other measures of perceived control. The low \underline{R}^2 obtained in this study suggests a need to examine the statistical legitimacy of the use of one composite score as an index of perceived control.

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APPENDIX A
Questionnaire - Adult Study

QUESTIONNAIRE

Adult Study
School of Home Economics
UNC-G

Please read each question carefully and do not leave any item unanswered. Remember, on items of opinion there are no right or wrong answers. You will notice that no names are used on the papers.

1. Are you? (Please check)
 - 1 ___ Male 2 ___ Female
2. Are you? (Please check)
 - 1 ___ White 2 ___ Black 3 ___ Other
3. Age (Please write in information requested)
 - A. When were you born? _____
 Month Day Year
 - B. How old were you on your last birthday?
 _____ Years of age
4. How many years of school did you complete?
 (Count high school graduation as 12 years.)
 _____ Years
5. What is your marital status? (Please check only one)
 - 1 ___ Single
 - 2 ___ Married (If married, please answer A and B)
 - A. Date married _____
 Month Day Year
 - B. Place married _____
 Town State
 (If no town, give county)
 - 3 ___ Widowed

(Please go on to the next page)

4 ___ Divorced

5 ___ Separated

6. How do you rate your overall health in comparison to other persons your age? (Please check only one)

1 ___ Excellent

2 ___ Good

3 ___ Fair

4 ___ Poor

7. What is your present work status? (Please check only one)

1 ___ Employed full-time

2 ___ Employed part-time

3 ___ Housewife (no outside job)

4 ___ Retired

5 ___ Unemployed (temporarily)

(If you have never worked outside the home, please answer the next question in reference to your husband.)

8. Work (Please write in information requested.)

A. What kind of industry, company, or institution do you presently work for? (If retired, what kind of industry, etc. did you work for at time of retirement?)

B. What kind of work do you do there? If retired, what work did you do? (Please be specific.)

(Please stop at this point and wait for further directions.)

9. The following question deals with how you feel about yourself. It has 3 parts: How you appear to others; what you would like to be; and what you really are. Under each part there are 7 words and their opposites, such as "Busy--Inactive." Look at Part I, "How I appear to others," and mark on the 1-7 scale the extent to which the words describe how you feel. For example, if you think you appear very busy to others, draw a circle around 1; if you think that you appear somewhat busy, circle 4; if you appear very inactive, circle 7. Continue through the 3 parts in this way. Remember, there are no right or wrong answers.

<u>Part I</u>	<u>How I appear to others</u>							
Satisfied with life	1	2	3	4	5	6	7	Dissatisfied with life
Look to the future	1	2	3	4	5	6	7	Look to the past
Useless	1	2	3	4	5	6	7	Useful
Free to do things	1	2	3	4	5	6	7	Not free to do things
Ineffective	1	2	3	4	5	6	7	Effective
Busy	1	2	3	4	5	6	7	Inactive
Respected	1	2	3	4	5	6	7	Not respected
<u>Part 2</u>	<u>What I would like to be</u>							
Busy	1	2	3	4	5	6	7	Inactive
Free to do things	1	2	3	4	5	6	7	Not free to do things
Useless	1	2	3	4	5	6	7	Useful
Look to the future	1	2	3	4	5	6	7	Look to the past
Ineffective	1	2	3	4	5	6	7	Effective
Satisfied with life	1	2	3	4	5	6	7	Dissatisfied with life
Respected	1	2	3	4	5	6	7	Not respected

<u>Part 3</u>	<u>What I really am</u>							
Respected	1	2	3	4	5	6	7	Not respected
Free to do things	1	2	3	4	5	6	7	Not free to do things
Ineffective	1	2	3	4	5	6	7	Effective
Look to the future	1	2	3	4	5	6	7	Look to the past
Useless	1	2	3	4	5	6	7	Useful
Satisfied with life	1	2	3	4	5	6	7	Dissatisfied with life
Busy	1	2	3	4	5	6	7	Inactive

10. The following questions are to find out the way in which certain important events in our society affect different people. Each item consists of a pair of statements, a or b. Please circle the a or b of the statement of each pair which you more strongly believe to be the case as far as you are concerned. Be sure to select the one you actually believe to be the more true rather than the one you think you should choose or the one you would like to be true. There are no right or wrong answers.

Please answer items carefully but do not spend too much time on any one. Be sure to find an answer for every choice. In some cases you may find that you believe both statements or neither one. In such cases, still make a decision and circle the one statement that comes closest to your belief. As you circle the items, do not be influenced by your previous choices.

- 1.
- a Children get into trouble because their parents punish them too much.
 - b The trouble with most children nowadays is that their parents are too easy with them.

(Please go on to the next page)

2.
 - a Many of the unhappy things in people's lives are partly due to bad luck.
 - b People's misfortunes result from the mistakes they make.

3.
 - a One of the major reasons why we have wars is because people don't take enough interest in politics.
 - b There will always be wars, no matter how hard people try to prevent them.

4.
 - a In the long run people get the respect they deserve in this world.
 - b Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5.
 - a The idea that teachers are unfair to students is nonsense.
 - b Most students don't realize the extent to which their grades are influenced by accidental happenings.

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

7.
 - a No matter how hard you try some people just don't like you.
 - b People who can't get others to like them don't understand how to get along with others

- 8.
- a Heredity plays the major role in determining one's personality.
 - b It is one's experiences in life which determine what they're like.
- 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.
- 10.
- a In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
 - b Many times exam questions tend to be so unrelated to course work that studying is really useless.
- 11.
- a Becoming a success is a matter of hard work, luck has little or nothing to do with it.
 - b Getting a good job depends mainly on being in the right place at the right time.
- 12.
- a The average citizen can have an influence in government decisions.
 - b This world is run by the few people in power, and there is not much the little guy can do about it.

(Please go on to the next page)

- 13.
- a When I make plans, I am almost certain that I can make them work.
 - b It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
- 14.
- a There are certain people who are just no good.
 - b There is some good in everybody.
- 15.
- a In my case getting what I want has little or nothing to do with luck.
 - b Many times we might just as well decide what to do by flipping a coin.
- 16.
- a Who gets to be the boss often depends on who was lucky enough to be in the right place first.
 - b Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
- 17.
- a As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
 - b By taking an active part in political and social affairs the people can control world events.
- 18.
- a Most people don't realize the extent to which their lives are controlled by accidental happenings.
 - b There is really no such thing as "luck."

- 19.
- a One should always be willing to admit mistakes.
 - b It is usually best to cover up one's mistakes.
- 20.
- a It is hard to know whether or not a person really likes you.
 - b How many friends you have depends upon how nice a person you are.
- 21.
- a In the long run the bad things that happen to us are balanced by the good ones.
 - b Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
- 22.
- a With enough effort we can wipe out political corruption.
 - b It is difficult for people to have much control over the things politicians do in office.
- 23.
- a Sometimes I can't understand how teachers arrive at the grades they give.
 - b There is a direct connection between how hard a person studies and the grade that they get.
- 24.
- a A good leader expects people to decide for themselves what they should do.
 - b A good leader makes it clear to everybody what their jobs are.

(Please go on to the next page)

- 25.
- a Many times I feel that I have little influence over the things that happen to me.
 - b It is impossible for me to believe that chance or luck plays an important role in my life.
- 26.
- a People are lonely because they don't try to be friendly.
 - b There's not much use in trying too hard to please people, if they like you, they like you.
- 27.
- a There is too much emphasis on athletics in high school.
 - b Team sports are an excellent way to build character.
- 28.
- a What happens to me is my own doing.
 - b Sometimes I feel that I don't have enough control over the direction my life is taking.
- 29.
- a Most of the time I can't understand why politicians behave the way they do.
 - b In the long run the people are responsible for bad government on a national as well as on a local level.

(Please go on to the next page)

11. Following are several statements dealing with religious feelings. Please read each statement and indicate whether you strongly agree; agree; disagree; or strongly disagree with each statement by drawing a circle around the appropriate word. Please respond to each item. There are no right or wrong answers.

1. My faith involves all of my life.

Strongly agree Agree Disagree Strongly disagree

2. One should seek God's guidance when making every important decision.

Strongly agree Agree Disagree Strongly disagree

3. In my life I experience the presence of the Divine.

Strongly agree Agree Disagree Strongly disagree

4. My faith sometimes restricts my actions.

Strongly agree Agree Disagree Strongly disagree

5. Nothing is as important to me as serving God as best I know how.

Strongly agree Agree Disagree Strongly disagree

6. I try hard to carry my religion over into all my other dealings in life.

Strongly agree Agree Disagree Strongly disagree

7. My religious beliefs are what lie behind my whole approach to life.

Strongly agree Agree Disagree Strongly disagree

(Please go on to the next page)

8. It doesn't matter so much what I believe as long as I lead a moral life.

Strongly agree Agree Disagree Strongly disagree

9. Although I am a religious person, I refuse to let religious considerations influence my everyday affairs.

Strongly agree Agree Disagree Strongly disagree

10. Although I believe in my religion, I feel there are many more important things in life.

Strongly agree Agree Disagree Strongly disagree

APPENDIX B

Computations for Determining \underline{R}^2 ShrinkageFormula:

$$\underline{R}^2 = 1 - (1 - \underline{R}^2) \frac{\underline{N} - 1}{\underline{N} - \underline{k} - 1}$$

Computation:

$$\begin{aligned} \underline{R}^2 &= 1 - (1 - .189) \frac{300 - 1}{300 - 17 - 1} = \\ &= 1 - (.811) \frac{299}{282} = 1 - (.811)(1.06) = .14 \end{aligned}$$

Source: Kerlinger, F., & Pedhazur, E. Multiple regression in behavioral research. New York: Holt, Rinehart & Winston, 1973.

APPENDIX C
Form Letters

Form Letter: Initial Letter to Ministers
(Sample II)

July 29, 1975

Dear

The Greensboro District is currently cooperating with the School of Home Economics at the University of North Carolina at Greensboro in a study of middle aged adults. Middle age is thought to be a very important stage in the life cycle that greatly influences adaptation in later life. Several Church Schools in the District were selected at random for participation in this meaningful endeavor.

Mrs. Vira Kivett, a Methodist and faculty member at UNC-G is the project director for this undertaking and will meet with a selected group of ministers just thirty minutes prior to the Hearing about facilities for the Aging at Centenary Church, Tuesday, August 12.

Your church was one of the churches randomly selected to participate in the project. I am requesting that all ministers of churches making up the potential sample to meet with me and Mrs. Kivett at 7:00 p.m. in the general office area in order that they may discuss with her the goals and purposes of the study and decide then whether they desire for their churches to participate.

Several churches in the District have already participated in the project and church school members have expressed considerable enthusiasm and willingness to participate. I look forward to seeing you on the 12th.

Sincerely,

Harley Williams
District Superintendent
Greensboro District of the
United Methodist Church

HW:bm

cc: Mrs. Vira Kivett

Form Letter: Church Contact Person

(Date)

Dear :

Thank you for arranging to have your church school classes containing adults aged 45-65 meet with one of our team members . (Mrs.) (Miss) will meet with you in your church school building at on 1975. I am enclosing a brief overview of the purposes of the study for your information. Since the questionnaire requires approximately 30 minutes to complete, it would be helpful if the adults could begin promptly at 10:00. The person visiting your church will explain the purposes of the study to the adults.

Please call me at 379-5972 or 288-4886 if you have further questions.

Sincerely,

(Mrs.) Vira R. Kivett
Research Instructor
Child Development and
Family Relations

Enclosure

Form Letter: Follow up to Ministers

(Date)

Name
Address

Dear Rev. :

The recent participation of the adults in your church school contributed very much to our study of middle age. Your members were most cooperative. Thank you for your interest and assistance in a project that we think will add important information to current knowledge of middle age. I look forward to sharing the results of the study with your church when the data are analyzed.

Sincerely,

Vira R. Kivett
Research Instructor
Child Development and
Family Relationscc: Dr. Harley Williams
District Superintendent
Greensboro District of
the United Methodist Church
1130 Westridge Road
Greensboro, N. C. 27410