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ECOLOGICAL MODELING OF QUALITY OF LIFE AMONG MIDDLE-AGED HUSBANDS AND WIVES: A STRUCTURAL EQUATION MODEL

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Meesok Park Lee

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ECOLOGICAL MODELING OF QUALITY OF LIFE AMONG MIDDLE-AGED HUSBANDS AND WIVES: A STRUCTURAL EQUATION MODEL

By

Meesok Park Lee

A DISSERTATION

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ABSTRACT

ECOLOGICAL MODELING OF QUALITY OF LIFE AMONG MIDDLE-AGED HUSBANDS AND WIVES: A STRUCTURAL EQUATION MODEL

By

Meesok Park Lee

This study was designed to investigate and predict the quality of life among middle-aged men and women in terms of economic well-being, stress from life events, perceived health, and satisfaction with family life, employing longitudinal data. From an ecological perspective, the researcher hypothesized that the quality of life of individuals or families, assessed at one point in time, is the outcome of the functioning of the family ecosystem over time.

The findings of this study were based on a secondary analysis of longitudinal data collected for the NC-164 regional research project, entitled "Stress, Coping, and Adaptation in the Middle Years of the Family." Support for the original study was provided by the Cooperative Research Service of the U.S. Department of Agriculture, and the Agricultural Experiment Stations of nine states. The data were obtained from two different periods of time, 1983 and 1985, using the mail survey method.

The unit of analysis of this study was 754 men and

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women who responded in both phases of data collection. LISREL VII was used to test of the adequacy of the measurement models and the hypothesized causal relationships among selected constructs.

The results indicate that satisfaction with family life strongly affects an individual's evaluation of quality of life. Economic well-being, measured in objective as well as subjective terms, is another important variable affecting quality of life. Perceived health was a dimension which had a significant direct influence on quality of life and an indirect impact via economic well-being. Stress, being an outcome, or product of interactions between the individual and the environment, indirectly influenced quality of life.

This study demonstrated the usefulness of using the family ecological model along with a family resource management model to study quality of life. From an ecological perspective, the evaluation of quality of life can be assessed as an outcome of functioning of the family ecosystem over time, based on satisfaction with various dimensions of the environment. Implications for future research and ecological theory as well as for practice are suggested.

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CHAPTER I

INTRODUCTION

During recent decades, concern over quality of life has been a growing issue, especially due to declining resources, economic constraints, and environmental problems. Substantial progress has been made in finding effective ways to measure people's sense of well-being. Various research attempts have been made to measure different aspects of life quality and to explore how people evaluate their sense of overall life quality, both as a whole and with respect to numerous specific life domains.

Quality of life, in general, refers to a sense of well-being as perceived by people, often measured on a scale to convey different levels of well-being. According to Bubolz and her colleagues quality of life refers to the well-being or ill-being of people and the environment in which they live (Bubolz, Eicher, Evers, & Sontag, 1980). Andrews and Withey (1976) concluded that quality of life is determined by people's perceptions of their well-being based on their evaluations of domains of their lives, such as marriage, family, housing, job, friends, neighbors, and health, and criteria, such as standards, aspirations, values, and goals. Another study revealed that a general sense of well-being is

more dependent on the individual's satisfaction with resources than the quality of these resources (Campbell, Converse, & Rodgers, 1976).

Some authors have defined quality of life in an objective, status-oriented manner, examining personal characteristics such as assets, health status, and financial security (e.g., Gastil, 1970; Morgan & Smith, 1969). Others have defined quality of life in terms of subjective evaluation which individuals formulate about their own life experiences (e.g., Campbell et al., 1976; Andrews & Withey, 1976). In this study both objective measures of resources and status and subjective evaluations of personal life experience are viewed as important dimensions of life quality. Certainly, the quality of one's life appears to encompass more than adequate material well-being. It also includes perceptions of well-being, a basic level of satisfaction.

In recent times many observers have reported serious deterioration of the quality of life due to the effect of inflation on economic well-being. Changes in the economy and economic downturns create painful family adjustments. The associated stress can even lead to family disintegration (Mammen, Helmick, & Metzen, 1983). Stress has been variously defined as a stimulus, as a crisis, as a response to a stimulus, and as a state of the organism as it responds to the stimulus (Dohrenwend & Dohrenwend, 1974; Hill, 1958;

Selye, 1956). Other researchers define stress related to any event in which environmental demands, internal demands, or both tax or exceed the adaptive resources of an individual, social system, or tissue system (Monat & Lazarus, 1977). Accumulation of stress of life events may deplete the resources (social, emotional, or financial) that a family can muster to meet the demands of its stressful problems. It has been found that stress leads to deterioration in health through depression (Brown & Andrews, 1986; Perlin, Liberman, Menaghan, & Mullan, 1981; Selye, 1956, 1980). Domains of family life are salient to the degree of stress. Domains that have been found to influence the level of quality of life are family life, self, family income, and housing (Sontag, Bubolz, & Slocum, 1979).

Quality of life is an organizing concept of potential importance to all who work toward improving the conditions of human life: basic scientists, applied researchers and service practitioners. In addition the broad appeal of this concept should help to facilitate communication between knowledge-oriented and action-oriented professionals.

Most of the research on quality of life has been descriptive, examining factors or correlates of quality of life for the general adult population or the aged population. Social gerontologists have conducted considerable research aimed at answering the question, "What is successful or optimal aging?" (e.g., Cumming & Henry,

1961; Havighurst, 1953). Efforts have been made to describe social patterns of aging historically. Recently, the conditions under which aging is satisfying or debilitating and identification of the resources and coping skills which influence the aging process have been delineated. Most of the research has been conducted on cross-sectional data. These cross-sectional studies do not offer a clear picture of the nature of family economic and psychological resources possessed by families, nor explain how an individual's quality of life is determined.

Knowledge of families in their middle years and the determinants of their life quality are sparse but important as the population ages and resources diminish. This knowledge has lagged far behind the demand for educational programs to address family well-being. Carefully designed studies of the middle-years are imperative to enhance the efforts of professionals working to increase the life quality of families in the middle years of the family life cycle.

Purpose of the Study

The purpose of this research is to develop a model that explains the relationships of selected measures to quality of life and to predict how the quality of life is determined in terms of family resources. Research is needed to identify a viable model that determines the important

influences on the satisfaction levels of family members.

This study was designed to investigate and predict the quality of life among middle-aged men and women in terms of economic well-being, stress from life events, perceived health, and satisfaction with family life, employing longitudinal data. More specifically this study examined how one's life quality is explained in terms of a linear structural relationship. The term "structural" means that the researcher will not just describe the variables or measure association between variables but rather will investigate an invariant "causal" relation (Bollen, 1989). Attention was focused on people in their middle years.

Relationship of this study to NC-164

This study examines data collected for the regional project, NC-164, supported by the Cooperative Research Service of the United States Department of Agriculture, the Michigan State University Agriculture Experiment Station, and the Experiment Stations of eight other states involved. The original study was titled "Stress, Coping, and Adaptation in the Middle Years of the Family."

The primary focus of the regional project was stress and coping among rural families during middle years. The original study included both rural and urban samples, varied employment statuses and types for men and women, and multiple life events. Data were gathered in the area of

life stress, health, family financial status, marital happiness, family happiness, and overall life satisfaction. The scope and depth of the data facilitate the examination of perception of individual life quality among middle-aged people.

Theoretical Approach

Human Ecological Approach

This study is based on the human ecological framework. A human ecological approach is a holistic approach to examine the interdependence between humans and their environments. For example, it examines the interrelationships between family members, between the family and their work and other environments, and the socio-economic system. The human ecological framework enables the researcher to examine phenomena in the wholeness of interaction and interdependence (Bubolz, Eicher, & Sontag, 1979). Because humans perceive their environment, make decisions, and satisfy needs through interaction, the phenomena must be examined from the stand point of wholeness and in terms of interaction and interdependence.

A human ecological framework provides a basis for delineating various kinds of quality of life indicators, defined as indices or measurements of various aspects of human life or environmental conditions. These tell something about the degree of ill-being or well-being of

human conditions or environments.

In the human ecological framework, the individual and the family unit are nested in three interrelated environments: the natural, biological, and physical environment; the human built environment; and the social-cultural environment (Bubolz & Sontag, in press). The basic components of the human ecosystem serve as a guide in clarifying what phenomena need to be described and what data need to be selected as indicators. Indicators can measure something about the conditions or status of people (the human environed unit); they can describe conditions or resources of the environments (natural, human constructed or human behavioral); or they may explain something about people's interaction with the environment and their use of resources. A human ecological framework provides a means for conceptualization, measurement, and analysis of the quality of life (Bubolz et al., 1980).

In the human ecosystem model, it is assumed that humans are a part of the total life system. Therefore, humans cannot be considered apart from all other living organisms in the environment. The environments for the family provide the resources necessary for life and constitute a life support system (Andrews, Bubolz, & Paolucci, 1980). Family members transform energy, matter, and information from their environment to meet their needs.

In the human ecological framework, quality of life is

defined as perceived satisfaction with life as a whole. This satisfaction results from: (1) the interaction of individuals possessing certain needs and characteristics with resources available in their various environments, and (2) the degree of person environment fit. Therefore, in this context, it is hypothesized that quality of life is influenced by the degree of satisfaction with selected life concerns. These concerns are indicated by variables which represent human needs, conditions, and resources related to the natural-biological, human constructed, and behavioral environments.

Conceptual Model

Components of the Deacon & Firebaugh Family Resource Management Model (Deacon & Firebaugh, 1988) are being utilized here. Deacon and Firebaugh conceptualized family resource management as a system comprised of inputs consisting of demands and resources, throughputs of planning and implementing, and outputs of met demands and used resources.

This study focuses on the effect that inputs (demands, including life events, goals and resources) have on quality of life as an output. Demands are represented by stress caused by stressors that relate to the economic environment, time, the family environment, and health. Resources are represented by health and economic well-being as measured in

objective (e.g., per capita income) and subjective terms (e.g., perceived income adequacy). Satisfaction with family life, and overall quality of life are assumed to be family goals. Respondents' evaluations of their family life and quality of life represent the degree to which these needs are met and evaluated as part of the system's output.

Limitations and Assumptions

Some limitations are inherent in this study. The limitations relate to the characteristics of the subjects and the method in which the sample was collected. Generalizability is limited due to the imbalance of race and income. The sample is predominantly Caucasian, and over-represents higher income and higher education groups, as well as the rural population. The original study intended to examine stress in intact families. Therefore the sample was purposely limited to married persons with at least one child. The sample was randomly drawn using mailed-questionnaires. The questionnaire dealt with sensitive areas of finances and family interactions. The sample may under-represent people who are less satisfied with their overall lives. In general, it is recognized that the survey method can not directly observe behavior nor can it measure the phenomenon in great depth.

The following assumptions are identified with regard to the research study.

1. The participants of this project responded to the questions on the research instrument to the best of their awareness as completely and fully as possible to the limits of their consciousness. It is also assumed that they completed the questionnaire independently, not being influenced by other persons.

2. Quality of life is normative. A high quality of life is a goal of individuals. It must be based on what is desirable and what is possible for the well-being of the individual.

3. Quality of life is affected by multiple indicators, recognizing that individual and family life encompasses several interrelated dimensions.

4. Quality of life is best explained by incorporating objective and subjective indicators of environmental conditions and resources as well as of individual and family well-being.

5. Individuals experience stress as a result of life events from total environments. Although the degree of stress may be different, all individuals experience stress.

6. Individuals experience stressful life events in their everyday life, including family life.

7. Stress is a potentially negative influence on an individual's health as well as psychological, emotional, physical, and social satisfaction.

8. The middle years are a period with some unique life events. It is also assumed that these life events do not necessarily result in a higher degree of stress because they have been experienced in the middle years.

CHAPTER II

REVIEW OF LITERATURE

Related research and literature are reviewed in six areas. These are quality of life, quality of family life, health, stress and life events, economic well-being, and middle years of life.

Quality of Life

Two major studies on quality of life were conducted in the early 1970s (Andrews & Withey, 1976; Campbell et al., 1976). These were done by the Survey Research Center of the University of Michigan. Employing a national sample, both studies examined how people's sense of well-being was related to different aspects of life.

Both studies indicated that an individual's overall satisfaction with life is based on the satisfactions related to various life domains. Andrews and Withey (1976) classified life concerns into domains and criteria, and further concluded quality of life is determined by people's perceptions of their well-being based on their evaluations of domains and criteria. Domains include places, things, activities, people, and roles that are part of people's lives and their environment. They include marriage, family,

housing, job, friends, neighbors, and health. Criteria are standards, aspirations, values and goals. People judge or make evaluations based on the criteria and domains of life. Andrews and Withey found the most important domains which contributed to quality of life were satisfaction with self, satisfaction with family life, satisfaction with the amount of fun in people's life, and satisfaction with family income and consumption. The domains contributing less were health, job, goods and services, residence of house or apartment, things to do with family, time to do things, spare time activities, and an index of satisfaction with national government.

Andrews and Withey have further demonstrated that satisfaction with one's life as a whole is additive. It reflects the sum of one's satisfaction in various domains, such as one's income, housing, occupation, leisure activities, family life.

The researchers of the two major studies have found that people reserved their ratings of greatest satisfaction for those parts of their lives that are the most personal and intimate. The more distanced a domain was from the person, the more dissatisfied they are likely to be with the domain. Campbell and his associates found Americans are most likely to express high satisfaction with their marriage and their family life and low satisfaction with their economic status and their education. Satisfaction in the

domains such as self, standard of living, family life, marriage, friends, and work has the greatest influence in accounting for the level of overall quality of life.

Income

A great deal of research has shown that a positive relationship exists between income and quality of life. Many studies have found that objective income is correlated with quality of life (Alston, Lowe, & Wrigley, 1974; Andrew & Withey, 1976; Mancini & Orthner, 1980; Riddick, 1980). The studies concluded that a relationship exists even when other variables, such as education, were controlled. However, the effect of income was reduced when other factors which interact with income, such as better health, were controlled.

As might be expected, subjective income measures, such as satisfaction with income, and perception of income adequacy, were also related to quality of life (Ackerman & Paolucci, 1983; Berry & Williams, 1987; Braun, 1977; Campbell et al., 1976; Spreitzer & Snyder, 1974). Spreitzer and Snyder (1974) found that people's perception of financial adequacy was a substantially stronger indicator of life satisfaction than objective economic indicators.

Other researchers have found that some subjective indicators make a larger contribution and are better predictors of people's evaluation of the quality of life

than objective indicators (Ackerman & Paolucci, 1983; Berry & Williams, 1987; Campbell et al., 1976). On the basis of several studies Campbell (1981) concluded that objective conditions and factors contribute to well-being to the degree that they provide positive and satisfying experiences and contribute to people's subjective evaluation of their lives and certain domains of their lives, such as the family.

In their study of quality of life, Ackerman and Paolucci (1983) examined subjective and objective income adequacy. Objective income measurements were calculated and adjusted for family size and place of residence. Subjective measures of income adequacy were measured by the degree to which the family felt satisfied with its income being enough to live on. The results indicated that people's evaluations of the quality of life were positively correlated with their subjective as well as objective income. The study also found that subjective indicators of income adequacy explained more variation in quality of life. The study concluded that individual evaluations of income relate to the societal average and satisfaction depends on how an individual perceives his/her income to match the average.

Age

Studies that include age variables have produced contradictory findings. In the 1960s, some studies found

that young people were happier than their elders (Bradburn & Caplovitzs, 1965; Gurin, Veroff, & Field, 1960). In other studies, however, no age effect was found (Andrews & Withey, 1976; Spreitzer & Snyder, 1974). Several other studies found a positive relationship between age and quality of life (Braun, 1977; Campbell et al., 1976; Cantril, 1965; Medley, 1980). Braun (1977) found that younger people reported higher levels of both positive and negative affects, but older groups reported greater levels of overall quality of life. Given the confusing nature of contradictory findings, a meta-analysis using studies done prior to 1980 revealed that the correlation between age and quality of life was near zero, regardless of whether other variables were controlled(Stock, Okun, Haring, & Witter, 1983).

In a large scale study, Campbell and his colleagues (1976) reported that satisfaction with life and their Index of General Well-Being correlated positively with age; whereas reports of being very happy decreased with age. The study also found that older persons reported greater satisfaction in every domain except health. Most results show a slow rise in satisfaction with chronological age; however, it seems that younger people tend to experience higher levels of satisfaction while older people tend to judge their lives in more positive ways.

In recent years, life stages that create

characteristics and demands have been examined (Estes & Willensky, 1978; Harry, 1976; Medley, 1980). Employing multivariate analysis on a national probability sample, Medley (1980) found that life satisfaction was high for men and women at each stage across the life span; four stages of adulthood were early adulthood (22-34), early middle age (35-44), late middle age (45-64), and late adulthood (65 and over). When gender was combined with the life cycle variable an interesting finding resulted. Men showed a monotonic increase in life satisfaction as their life cycle stage increased; while women showed a relatively constant relationship over the life span.

Gender

Little difference has been found between the sexes in the evaluation of overall quality of life (Andrews & Withey, 1976; Campbell et al., 1976; Goodstein, Zatra, & Goodhart, 1982; Olsen, 1980; Toseland & Rasch, 1979-1980). However some studies found a gender age interaction; younger women were happier than younger men, while older women were less happy than older men (Medley, 1980; Spreitzer & Snyder, 1974).

Education

Studies show education has an influence on quality of life, although the effects of education seem weak and may

interact with other variables such as income (Bradburn & Caplovitz, 1965; Campbell, 1981; Palmore, 1979). However, several other studies showed no significant effect of education on quality of life when other factors were controlled (Spreitzer & Snyder, 1974; Toseland & Rasch, 1979-1980). Some studies found that education has a more positive effect on quality of life for women (Freudiger, 1980; Glenn & Weaver, 1981; Mitchell, 1976). According to Campbell (1981), education may serve as a resource for a person and may also raise aspirations and alert people to alternative types of life.

Quality of Family Life

Several studies found that satisfaction with marriage and family life is the strongest predictor of quality of life (Andrews & Withey, 1976; Bubolz, Eicher, Evers, & Sontag, 1980; Bubolz, Walker, & Lee, 1989; Campbell, 1981; Campbell et al., 1976; Freudiger, 1980; Glenn, 1975; Glenn & Weaver, 1979, 1981; Haavio-Mannila, 1971; Michalos, 1980, 1982; Sontag, Bubolz, & Slocum, 1979; Toseland & Rasch, 1979-1980; Walker, Lee, Bubolz, & Keefe, 1990; Walker, Bubolz, & Lee, 1991). Glenn (1975) reported that although married women reported greater stress symptoms than their unmarried counterparts, they also tended to report a higher quality of life. Glenn & Weaver (1979) found that satisfaction with marriage was the strongest determinant of

quality of life when other factors such as income, education, and occupation were controlled.

According to Glenn and Weaver (1981), previous divorce is not related to the happiness of persons who are remarried. The researcher concluded that marriage has an effect on people's evaluation of quality of life; it was not simply a selection factor of happier people getting married, or staying married. In contrast others found that when people evaluate their quality of life, satisfaction with marriage and family life is more important than the objective fact of marriage (Andrews & Withey, 1976; Campbell, 1981; Campbell et al., 1976; Glenn & Weaver, 1979, 1981).

Recent research on quality of life identified major domains which have had great impact on quality of life (Bubolz et al., 1989; Walker et al., 1990, 1991). It was found that life quality is determined not only by objective conditions and resources but also by the subjective evaluations of these conditions in relation to demands and aspirations. Among those the assessment of life related to family relationships was the strongest predictor for quality of life. Several studies found negative effects of having children on quality of life (Andrews & Withey, 1976; Glenn & McLanahan, 1981; Glenn & Weaver,1979).

Health

Based on a national sample, Campbell (1981) concluded that poor health was associated with dissatisfaction with health. The researcher expected poor health to be associated with a degree of dissatisfaction in other domains of life. It was found that people with serious disabilities were in fact considerably more likely than people with no health problems to express dissatisfaction with their lives.

Results of several other studies found a significant relationship between self-rated health and quality of life (Edwards & Klemmack, 1973; Larson, 1978; Markides & Martin, 1979; Near, Rice, & Hunt, 1978; Riddick, 1980; Spreitzer & Snyder, 1974; Toseland & Rasch, 1979-1980). The self-rated health variable was measured by respondents rating their health as excellent, good, fair, or poor. This effect remained when other variables such as socio-economic status (SES) and age were controlled (Clemente & Sauer, 1976; Freudiger, 1980; Larson, 1978).

In a large-scale study, Campbell and his associates (1976) found that although health was rated by subjects as the most important factor in happiness, satisfaction with health was only the eighth strongest predictor of life satisfaction. On the other hand, although some other studies found a strong zero-order correlation between health and quality of life, they found no relationship when other factors such as leisure activities were controlled (Mancini

& Orthner, 1980; Miller, 1980). This indicates that part of the influence of health on quality of life is not simply the direct effect of how people feel about their health, but also on what their health allows them to do.

Many studies on health and life quality used more objective measures of health such as disease checklists (Larson, 1978; Liang, Kahana, & Doherty, 1980; Mancini & Orthner, 1980), while some other studies found physicians' ratings also correlated with quality of life (Palmore & Luikart, 1972; Larson, 1978). Perceiving oneself as being in good health was found to be positively related to satisfaction with life, while the number of experienced ailments, either recent or immediately past ones, were unrelated (Edwards & Klemmack, 1973).

According to Zautra and Hempel (1983), it appears that subjective health measures have a stronger relationship to quality of life than objective measures of health, although both measures were significant. However, one study showed that health influenced people's quality of life only cross-sectionally, not longitudinally (Miller, 1980). This finding raises questions about the process and causal direction by which health and quality of life are related (Zautra & Hempel, 1983).

Other studies found that poor sleep has been related to lower quality of life (Roth, Kramer, & Roehrs, 1976; Sherman, 1980; VanCoevering, 1974). The direction of

causality is not clear because distressed persons are more likely not to sleep as well as others.

Stress and Life Events

An extensive body of research has found a negative impact of stress on overall quality of life (Caplan, 1983; Holmes & Rahe, 1967; Perlin et al., 1981; Selye, 1956, 1980). Some researchers have obtained consistent results related to the impact of life events on quality of life (Kammann, 1982; Miller, 1980). Good events were related to positive affect, and bad events were related to negative affect (Reich & Zautra, 1981, 1983; Warr, Barter, & Brownbridge, 1983; Zautra & Reich, 1980). Reich and Zautra (1981) hypothesized that well-being was composed of two factors, a positive component and a negative component. Demand measures were positively related to the negative component, lower quality of life; desires were predicted to relate positively to the positive component. In their study the concepts of demands and desires were developed to capture the essential distinction between daily activities which occur because people want to do them and those which arise from the pressures of living. The impact of life events such as the death of a loved one or relocation of family members on quality of life has been found (Dohrenwend & Dohrenwend, 1974; Vinokur & Selzer, 1975; Williams, Ware, & Donald, 1981).

In a study on family life events which were more frequently reported and perceived as stressful, Williams and Bubolz (1986) reported that some family life events were perceived as very stressful. They were death of family member, family pet dies, member demands new privileges, household chores pile up, death of close friend or confidant, member experiences serious emotional problems, and family member involved in the courts.

Studies have found that people under stress are more susceptible to illness, depression, anxiety, low self-confidence, and dissatisfaction than are people who are not experiencing stress (Caplan, Cobb, French, Harrison, & Pinneau, 1980; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Rabkin & Streunig, 1976).

In a study on psychological concepts related to perceptions of life quality, Abbey and Andrew (1986) concluded that stress and depression relate strongly and negatively to perceptions of life quality. The results indicate that individuals who feel under stress or depressed report feeling worse about their lives than do unstressed or happy individuals.

Other research evidence shows that one's ability to act and control events is related to quality of life (Guttmann, 1978; Reich & Zautra, 1981). Although earlier research studies have shown that whether an event is controllable is an important factor on people's evaluation of quality of

life, an understanding of the impact of large scale events and of the cumulative impact of daily events seems to be needed.

Economic Well-being

Economic well-being is one of the indicators used in the study of quality of life. Economic well-being has been measured in both objective and subjective terms. Objective measures include variables such as per capita household income, while subjective indicators include measures such as income adequacy and satisfaction with resources. Objective measures do not take into account quality measures and mental processes important to individual perceptions. In addition these do not take into account all of the individual and family differences which may be pertinent. Likewise, some limitations of subjective measures have been recognized. Fletcher and Lorenz (1985) indicated that use of only subjective measures may be misleading if individuals have become resigned to their level of income and adapted to it.

Recently, authors have recognized the importance of both measures in the study of economic well-being and provided evidence that the combined measures are better predictors than one measure used alone. Ackerman and Paolucci (1983) studied subjective as well as objective income adequacy as related to overall quality of life.

Objective income was measured by comparing the reported income to the moderate income of the Bureau of Labor Statistics budgets adjusted for the family size and area of the country. Perceived income adequacy was measured by asking the degree to which respondent felt their family income was enough to live as comfortably as they liked. Using a multistage probability sample of private households, the researchers found that life quality measures of satisfaction increased with an increase in either subjective or objective income adequacy. They also found that the subjective measure accounted for more variation in satisfaction with income and overall life quality than objective adequacy.

Hafstrom and Dunsing (1973) examined both subjective family income adequacy and income before taxes, unadjusted for family size, to satisfaction with overall quality of life. Using a sample of homemakers, they found subjective adequacy to have the highest correlation with life satisfaction; income before taxes had a smaller but moderate correlation with life satisfaction. They also found that subjective adequacy predicted more of the variation in life satisfaction than did the objective measure. These researchers further suggested that the two kinds of measures should be used as compliments to each other, for the combined measures are better predictors than either type used alone.

In a study on economic well-being, Fletcher and Lorentz (1985) found a less strong relationship between subjective income and objective income for older respondents than for younger ones. They used total family income and satisfaction with family income related to economic well-being for different age, sex, and race groups. Satisfaction with income increased with age without an actual corresponding increase in total family income. A positive relationship between family income and satisfaction with family was found in both female and male groups. Overall, nonwhites were less satisfied.

Satisfaction with one's financial situation is an important factor in an individual's sense of economic well-being. In a study of factors having an impact on financial satisfaction, Davis and Helmick (1985) used measures of an additive index including satisfaction with consumption level, satisfaction with wealth, and satisfaction with financial security. The measures of financial security included these satisfactions: the proportion of income saved, emergency reserves, and future financial security. Other variables included family income, family net worth, debt to income ratio, remaining number of child-rearing years, and number of earners in the family. The researchers also included desire for financial improvement and perceived change in financial condition. Employing multivariate analysis for six groups (husbands and wives from three

states), the researchers concluded that desire for financial improvement and perceived change in financial improvement was a strong predictor of financial satisfaction in all six groups. Net worth was also found to be a strong predictor in four of the groups. However, family income was not a strong predictor in any of the groups. The findings are consistent with previous findings (Hafstrom & Dunsing, 1973; Yaar, 1976) that objective indicators such as family income or net worth were significant measures of financial satisfaction. The best predictors, however, seemed to be perceived change in financial condition and desire for financial improvement. It was further concluded that both were significant predictors of financial well-being.

One study found that families tend to judge their current economic status on the basis of past economic conditions as well as their future expectations (Moen, Kain, & Elder, 1983). Changes in environment external to the family (inflation, recession, or war) affected how the family felt about its security. Fear of job loss or concern that current income would be inadequate were related to perceptions of decreased economic well-being although income was unchanged. Changes internal to the family (illness of family member, change in family composition) may have the same effect. These may result in increased demands or decreased resources which may further result in a sense of decreased economic well-being (Davis & Helmick, 1985;

Hafstrom & Dunsing, 1973; Yaar, 1976).

The Middle Years

In recent years attempts have been made to develop sociopsychological conceptions of the life course and its various developmental periods (Hunter & Sundel, 1989). Studies based on the theories of life cycle have become important. The increase in longevity has brought more emphasis on the midlife period because this period has lengthened. According to Schaie and Willis (1986), the average couple can now expect to live almost twenty years alone in an "empty nest" after the last child has left home. Midlife has become a typical stage most individuals will experience. Until the mid 1970's, little research focused on the middle years.

The definition of middle years differ by researchers. Some use chronological age boundaries for life stages. Among them, Levinson defined the midlife era from 35-40 to 60-65. But others view middle age as a state of mind (Fiske, 1979) or as a period during which individuals create highly complex and demanding roles when compared to other stages of the life cycle (Cohler & Boxer, 1984).

Levinson (1978) has emphasized the importance of the midlife transition (midlife crisis). Campbell and his colleagues (1976) found that transitions similar to those described by Levinson do occur in the lives of most men and

women in American society. They found that there are long term patterns through the life span.

Individuals' perceptions as to whether they are young, middle aged, or old are strongly influenced by their particular social contexts, such as gender, social class, health, nutrition, beliefs, goals, and social values (Hunter & Sundel, 1989). One theory of human development is to view it as socially organized and socially produced, not only by what happens in the early stages, but also by the effect of social structure, and social interaction, and their effects on life chances throughout the life course (Brandtstadter, 1984). Social structure is considered powerful, because it shapes one's beliefs about aging and one's appraisal of life events.

Researchers have found a positive association between age and expressed satisfaction with a number of areas of life (Campbell et al., 1976). Based on their 1971 Quality of Life study, the researchers found that people in older stages of the life cycle report somewhat higher satisfactions than their younger counterparts. They explained that the higher satisfaction among older adults is a function of their declining aspirations.

One approach to understanding how people evaluate their quality of life has focused on the "gap" between what people have and what they aspire to (Andrews, 1981; Mason & Faulkenberry, 1978; Michalos, 1980, 1983). The key notion

is that people whose actual life conditions and aspirations are closely matched will assess their life quality as much higher than will people for whom there is a large gap between actuality and aspirations.

Studies have found that people in later life stages experienced a decline in stress due to fewer life events. A typical life event scale, often used to assess the level of stress, showed a declining number of such events with increasing age. Campbell and Converse (1980) included thirty life events in the 1978 Quality of Life survey. They concluded that, with increasing age, respondents reported a decreasing number of life events for the previous five years.

Some researchers have recently argued that the traditional major life events methodology may not be the best assessment of stress because stress may be created through "daily hassles" that people experience when carrying out routine transactions within their environments (Kanner, Coyne, Schaefer, & Lazarus, 1981). The number of these daily hassles probably declines for older persons, because they are released from many of the roles and constraints that make life difficult. The stress that arises in the middle years may be unique to the time period.

Proposed Ecological Model

An Application of the Human Ecological Perspective to Quality of Life

As indicated in Chapter I, ecological theory is the study of the interrelationships of organisms and environments. In this perspective, it is critical to realize that human beings interact with the total environment. It is further recognized, in the ecological perspective, a change or action in one part of the ecosystem induces a change in another part (Bubloz & Sontag, in press). According to Bubolz and Sontag, mutual or reciprocal interaction occurs when any part of an ecosystem causes a change in any other part and, in return, is changed.

From this ecological perspective, the researcher hypothesizes that the quality of life of individuals or families, assessed at one point in time, is the outcome of the functioning of the family ecosystem over time. The assessment of individual or family quality of life can be made based on objective and subjective satisfaction with the quality of the natural physical biological, human built, and social-cultural environments and the resources which come from the environments or from family members themselves.

In characterizing the relationships in an ecosystem, Griffore and Phenice (1988) emphasized multidimensional and

reciprocal causality. Consistent with this view, the present investigator proposes a multidimensional measure of quality of life and will examine possible reciprocal causation of selected variables over time. In this study, the interactive nature of family processes and relationships with environments (crucial characteristics of an ecosystem) can be captured by utilizing Linear Structural Relation analysis with longitudinal data.

Based on the ecological theory, an ecological model of quality of life is presented in Figure 1. An individual's assessment of quality of life today is the outcome of past events and conditions.

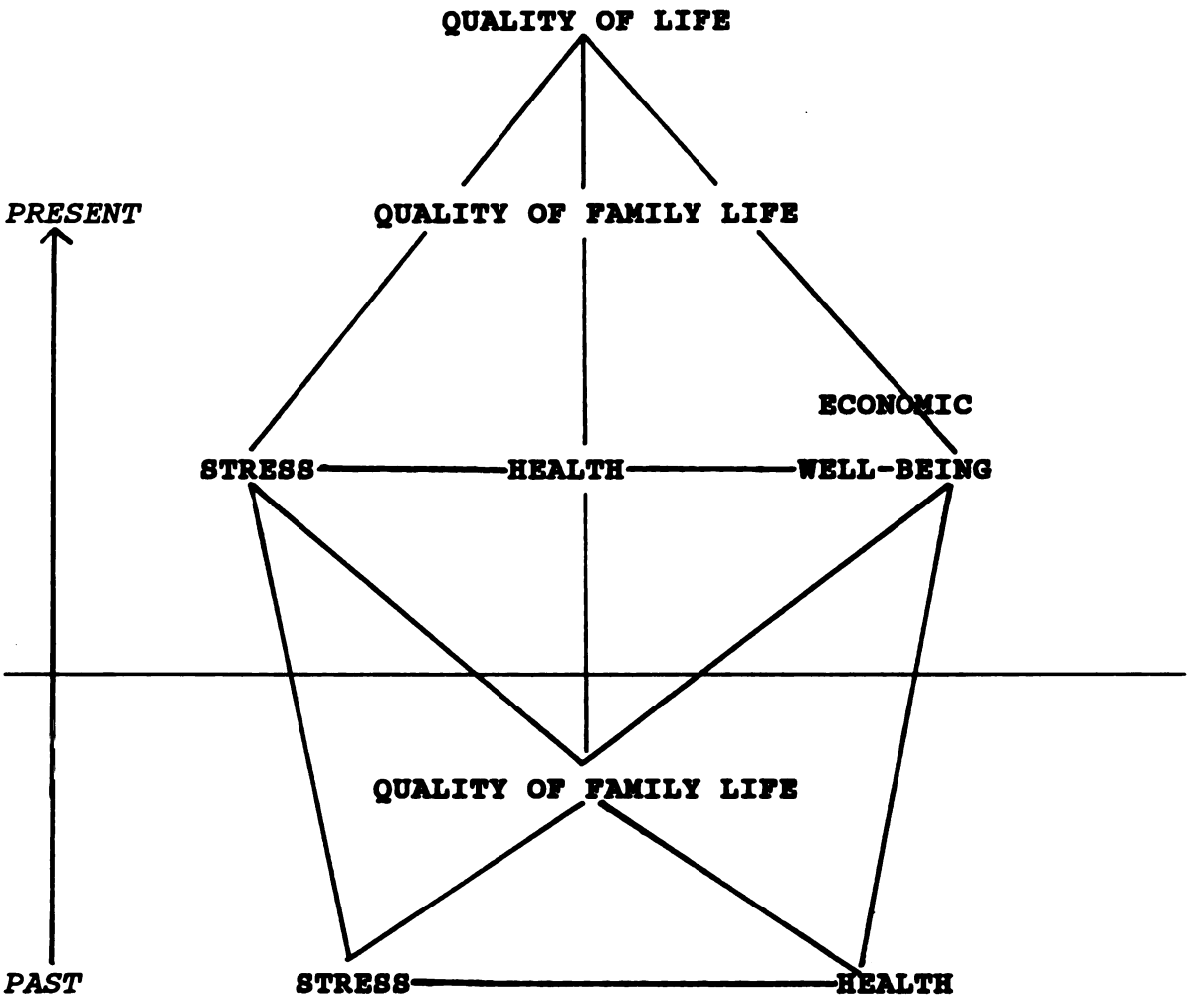

Figure 1 Ecological Model of Quality of Life

CHAPTER III

METHODOLOGY

The primary foci of this investigation were to examine predictive factors and to formulate an ecological model of quality of life over time. The study was designed to investigate and predict the quality of life among middle aged individuals in terms of stress, economic well-being, perceived health, and quality of family life, employing longitudinal data.

The data utilized in this study were collected for the NC-164 regional research project entitled "Stress, Coping, and Adaptation in the Middle Years of the Family." Support for the original study was provided by the Cooperative Research Service of the U. S. Department of Agriculture, and the Agricultural Experiment Stations of nine states: Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, and Nebraska. The following section describes the research design and subjects, research variables, hypotheses, and analysis of data.

Research Design and Subjects

Core Study

This study is based on a secondary analysis of longitudinal data from the NC-164 regional project. Data were gathered over two different time periods, 1983 and 1985, using the mail survey method. The study examined husbands and wives as they existed at each point in time. Additionally, the 1983 study asked questions on the family's experiences over the past three years. In 1985, those same individuals who responded in 1983 were asked to give information about their experiences over the past two years.

Selection of Core Sample

The sample for project NC-164 was randomly selected from a marketing corporation's list of names and addresses of intact families in the middle years in the nine states participating in the study. A stratified sampling design was employed. Each state selected a Standard Metropolitan Statistical Area (SMSA) with a population of 20,000 or more as the site for the urban sample. The rural sample was drawn from a county not part of or adjacent to a SMSA. Sampling areas were selected to be representative of the state in terms of median family income and educational attainment of persons age 18 and older. In the project, middle-stage families were defined as families in which the wife was between the ages of 35 and 65 with at least one

child. The rural sample was over-represented because of a primary interest of the research team in rural families. Response rates by states in 1983 ranged between 30 percent and 40 percent, considered satisfactory in light of the length and complexity of the questionnaire. The overall response rate for 1985 was a little over 50 percent.

Procedure Used

The questionnaire for project NC-164, developed by the research team from the participating states, primarily focused on stress among families during mid-life. In February 1983, each wife and each husband were mailed separate packets, containing a letter of introduction, a questionnaire, and a postage-paid return envelope. This method was employed to insure independent completion of the questionnaires. Follow-up post cards and a second set of questionnaires were mailed to encourage broader participation. In March 1985 all participants who had responded in 1983 were mailed similar packets. An identical procedure was used in March 1985. Approval was obtained from the University Committee on Research Involving Human Subjects for all research procedures and instruments.

Research Instrumentation

The research instrument used in this study was developed by committee members of the Agricultural

Experiment Station Regional Research Project NC-164, North Central Region. The instrument, a self administered mail questionnaire, included information representing the varied interests of the research team.

The instrument used in 1983 was thirty-two pages in length and took about one hour to complete. The instrument was pre-tested twice in the development process. As part of the development process, each state pre-tested the instrument and then pooled the information to identify problems and make appropriate changes.

A similar research instrument was used for the 1985 collection of data. In the 1985 instrument, a few questions were added concerning changes in family life events and economic status. Some questions were revised to make the instrument clearer. Questions which were confusing or not central to the overall purpose of the project were eliminated, resulting in a shorter questionnaire of 23 pages.

The Quality of Life Measure

Overall quality of life was measured using the Campbell, Converse, & Rodgers (1976) Index of Well-being. Campbell, Converse, and Rodgers developed the Index of Well-being using the Index of General Affect (multi-item general use scale) in a large scale study of The Quality of American Life (1976). The Index consists of respondents' rating of

their lives on an eight semantic differential scale concerning feelings about present life (eg., a scale of 1 to 7 relative to life being boring-interesting, miserable-enjoyable, and useless-worth while) and life as a whole. Evaluation of life as a whole was measured on a 7 point scale ranging from completely satisfied to completely dissatisfied (Appendix C, Q57, Q58a, p127). The reliability of this index was estimated as .89 in Campbell's study (Campbell et al., 1976).

Kansas Family Life Satisfaction Scale

Quality of family life was measured by a four-item scale dealing with satisfaction in family relationships: (1) relationship with spouse, (2) relationship with children, (3) childrens' relationships with each other (4) family relationships in general. The scale was developed by Schumm and his associates (1986). (Appendix B, Q43, p117). The scale was found to be substantially correlated with quality of life in their study of 620 families in twelve states ($r = .46$ for mothers, $p < .001$). In the study the scale proved to have acceptable internal consistency and reliability, above the .80 criterion.

Health Difficulty Scale

The health difficulty scale (Appendix B, Q18, p115) was a twelve-item scale of general difficulties which can be a

health difficulty by itself or be an indicator of another illness. Respondents were asked to rate the frequency with which each item occurred on a five point scale ranging from 1 (never) to 5 (almost always). The points were added for the 12 items, the higher the score the more health difficulties. This scale, and all succeeding scales, were the same at both times, 1983 and 1985.

Description of Core Sample

McMahon (1988) describes the characteristics of the 1983 core sample. The mean ages for women and men were 45.1 and 48.1 respectively (Williams & Bubolz, 1986). The mean number of years married to the present spouse was 24. In 1983, 61 percent of families had two or three children, while 34 percent had four or more and 5 percent had one child. The sample was 95 percent white, and 72 percent of the sample resided in rural areas in contrast to 28 percent from urban areas. In religious preference, 67 percent women and 63 percent men were Protestant, while 23% and 30% men were Catholic, and the remainder "other." The majority of men were employed full-time; women were evenly distributed among full-time employed, part-time employed, and full-time homemaker. The mean years of education of women and men were 12.9 and 13.1 respectively.

Description of Study Sample

The present study utilizes data for 754 married women and 754 married men who responded to both phases of data collection, 1983 and 1985. The respondents were from seven states: Iowa, Kansas, Kentucky, Louisiana, Michigan, Missouri, and Nebraska. Data from Indiana and Minnesota were eliminated due to inconsistencies in coding and data handling.

In 1985 two-thirds of the sample lived in rural areas or towns with population less than 50,000. Mean age of women was 53 and that of men was 56. Women's mean years of education was 13 years; men's was 14 years. Median family income was between $35,000 and $40,000.

Summary of Research Design

In summary, the major purpose of the present study is to investigate the selected factors that cause various assessments of life quality among individuals. The model is developed based on the human ecological theory. This study is longitudinal in design involving two phases of assessment: 1983, 1985. The unit of analysis is 1508 married individuals from whom completed questionnaires were available for the two assessment periods.

Research Variables

Dependent Variable

Quality of Life (QOL85)

Conceptual Definition: Quality of life refers to an individual's evaluation of overall life satisfaction. For this study, it is defined as a person's sense of well-being, his/her satisfaction or dissatisfaction with life, or his/her happiness or unhappiness.

Operational Definition: Quality of life was measured using the Index of Well-being (Campbell et al., 1976). It is an eight item semantic differential scale concerning feelings about present life and one question about life as a whole. On a scale of one to seven, respondents were asked to describe their feelings on each items. (Refer to Appendix C, Q57 and Q58a, p127). The score to obtain the quality of life measure averaged the individual scores of the eight statements and added the weighted score (1.1) of feelings about satisfaction with life as a whole. In calculating this score the procedure of Campbell and his associates (1976) was adopted. The possible range was 2.1 to 14.7. In the analysis the response from 1985 was used.

Independent and Intervening Variables

Quality of Family Life (QFL83,QFL85)

Conceptual Definition: The level of satisfaction one receives from the relationships within one's nuclear family

composed of husband, wife, and children.

Operational Definition: The quality of family life was measured by questions used in the Kansas Family Life Satisfaction Scale (Schumm, McCollum, Bugaighis, Jurich, & Bollman, 1986), consisting of four statements regarding satisfaction with family relationships. The four statements asked respondents how satisfied they were with family life (SFL83,SFL85), relationship with spouse (SSP83, SSP85), relationship with children (SCH83, SCH85), and the relationship the children had with each other (SCE83,SCE85). They were to rate each statement on a scale of 1 to 7 scale (completely dissatisfied to completely satisfied). The 2 variables, QFL83 and QFL85, are based on data from the 1983 and the 1985 surveys, respectively (Appendix B, Q43, p117, and Appendix C, Q58, p127).

Perceived Health (HLTH83, HLTH85)

Conceptual Definition: It is defined as the level of objective and subjective health as perceived by the individual.

Operational Definition: In 1983, respondents were asked to score 12 statements related to health problems or health habits. The statements concerned: had trouble sleeping, had accidents, been irritable, smoked cigarettes, used prescription drugs, had a weight problem, used alcohol, found it difficult to relax, had muscle tension, had nervous

indigestion or anxiety, had cold or flu, had headaches, and had been depressed. Each item for the statements had a possible score of 1 to 5 (never to always). The scores were recoded for the twelve items (1 = always, 5 = never) and then added together to create HLTH83. HLTH85 was developed in an identical way from the 1985 data. A higher cumulative score represented fewer symptoms or problems and a higher level of health than a lower cumulative score. The perceived health variable could range from 12 to 60 (Appendix B, Q18, p115 and Appendix C, Q27, p124).

Stress (STRS83, STRS85)

Conceptual Definition: Stress can be defined in various ways based on the context in which it is being employed. According to Antonovsky (1980), stress is the loss of desired homeostasis that requires energy which is not readily available. Stress can cause disruption of the social unit or system (Monat & Lazarus, 1977). Stress for this study is defined as a personal reaction to an experience which puts demands on the individual.

Operational Definition: Stress was measured by the cumulative scores on the Family Life Event Scale, an adaptation of the Family Inventory of Life Events (FILE), which was developed to measure family stress (McCubbin, Patterson, & Wilson, 1987). It was the measure of collective life events including internal events related to

family transitions and relations, finances and health, as well as interactions with events in external environments such as school, work, and the law. In 1983 respondents were asked to indicate if certain events had occurred in their families within the last three years. In 1985 they were asked if the events had occurred within the last two years. The following coding method was used. If the event had not happened to the respondents, the score for the item was 0. If the event had occurred, they identified the degree to which the event was disturbing, using a five point scale ranging from 1 = not disturbing to 5 = extremely disturbing. Thus the range for each event was from 0 to 5. If data were missing, the mean score of the item was substituted. The values for the selected events were added to create total scores for the stress of each period of time (STRS83, STRS85). The total scores were composed of five types of stress: economic, time related, children related, familial, and health related (Appendix B, Q8, pp109-114 and Appendix C, Q19, pp120-123). Economic stress was composed of the events and stress related to nine items: job loss by major wage earner, family member's job demotion or retooling, financial assistance required by own or in-law's family, cut in family income, going into or increasing debt, major financial loss in family, going on welfare, having to increase debt due to increased expenses, and forced to dip into savings.

Time related stress was composed of four items: member accepts time consuming volunteer work, change in member's work schedule, outside activities draw adult away from home, and household chores pile up.

Child related stress was composed of five events including member demanding new privileges, member dropping out of school, pregnancy of unmarried member, adult children having problems achieving independence, and married children "freezing out" parents.

Familial stress was composed of four events and accompanying stress levels related to marital separation and relations with married children, relatives, or in-laws.

Health stress was created from four items: major wage earner has serious illness or accident; child has serious illness; grandparents require direct care or become institutionalized; family member has serious emotional problems. Data from 1983 created STRS83; STRS85 relied on the 1985 responses.

Economic Well-Being (EWB85)

Conceptual Definition: The degree of over-all satisfaction of individuals with their own objective and subjective financial situation.

Operational Definition: Economic well-being was measured by four indicators: per capita income (PCI84), change in family income (CFI85), income adequacy (IAD85),

and change in financial situation (CFS85).

In the 1985 survey, respondents were asked to indicate which of twenty income brackets best described their 1984 total income before taxes. The income variable was coded from 1 (1 = less than $5,000) to 20 (20 = $100,000 or more). To compute per capita income the coded value was divided by the number of persons in the household. Number of persons in the household was calculated in this manner: 2 (husband and wife) plus number of children living at home (Appendix C, Q37, p125 and Q11, p119).

For change in family income, respondents were asked in 1985 "In general, which of the following best describes any changes in your total family income over the past three years?" Possible responses were: 1 to 6 with 1 = increase more than 25%; 2 = increase 5 to 25%; 3 = no change; 4 = decrease 5 to 25%; 5 = decrease more than 25%, and 6 = fluctuated up and down over the three years. In the analysis, these responses were recoded in reverse order so that 5 = increased more than 25% and 1 = decreased more than 25%. The response for "fluctuated up and down" was treated as missing for the 5.9 percent of respondents who selected the "fluctuated" response. Since the change in family income variable was measured on an interval scale, the fluctuation state was not conceptually consistent with the direction of change being measured (Appendix C, Q40, p126).

Income adequacy measured the extent to which the respondents thought their income was enough to live on in 1985. Responses were coded 1 = can't buy necessities, 2 = can meet necessities only, 3 = can afford some of the things we want but not all we want, 4 = can afford about everything we want, and 5 = can afford about everything we want and have some left (Appendix C, Q41, p126).

Change in financial condition was measured by asking respondents in 1985 to describe any change in their overall financial condition over the past three years. Responses were coded 1 = much worse, 2 = worse, 3 = same, 4 = better, and 5 = much better (Appendix C, Q42, p126).

Conceptual Model and Hypotheses

Conceptual Model

The conceptual model is presented in Figure 2. It shows the hypothesized relationships among the variables.

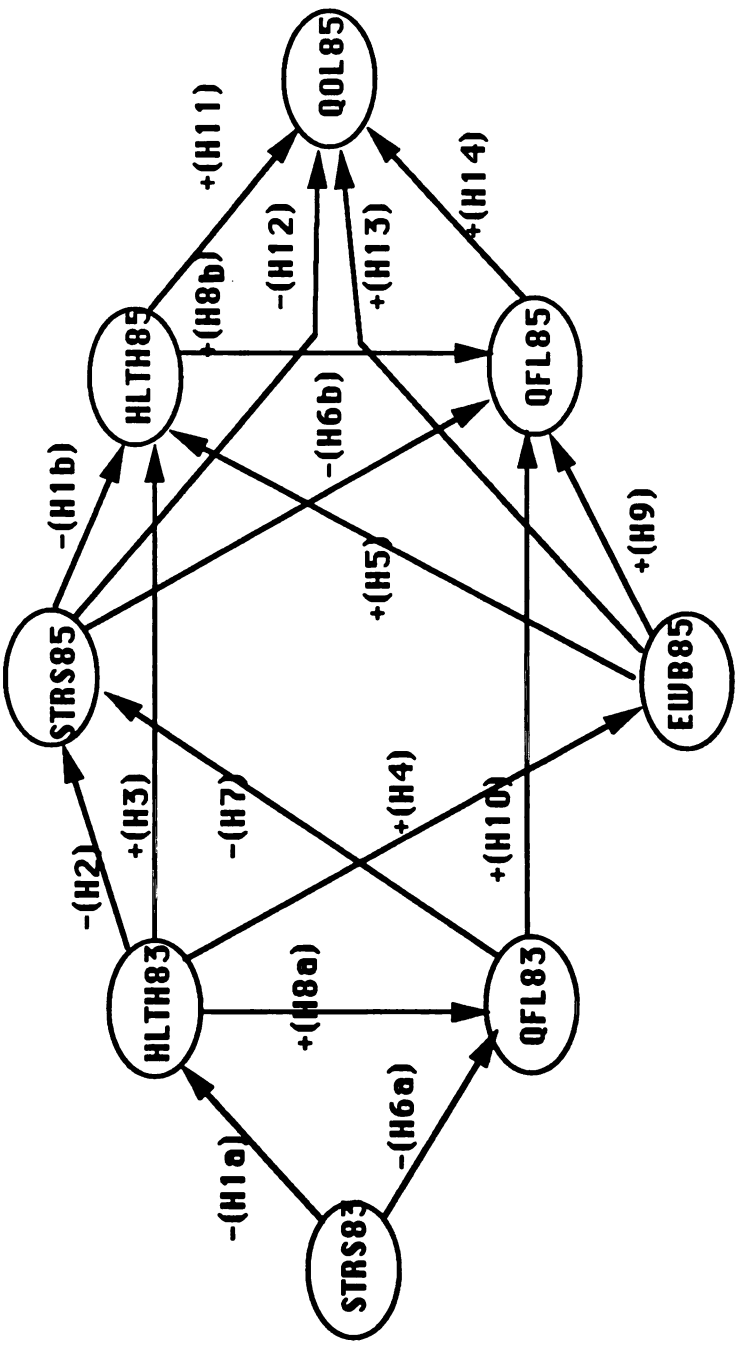

Figure 2 Conceptual Model

Hypotheses

Based on the proposed relationships among the selected variables, the specific hypotheses to be investigated relative to middle-aged individuals are presented. The first set of hypotheses examines the causal effect of the exogenous variable (STRS83) on two endogenous variables, as well as the relationships among all the endogenous, intervening variables. They are stated as:

Hypothesis 1a: Stress (STRS83) has a negative, direct impact on perceived health (HLTH83).

Hypothesis 1b: Stress (STRS85) has a negative, direct effect on perceived health (HLTH85).

Hypothesis 2: Perceived health (HLTH83) has a negative, direct effect on stress (STRS85).

Hypothesis 3: Perceived health of past years (HLTH83) has a positive, direct effect on present perceived health (HLTH85).

Hypothesis 4: Perceived health (HLTH83) has a positive, direct effect on economic well-being (EWB85).

Hypothesis 5: Economic well-being (EWB85) has a positive, direct effect on perceived health (HLTH85).

Hypothesis 6a: Stress (STRS83) has a negative, direct impact on quality of family life (QFL83).

Hypothesis 6b: Stress (STRS85) has a negative, direct impact on quality of family life (QFL85).

Hypothesis 7: Quality of family life (QFL83) has a negative, direct effect on stress (STRS85).

Hypothesis 8a: Perceived health (HLTH83) has a positive, direct effect on quality of family life (QFL83).

Hypothesis 8b: Perceived health (HLTH85) has a positive, direct effect on quality of family life (QFL85).

Hypothesis 9: Economic well-being (EWB85) has a positive, direct influence on quality of family life (QFL85).

Hypothesis 10: Quality of family life of past years (QFL83) has a positive, direct effect on present quality of family life (QFL85).

The second set of hypotheses is intended to examine the effect of four endogenous variables on quality of life.

Hypothesis 11: Perceived health (HLTH85) has a positive, direct impact on quality of life (QOL85).

Hypothesis 12: Stress (STRS85) has a negative, direct impact on quality of life (QOL85).

Hypothesis 13: Economic well-being (EWB85) has a positive, direct impact on quality of life (QOL85).

Hypothesis 14: Quality of family life (QFL85) has a positive, direct effect on quality of life (QOL85).

The last hypothesis proposed examines the overall explanatory power of the structural model for quality of life, integrating all the variables selected for the present study. It is stated as follows:

Hypothesis 15: Among middle-aged individuals, the levels of influence of the independent variable (STRS83) and the intervening variables are causally related to the level of quality of life.

Structural Model

The research model is presented in Figure 3. The following equations were developed based on the structural model in Figure 3.

The structural equations for the latent variable model are:

$$\eta_1=\gamma_{11}\xi_1+\zeta_1$$

$$\eta_2=\gamma_{21}\xi_1+\beta_{21}\eta_1+\zeta_2$$

$$\eta_3=\beta_{31}\eta_1+\beta_{32}\eta_2+\zeta_3$$

$$\eta_4=\beta_{41}\eta_1+\zeta_4$$

$$\eta_5=\beta_{51}\eta_1+\beta_{53}\eta_3+\beta_{54}\eta_4+\zeta_5$$

$$\eta_6=\beta_{62}\eta_2+\beta_{63}\eta_3+\beta_{64}\eta_4+\beta_{65}\eta_5+\zeta_6$$

$$\eta_7=\beta_{73}\eta_3+\beta_{74}\eta_4+\beta_{75}\eta_5+\beta_{76}\eta_6+\zeta_7$$

Where ξ(xi): latent exogenous variables

η(eta): latent endogenous variables

ζ(zeta): latent errors in equations

γ(gamma): coefficient for latent exogenous variables

β(beta): coefficient for latent endogenous variables

X: observed indicators of ξ

Y: observed indicators of η

δ(delta): measurement errors for X

ϵ(epsilon): measurement errors for Y

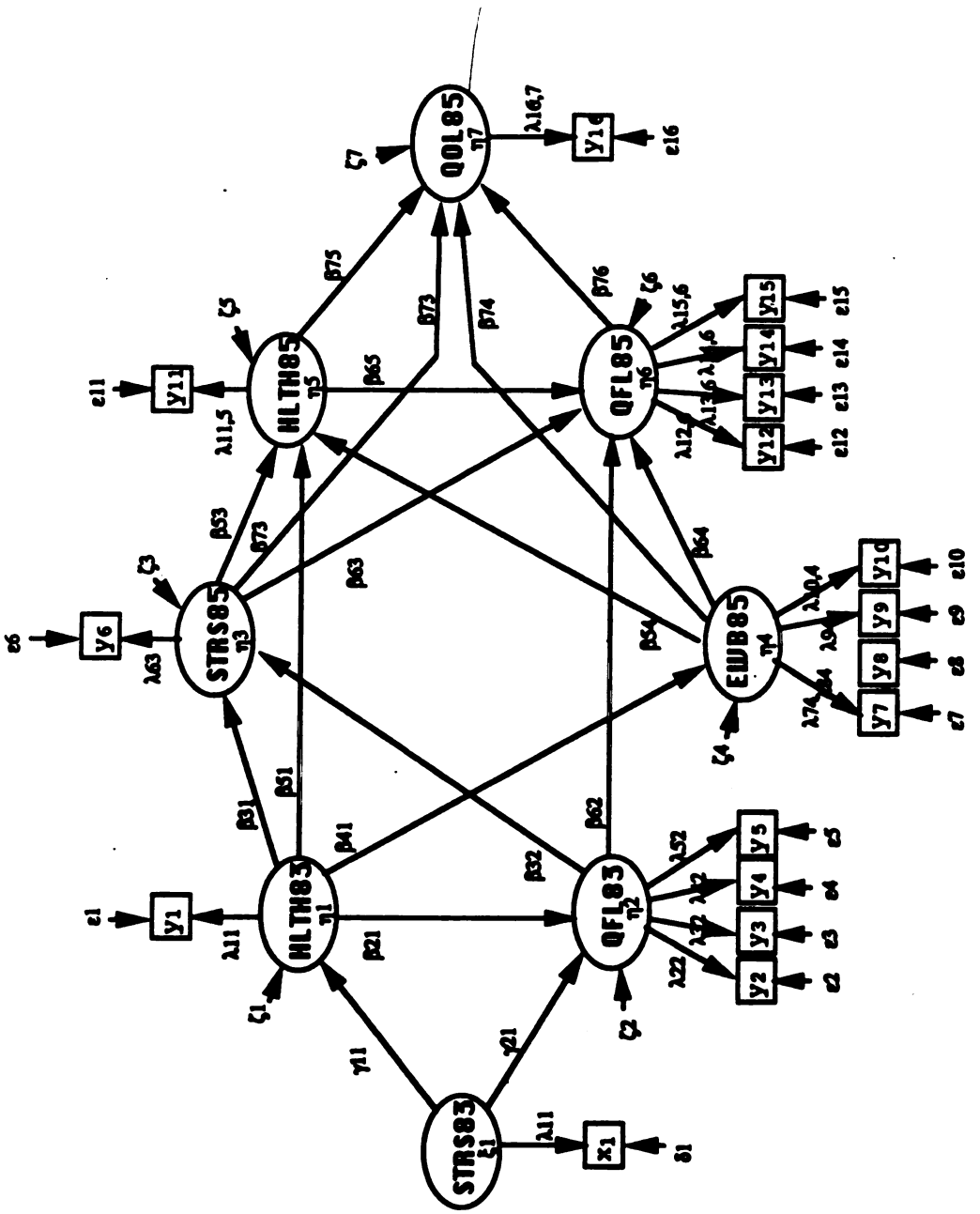

Figure 3 Structural Model

The measurement model corresponding to the proposed structural model in Figure 3 is presented in Figure 4. The following equations were developed based on the measurement model.

The measurement equations are:

$x_1=\lambda_{11}\xi_1+\delta_1$

$x_2=\lambda_{22}\xi_2+\delta_2$

$x_3=\lambda_{32}\xi_2+\delta_3$

$x_4=\lambda_{42}\xi_2+\delta_4$

$x_5=\lambda_{52}\xi_2+\delta_5$

$x_6=\lambda_{63}\xi_3+\delta_6$

$x_7=\lambda_{74}\xi_4+\delta_7$

$x_8=\lambda_{84}\xi_4+\delta_8$

$x_9=\lambda_{94}\xi_4+\delta_9$

$x_{10}=\lambda_{10,4}\xi_4+\delta_{10}$

$x_{11}=\lambda_{11,5}\xi_5+\delta_{11}$

$x_{12}=\lambda_{12,6}\xi_6+\delta_{12}$

$x_{13}=\lambda_{13,6}\xi_6+\delta_{13}$

$x_{14}=\lambda_{14,6}\xi_6+\delta_{14}$

$x_{15}=\lambda_{15,6}\xi_6+\delta_{15}$

$x_{16}=\lambda_{16,7}\xi_7+\delta_{16}$

$x_{17}=\lambda_{17,8}\xi_8+\delta_{17}$

Where X: observed indicators of ξ

δ(delta): measurement errors for x

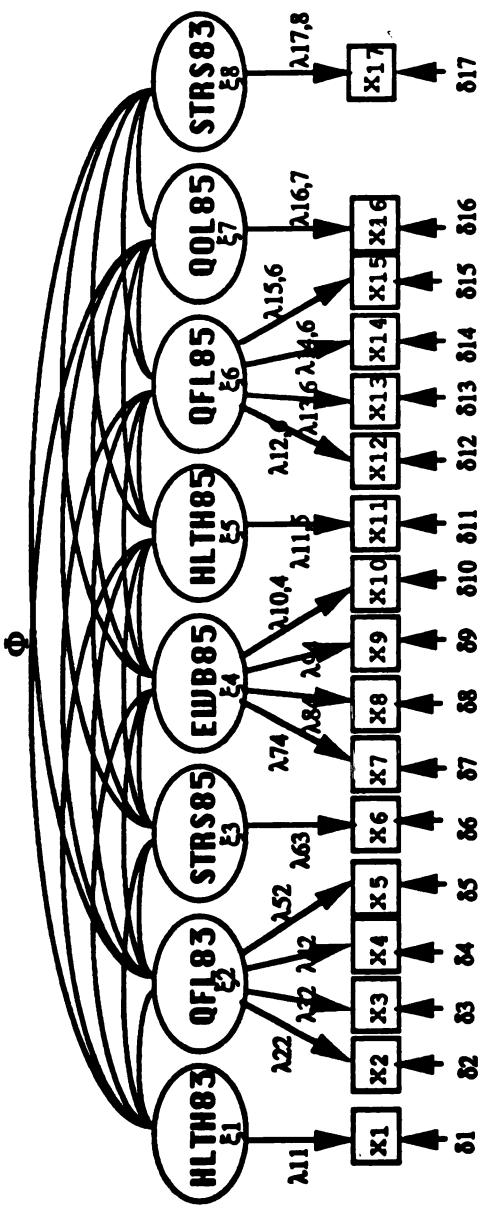

Figure 4 Measurement Model

Analysis of Data

Overview of Analyses

The data in this research were analyzed in two steps. First, the measurement model was evaluated. Reliability, unidimensionality, and discriminant validity were tested. After the measurement model was evaluated, the second step was an examination of the structural equation model.

In general, structural equation models are regression equations with assumptions that allow measurement error in the explanatory as well as the dependent variables (Bollen, 1989). In these models, assumptions about the distributions of the observed variables are less restrictive than the distributional assumptions generally made for ANOVA or regression analysis. The structural equation models consist of factor analyses that permit direct and indirect effects between factors. These include multiple indicators and latent variables. In brief, these models encompass and extend regression, econometric models, and factor analysis procedures.

As implied in the term "linear structural relations", the model assumes a linear relationship between all variables, latent and observed variables. Additionally, the assumptions of homoscedasticity and no autocorrelation for disturbances or errors across the observations are also made (Bollen, 1989). The homoscedasticity assumption means that the variance of zeta (latent errors in the equations) is

constant across cases. The no autocorrelation assumption means that the variance of zeta is uncorrelated with other zetas in the equation. The assumptions of homoscedasticity and no autocorrelation do not mean that the disturbances from two different equations need be unrelated nor that they need have the same variance.

In structural equation models three components are presented: (1) the conceptual synthesis of latent variable and measurement models, (2) path analysis, and (3) general estimation procedures. Path analysis has three aspects: the path diagram, the equations relating correlations or covariances to parameters, and the decomposition of effects (Wright, 1960).

The conceptual synthesis of latent variable and measurement models is essential to the structural equation model. In this regard, factor analysis is utilized to examine the relation of latent factors to observed variables. As in econometrics, the structural relation between observed variables is examined in relation to an occasional reference to error-in-the-variable situation.

Path analysis provides a means to distinguish direct, indirect, and total effects of one variable on another. The direct effects are those not mediated by any other variable; the indirect effects operate through at least one intervening variable, and the total effects are the sum of direct and all indirect effects.

The last characteristic of the structural equation models is general estimation procedures. Joreskog (1973) proposed a maximum likelihood estimator (based on the multinormality of the observed variables) for general structural equation models. This method is the most widely used estimator today. Generalized least square (GLS) estimation is another method that offers additional flexibility in the assumptions. This method can be applied when arbitrary distributions or elliptical distributions are found for the observed variables (Joreskog & Goldberger, 1972; Browne, 1982).

In summary, the structural relation technique enables estimation of both a measurement model and a causal model. It permits the inclusion of multiple indicators of latent constructs (unobserved) and the estimation of the relationships among the latent variables without the compounding effects of measurement error. In this study the focus will be on how latent variables or hypothetical constructs (stress, economic well-being, perceived health, quality of family life) are causally related to quality of life. The structural equation model specifies the causal relationships among the latent variables, describes the causal effects, and assigns the explained and unexplained variances. Therefore, the LISREL method estimates the unknown coefficients of a set of linear structural equations. The major strength of the LISREL method is to

accommodate models that include latent variables and measurement errors in both dependent and independent variables, reciprocal causation, simultaneity, and interdependence.

Since the regional project NC-164 data set is longitudinal in nature, it is particularly suitable to causal modeling analyses. With longitudinal data the causal direction is clear because they reveal a sequence over time. Although the use of multi-time data cannot remove all ambiguity about causal directions, multi-time data do allow confidence in the causality-direction assumptions within a particular model. In this longitudinal study, auto-correlation among measurement errors may be assumed since the same measures were obtained from the same people at two different times.[1]

LISREL VII (Joreskog & Sorbom, 1988), a personal computer software package, was used to analyze the data. LISREL VII allows a variety of estimators including arbitrary distribution estimators.

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[1]As in other longitudinal studies, there is a tendency for the errors in these measures to correlate over time. When data are gathered repeatedly over time, they may be correlated due to memory or other retest effects (Joreskog & Sorbom, 1988, 1989).

Measure Validation

Reliability and Unidimensionality

The validity of the measures was assessed by estimating the measurement model of all the exogenous and endogenous variables prior to the simultaneous estimation of the measurement and structural submodels. This is desirable to ensure that the alternate indicators of each construct are acceptably unidimensional (Anderson & Gerbing, 1988).

In this study, STRESS and HEALTH (STRS83, STRS85, HLTH83, HLTH85) measures were developed by adding the construct domain to provide formative scales. The dimensions of the indicators of the latent variables, STRESS and HEALTH, were not considered to be unidimensional, reflecting low correlation coefficient among indicators. The present researcher, therefore, treated these as formative scales, and summed the scores of each of the responses in the process of developing the measures. The remainder of the scales, however, were reflective scales representing multi-item scales. The unidimensionality of the reflective scales was examined by separate confirmatory factor analysis.

Reliability analysis via coefficient alpha and the tests of unidimensionality through confirmatory factor analysis via LISREL were conducted prior to the examination of the structural equation models. According to Anderson and Gerbing (1988), confirmatory factor analysis is a

sufficient condition for an assessment of unidimensionality. Confirmatory factor analysis jointly assumes internal consistency and an external measurement model to arrive at parameter estimates.

In the present study, internal consistency via coefficient alpha was used to assess the reliability of the measures of each construct. A coefficient of .60 or above was considered an indication of the usefulness of the scale in measuring the variable (Nunnally, 1978).

Test of unidimensionality was considered to be a tool to achieve convergent validity. Convergent validity is obtained when the correlation between a measure of a construct and another measure of the same construct is significantly different from zero and is sufficiently large to encourage further examination of validity (Campbell & Fiske, 1959). In confirmatory factor analysis, convergent validity is also achieved when the measurement model shows a satisfactory fit to the data (Bagozzi & Phllips, 1982).

Throughout the study, the covariance matrix, rather than the correlation matrix was used as recommended by Joreskog and Sorbom (1988, 1989). When the covariance matrix is analyzed in LISREL, the normal theory of standard errors is valid. Results of confirmatory analysis were examined to determine whether all loading parameters were large and loaded significantly on the latent variables (factors) which they were intended to represent, with small

standard errors and significant t-values. The fit indices of confirmatory factor models were tested in terms of χ^2, goodness-of-fit (GFI), adjusted goodness-of-fit (AGFI), and root mean squares of residuals (RMSR).[2] GFI is an index of measure of the relative amount of variance and covariance jointly explained by the model, whereas RMSR is a measure of the average residual variances and covariances. In addition to χ^2, these indicate the overall fit of the model to the data (Joreskog & Sorbom, 1988, 1989).

If the model poorly fits the data based on the above criteria, a researcher might inspect modification indices. The modification indices guide possible changes in model parameters. This decision can only be made when it is conceptually plausable.

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[2]The goodness-of-fit index is defined as

$$GFI = 1 - tr[(\Sigma^{-1}S - I)^2]/tr[(\Sigma^{-1}S)^2].$$

It is interpreted as relative amount of variance and covariance in s that are predicted by Σ (Bollen,1989).

The adjusted goodness-of-fit index is the goodness-of-fit index adjusted for degrees of freedom relative to the number of variables, and defined as

$$AGFI = 1 - (p+q)(p+q+1)(1-GFI)/2d,$$

where, d is the degrees of freedom of the model (Joreskog & Sorbom, 1989).
Both of GFI and AGFI should be between zero and one, although negative values are possible for them, meaning the model fits worse than any other model at all.

Root mean squared residual is defined as

$$RMSR = [2\Sigma\Sigma(s_{ij}-\sigma_{ij})^2/(p+q)(p+q+1)]^{1/2}.$$

RMSR can be used to compare the fit of two different models for the same data. The GFI can be used to compare the fit of models for the same or different data.

Discriminant Validity

Discriminant validity refers to the degree to which measures of distinct concepts differ. According to Campbell and Fiske (1959), discriminant validity is the requirement that a measure does not correlate too highly with measures from which it is supposed to differ. That is, measures of different concepts should share relatively little common variance. A conventional test of discriminant validity using the structural equations model involves comparing the measurement model to a model in which all the correlation coefficients among constructs (i.e., off-diagonal ϕ's) are constrained to equal one (Bagozzi & Phillips, 1982). The significance of the χ^2 difference between the two models was considered to indicate that the constructs are not perfectly correlated; each construct is uniquely measured. However, as many others have noted (Bagozzi & Phillips, 1982; Howell, 1987), this is a "weak" test of discriminant validity in that it is very unlikely to have all the constructs perfectly correlated.

In the present study, discriminant validity was tested by examining each pair of constructs individually (Howell, 1987). Given the model, discriminant validity then was examined for each pair of the latent constructs by constraining the relevant correlation to 1 (or any arbitrary relatively high number i.e., 0.8) and estimating this new model. Then the difference in χ^2 was tested. A significant

difference was inferred to indicate that the pair of latent constructs were not correlated, and it could be concluded that an adequate level of discriminability had been achieved. In sum, in this study, discriminant validity was tested by pairwise comparison of the χ^2 difference between freed ϕ and constrained ϕ.

Testing the Structural Model

As described earlier, the variables such as HLTH83, HLTH85, STRS83, and STRS85 are formative scales. Although no reliability measures for these variables were available, it was assumed that these variables were fallible measures. As recommended by Joreskog and Sorbom (1988, 1989), the reliability of 0.85 for one item measures (formative scales) was used. It was assumed that an arbitrary value of 0.85 is better than an equally arbitrary value of 1.00. Consequently, the parameter estimates and standard errors will be affected by the assumed value of the reliability. For the error terms, the constraint of the reliability of 0.85 for such variables in LISREL was done by assigning the fixed value of 0.15 times the variance of each scale to their respective Θ_δ or Θ_ϵ. For the parameters, Λx and Λy were fixed at the value of the square root of 0.85 (reliability) times the standard deviation of the scale.

Regarding the reflective scales (e.g., QFL83) one of the measures (Λy) of each latent construct was constrained

to have the value of its standard deviation. The corresponding error terms (θ_ϵ) of the reflective scales were fixed at zero.

The relationships among the variables were examined simultaneously via analysis of covariance. Maximum likelihood (ML) estimation, using the covariance matrix as input data was used to estimate model parameters (Joreskog & Sorbom, 1988, 1989).[3] According to Anderson and Gerbing (1988), the ML estimation method is well suited to the test and development of theory. With large sample sizes, ML method provides unbiased, consistent, and efficient estimations (Kmenta, 1971).

In the present study, to check the robustness of the results, the ML estimates were compared with generalized least squares (GLS) estimates and ordinary least squares (OLS) estimates.[4] Bohrnstedt and Carter (1971) found the OLS estimates were more robust than the ML estimates when violations of the statistical assumptions, such as normality of disturbances, were present.

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[3] ML maximizes the likelihood of the parameters, given the data. It is equivalent to minimizing

$$F = \log \|\Sigma\| + tr(S\Sigma^{-1}) - \log\|S\| - (p+q)$$

[4] GLS minimizes

$$F=1/2tr[(I - S^{-1}\Sigma)^2],$$

equivalent to minimizing the sum of squares of the residuals weighted by the inverse of the sample covariance matrix (Joreskog & Sorbom, 1989).

Model Fits

According to Bagozzi and Yi (1988), non-existence of any anomalies is a preliminary criteria for model evaluation. These anomalies are negative error variances for ζ, δ, or ϵ; correlations greater than one; and extremely large parameter estimates.

The overall goodness-of-fit of the present model can be evaluated with the χ^2 test. In a structural model, the χ^2 test is a likelihood ratio statistic for testing a hypothesized model against the alternative model in which the covariance matrix is unconstrained.

However, careful inspection should be made because a valid model might be falsely rejected due to the presence of a large sample size. Bagozzi and Yi (1988) strongly argue that the dependence of the χ^2 test on sample size makes contrasting outcomes possible. That is, not only might one falsely reject a valid model because of large sample size, but also one might falsely accept an invalid model when the sample size is too small. Because the power of χ^2 is a function of sample size, the number of estimated parameters, and the significant level of alpha, it can be increased by increasing the sample size and the number of parameters while holding constant the alpha level.

Bagozzi and Yi (1988) suggested that values of AGFI equal to or greater than about .9 suggest that the model is meaningful from a pragmatic point of view. It was noted

that, in contrast to the χ^2 test, the AGFI is independent of the sample size and relatively robust against departure from the normality assumption (Joreskog & Sorbom, 1988, 1989).

Another way to guide in the evaluation of the overall model is Bentler and Bonett's incremental fit indices (Bentler & Bonett, 1980).[5] Incremental fit indices also suggest that the models are generally appropriate when compared to the null model. The null model is a severely restricted model hypothesizing complete independence among the indicators, implying no common factors underlying the observed variables.[6] This can be stated as $\Sigma = \Phi$, with Φ being a diagonal and all off-diagonal covariances are zero. In the null model, the matrix of Lamdas (Λ) is an identity

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[5]Incremental fit indices provide information about the adequacy of two comparative models. They are defined as :

$$\rho(\text{non-normed fit index}) = [(\chi^2_b/df_b) - (\chi^2_m/df_m)] / [(\chi^2_b/df_b)-1]$$

$$\Delta(\text{normed fit index}) = [F_b - F_m]/F_b = [\chi^2_b - \chi^2_m]/\chi^2_b$$

where F_b is the fitting function value of a "baseline model" and F_m is the value of the fitting function for the maintained or hypothesized model (Bentler and Bonett, 1980; Bollen, 1989). In alternative formula, χ^2_b is the chi-square estimate for the baseline model and χ^2_m is for the maintained model. Rho is not normed to lie between zero and one, whereas delta lies in that interval.

[6]A null model (Mo) represents "the severely restricted model specifying that the variables are mutually independent (Bentler and Bonett, 1980)." Mo assumes no common factors among the observed variables. Thus all factor loadings are set to zero. This can be described as $\Sigma = \Phi$, with Φ being a diagonal matrix. In LISREL, the null model is obtained by setting LX=DI,FI (at $\alpha^{1/2}$), TD=DI, FI (at 1-α), PH=DI, FR, with known variance. This would give the same results as the model of LX=DI, PH=DI, FR, TD=FU, FI and that of LX=FU, FI, TD=DI, FR.

matrix and the errors of the lamdas (θ_δ) are zero.

According to Bentler and Bonett (1980), even if one has a large or small sample, values of delta greater than .9 can be considered an adequate fit. Further, the model may be a substantial statistical improvement over the null model. The nonnormed fit indices (ρ) and normed fit indices (Δ) of the hypothesized structural model indicate the degree of adequacy of two comparative constructs.

CHAPTER IV

RESULTS

Measurement Models

Reliability and Unidimensionality

In this study, as stated in Chapter III, STRESS and HEALTH (STRS83, STRS85, HLTH83, HLTH85) measures were treated as one item scales. Therefore, the dimensions of the indicators STRESS and HEALTH were not tested. The unidimensionality of the remainder of the scales, however, was tested by separate confirmatory factor analysis.[7]

Table 1 summarizes key parameter estimates, and indices of the confirmatory factor models and the scale reliability scores. With regard to reliability, all constructs showed levels of coefficient alpha well above the conventionally accepted criterion of .60. Among the measures, EWB85 had the relatively lowest reliability scores (.676). Some degree of fluctuations in the responses was implied by the results because reliability refers to consistency of measurement (Bollen, 1989). However, the remaining measures showed sufficiently large scores (above .80), indicating the

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[7]Throughout the study, the covariance matrix was used in the analyses. Descriptive statistics including correlation coefficients, means, and standard deviations are presented in Appendix A.

Table 1 Measurement Models: Key Parameter Estimates, t-values, Model Fits, and Scale Reliability

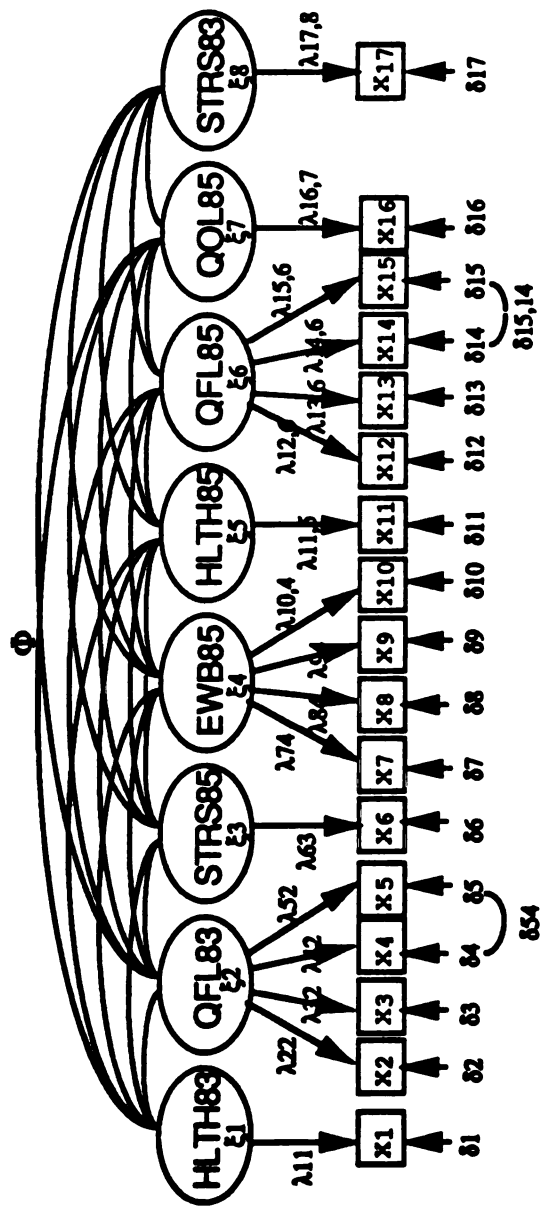
Construct/ Items[a]	ML Estimates	t-values	Fit Indices	Scale Relibility
QFL83/			$\chi^2(3) = 443.48$	
SFL83	1.179[b]	—	p = .000	.869
SSP83	1.167	40.742	GFI = .871	
SCH83	.923	39.187	AGFI = .571	
SCE83	.858	30.020	RMSR=.129	
QFL85/			$\chi^2(3) = 331.58$	
SFL85	.952[b]	—	p = .000	.821
SSP85	.923	36.361	GFI = .905	
SCH85	.584	27.538	AGFI = .683	
SCE85	.507	20.543	RMSR = .088	
EWB85			$\chi^2(3) = 177.51$	
PCI84	.560	14.935	p = .000	
CFI85	.535	25.104	GFI = .944	.694
IAD85	.488	23.663	AGFI = .812	
CFS85	.688[b]	—	RMSR = .078	
QOL85				
QOL1	.856	35.262	$\chi^2(27) = 400.65$	
QOL2	.885	40.919	p = .000	.943
QOL3	.852	38.697	GFI = .942	
QOL4	.606	28.414	AGFI = .903	
QOL5	.920	41.001	RMSR = .028	
QOL6	.977	40.931		
QOL7	1.028	43.486		
QOL8	.816	37.828		
QOL9	.746	32.000		

a: Formative Scales (HLTH83, HLTH85, STRS83, and STRS85) were not tested.
b: Constrained parameters to 1.0.

measures of the respective constructs are internally consistent. The results of confirmatory analysis showed that all loading parameters were large and loaded significantly on the latent variables which they were intended to represent, with small standard errors and significant t-values. The results provided evidence of unidimensionality and convergent validity. Thus, for example, the four indicators of QFL83 (SFL83, SSP83, SCH83, and SCE83) were all acceptable for quality of family life measure.

The fit indices of Table 1 indicate that none of the confirmatory factor models were accepted by the χ^2 tests. However, when goodness-of-fit (GFI) indices and root mean squares of residuals (RMSR) were examined, the lack of significance in χ^2 did not appear to be a serious problem except for QFL measures (QFL83: χ^2 = 443.3, d.f.= 3, p =.000, GFI = .871, AGFI = .571, RMSR = .12; QFL85: χ^2 = 331.6, d.f.= 3, p = .000, GFI = .905, AGFI = .683, RMSR = .088).

To improve the model fit, the researcher inspected the modification indices. As a result, it was decided to free out the parameters between SCH83 and SCE83, and between SCH85 and SCE85. This was done because of the possible existence of correlated errors of the measures between SCH (Degree of satisfaction with your relationship with your children) and SCE (Degree of satisfaction with the



$\chi^2 = 887.1$
df = 102
GFI = .933
AGFI = .900
RMSR = .143

Figure 5 Measurement Model (I)

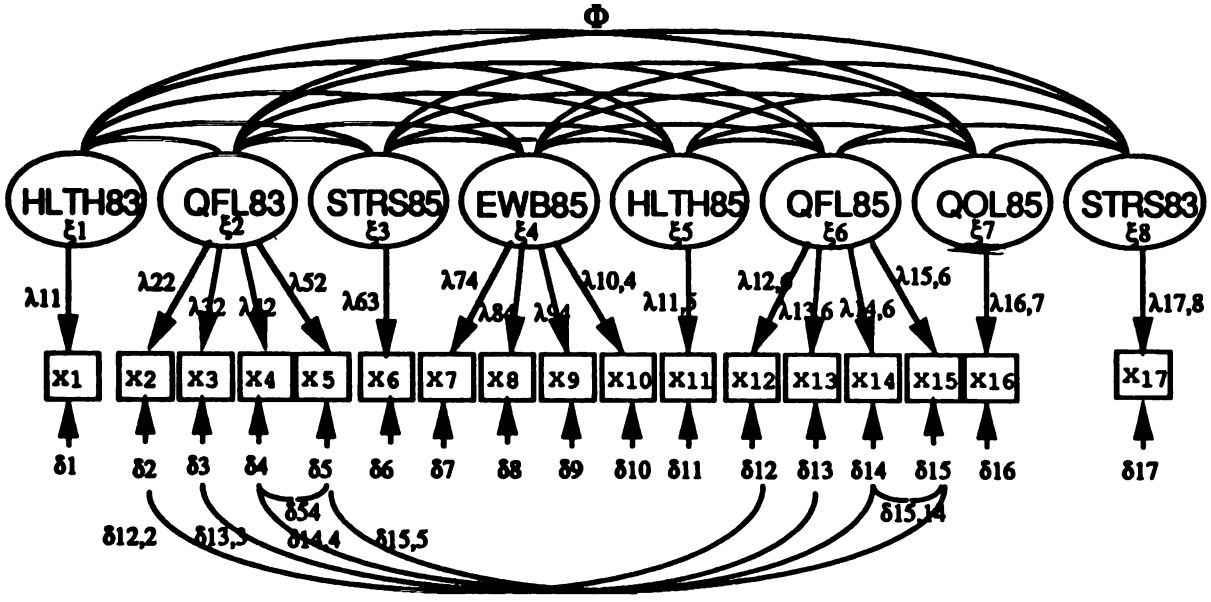
relationship your children have with each other) for 1983 and 1985 data. In other words, the two indicators might be conceptually related. Therefore, assuming uncorrelated error variances among the indicators (SCH83 and SCE83, SCH85 and SCE85), the Goodness of Fit Index indicated the models poorly fit the data. Examination of the measurement models, after allowing for correlated errors, provided better fit for QFL83 and QFL85 (Table 2). For example, χ^2 for QFL83 decreased from 443.3 (d.f.= 3) to 23.05 (d.f.= 2), and GFI improved from .871 to .993, in Table 2.

The test of the overall measurement model was conducted using confirmatory factor analysis. The results appear in Figure 5. Although GFI seems reasonably adequate along with RMSR, the χ^2 seemed to be large (χ^2_{102} = 887.1, GFI = .933, AGFI = .900, RMSR = .143). Acknowledging the characteristics of the longitudinal data set, further, auto-correlations among error variances between the measures QFL83 and QFL85 were allowed (Figure 6). After allowing for auto-correlation between the indicators, the model showed considerable improvement. The results of the overall model fit with the modification is indicated in Figure 6. The results of the overall model fit showed improvement in terms of χ^2, GFI, AGFI, and RMSR (χ^2_{98} = 486.3, GFI = .962, AGFI = .940, RMSR = .141). The χ^2 difference test results led to the conclusion that the Measurement Model II in Figure 6 was more adequate than Model I ($d\chi^2(4) = 400.8$, $p < .001$).

Table 2 Measurement Models After Modification: Key Parameter Estimates, t-values, Model Fits, and Scale Reliability

Construct/ Items[a]	ML Estimates	t-values	Fit Indices	Scale Relibility
QFL83/			$\chi^2(2) = 23.05$	
SFL83	1.158[b]	—	p = .000	.869
SSP83	1.075	34.012	GFI = .993	
SCH83	.815	31.126	AGFI = .963	
SCE83	.742	24.387	RMSR = .116	
QFL85/			$\chi^2(2) = 28.08$	
SFL85	.934[b]	—	p = .000	.821
SSP85	.875	31.559	GFI = .991	
SCH85	.538	24.024	AGFI = .956	
SCE85	.459	18.114	RMSR = .049	
EWB85			$\chi^2(3) = 177.51$	
PCI84	.560	14.935	p = .000	
CFI85	.535	25.104	GFI = .944	.694
IAD85	.488	23.663	AGFI = .812	
CFS85	.688[b]	—	RMSR = .078	
QOL85				
QOL1	.856	35.262	$\chi^2(27) = 400.65$	
QOL2	.885	40.919	p = .000	.943
QOL3	.852	38.697	GFI = .942	
QOL4	.606	28.414	AGFI = .903	
QOL5	.920	41.001	RMSR = .028	
QOL6	.977	40.931		
QOL7	1.028	43.486		
QOL8	.816	37.828		
QOL9	.746	32.000		

a: Formative Scales (HLTH83, HLTH85, STRS83, and STRS85) were not tested.
b: Constrained parameters to 1.0.



$\chi 2 = 486.3$
df = 98
GFI = .962
AGFI = .940
RMSR = .141

Figure 6 Measurement Model (II)

Discriminant Validity

In this study, discriminant validity was tested by examining each pair of constructs individually. Given the model, discriminant validity then was examined for each pair of the latent constructs by constraining the relevant correlation to 1 (or any arbitrary relatively high number i.e., 0.8) and estimating this new model.[8] Discriminant validity was tested by pairwise comparison of the χ^2 difference between freed ϕ and constrained ϕ. The correlation matrix of the latent variables is shown in Table 3.

The results of the χ^2 tests using confirmatory factor analysis are shown in Table 4. An example of the procedure, for testing discriminant validity between ξ_6 and ξ_7 (QFL85 and QOL85), one of the most stringent one in the pairs, as follows. The new χ^2 score after constraining ϕ_{76} to 1.0 was presented in Table 4 (1766.4). The difference in χ^2 was obtained by subtracting the original χ^2 value (498.14, presented in Table 3) from new χ^2 (1766.4). As a result, the difference in χ^2 yielded $d\chi^2(1) = 1268.3$ ($p < .005$); and Ho: $\phi = 1.0$ was rejected. Thus it was concluded that the two measures, QFL85 and QOL85, are uniquely developed, measuring different concepts. Further tests of χ^2 difference for discriminability indicated that all of the

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[8]In testing discriminant validity, the correlation matrix was used.

Table 3 Correlations among Constructs (Φ matrix)

	$\xi 1$	$\xi 2$	$\xi 3$	$\xi 4$	$\xi 5$	$\xi 6$	$\xi 7$	$\xi 8$
$\xi 1$	1.000							
$\xi 2$	-.003	1.000						
$\xi 3$	.014	-.118	1.000					
$\xi 4$	.053	.033	-.067	1.000				
$\xi 5$	.259	.017	.007	.053	1.000			
$\xi 6$	-.021	.436	-.127	.070	.051	1.000		
$\xi 7$	.027	.272	-.091	.252	.103	.680	1.000	
$\xi 8$	-.051	-.275	.137	-.052	-.049	-.106	-.057	1.000

$\chi^2 = 498.13$
d.f. = 98
p = .000
GFI = .961
AGFI = .939
RMSR = .046

Table 4 Test of Discriminant Validity

	ξ1	ξ2	ξ3	ξ4	ξ5	ξ6	ξ7	ξ8
ξ1	---							
ξ2	498.1[b]	---						
ξ3	6299.5[a]	3738.7[a]	---					
ξ4	2660.6[a]	499.1[c]	2641.2[a]	---				
ξ5	4457.6[a]	498.5[c]	6363.6[a]	2675.9[a]	---			
ξ6	498.7[b]	500.5[e]	1775.7[d]	1614.9[d]	501.1[b]	---		
ξ7	498.8[b]	2786.9[c]	3881.8[c]	1363.0[d]	2196.5[d]	1766.4[a]	---	
ξ8	6021.9[a]	3351.7[a]	5325.9[a]	2661.7[a]	6030.7[a]	1791.6[d]	1040.65[a]	---

a: Φ's were fixed at ±1.0.
b: Φ's were fixed at 0.
c: Φ's were fixed at ±0.9.
d: Φ's were fixed at ±0.8.
e: Φ's were fixed at ±0.5.

measures in the present study were different from each other, and it was concluded that an adequate level of discriminant validity among the constructs was achieved in the measurement model.

From the overall evidence on internal consistency, factor structure, and reliability, with modification of the original measurement model, the researcher concluded that adequate levels of the measurements were achieved. Thus all the constructs were utilized in the model to be tested.

Testing the Structural Model

Figure 7 presents a revised model of the original structural equation model (Figure 3) adjusted for the results of measure validations. In the revised model, correlations and autocorrelations of the error terms were allowed due to the characteristics of the longitudinal data set. The results of LISREL analysis on the revised model are presented in Table 5.

Model Fits

The results were examined for anomalies as described in Chapter III, and none were found. Table 5 contains the global measures of fit of the structural model as well as the parameter estimates. The overall effect model of the ML and GLS methods failed to meet the χ^2 test (ML: $\chi^2_{102} = 482.1$, p=.000; GLS: $\chi^2_{102} = 389.8$, p = .000). Thus, the hypothesized

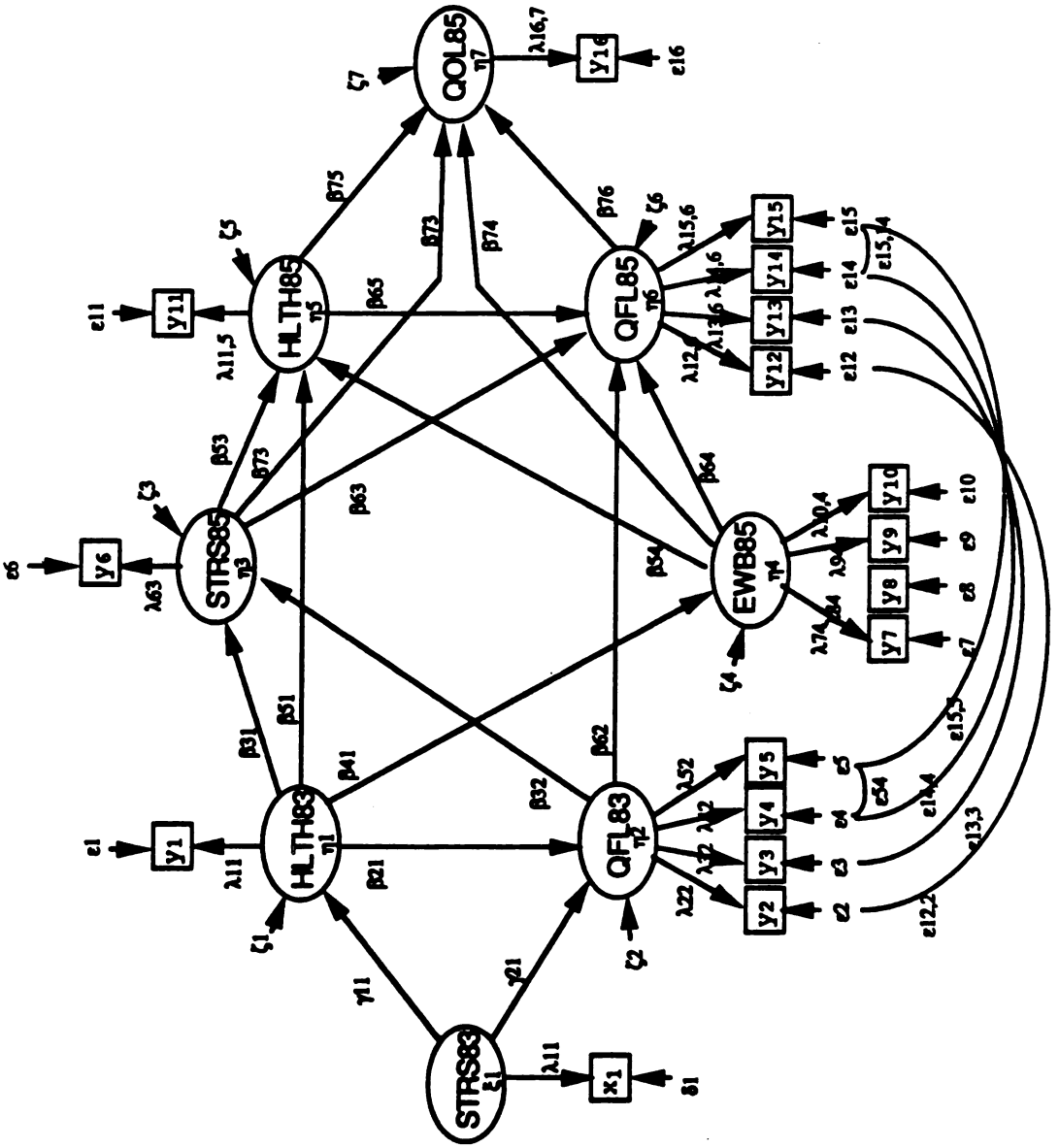

Figure 7 Structural Model (with Modification)

model was rejected by the χ^2 test, and the model failed to fit in an absolute sense. However, careful inspection was made because, as discussed in Chapter III, a valid model might be falsely rejected due to the presence of a large sample size, a characteristic of this study.

All of the values of GFI (.962 for ML; .970 for GLS) and AGFI (.943 for ML; .954 for GLS) are greater than .9. A general rule-of-thumb is to accept the hypothesized model if the AGFI index is greater than .9. Recall that Bagozzi and Yi (1988) suggested that values of AGFI equal to or greater than about .9 suggest that the model is meaningful from a pragmatic point of view.

Bentler and Bonett's incremental fit indices are shown in Table 5. The null model is the severely restricted model hypothesizing complete independence among indicators. Fitting the null model gives χ^2_{136} = 9919.5 (ML), 2742.4 (GLS); p = .000; GFI = .491(ML), .786(GLS); AGFI = .427 (ML), .759 (GLS); RMSR = 5.129 (ML), 6.449 (GLS).

According to Bentler and Bonett (1980), the nonnormed fit indices (ρ) and normed fit indices (Δ) of the hypothesized structural model indicated the degree of adequacy of this model compared to the null model. Whether one has a large or small sample, values of delta greater than .9 can be considered an adequate fit. The results of the present study (Δ = .951 (ML); ρ = .935 (ML)) indicated that the model was a substantial improvement over the null

Table 5 Structural Model: Parameter Estimates, t-values, and Model Fits

Parameters	ML estimates	t-values	GLS estimates	t-values	OLS estimates	t-values
γ_{11}	-.052	-1.712	-.054	-1.808	-.353	-1.658
γ_{21}	-.356	-10.763	-.351	-10.742	-.548	-9.439
β_{21}	-.023	-.680	-.021	-.641	-.008	-1.199
β_{31}	.013	.441	.014	.474	.001	.686
β_{41}	.036	1.702	.036	1.761	.002	1.129
β_{51}	.257	8.663	.263	8.791	.259	8.767
β_{32}	-.103	-4.583	-.104	-4.496	-.011	-3.929
β_{42}	.340	16.965	.335	16.212	.322	18.587
β_{53}	.005	.160	.011	.373	.130	.138
β_{63}	-.072	-2.852	-.075	-2.886	-.254	-1.629
β_{73}	.002	.086	-.016	-.712	-.118	-1.701
β_{54}	.057	1.268	.074	1.579	.441	.819
β_{64}	.064	1.684	.079	2.015	-.001	-.015
β_{74}	.291	8.680	.325	9.331	.383	9.757
β_{65}	.039	1.564	.040	1.585	.007	1.642
β_{75}	.057	2.676	.056	2.637	.006	3.026
β_{76}	.706	29.231	.696	28.073	.318	30.665
λ_{y11}	14.413[a]	—	14.414[a]	—		
λ_{y22}	1.000[b]	—	1.000[b]	—		
λ_{y32}	.934	38.601	.948	38.029		
λ_{y42}	.704	34.345	.705	34.048		
λ_{y52}	.632	26.890	.626	26.255		
λ_{y63}	.450[a]	—	.450[a]	—		
λ_{y74}	.865	14.630	.952	15.338		
λ_{y84}	.790	21.250	.801	22.030		
λ_{y94}	.748	20.985	.817	21.866		

Table 5 (cont'd)

Parameters	ML estimates	t-values	GLS estimates	t-values	OLS estimates	t-values
$\lambda_{y10,4}$	1.000[b]	—	1.000[b]	—		
$\lambda_{y11,5}$	16.934[a]	—	16.934[a]	—		
$\lambda_{y12,6}$	1.000[b]	—	1.000[b]	—		
$\lambda_{y13,6}$	.967	38.296	.971	37.213		
$\lambda_{y14,6}$	.608	27.883	.612	27.246		
$\lambda_{y15,6}$	.496	19.660	.496	19.401		
$\lambda_{y16,7}$	1.664[a]	—	1.664[a]	—		
λ_{x11}	1.745[a]	—	1.745[a]	—		
ψ_{11}	.997	23.314	.984	23.121		
ψ_{22}	1.388	24.191	1.337	23.602		
ψ_{33}	.981	23.240	.937	22.629		
ψ_{44}	.455	16.418	.425	16.186		
ψ_{55}	.931	22.831	.910	22.509		
ψ_{66}	.705	21.678	.683	21.248		
ψ_{77}	.489	22.353	.453	21.737		
$\Theta_{\epsilon 11}$	36.658[a]	—	36.658[a]	—		
$\Theta_{\epsilon 22}$	.006	.237	.025	1.086		
$\Theta_{\epsilon 33}$	.864	22.717	.800	21.053		
$\Theta_{\epsilon 44}$	.672	24.937	.613	23.093		
$\Theta_{\epsilon 55}$	1.604	27.064	.976	24.935		
$\Theta_{\epsilon 66}$	.036[a]	—	.036[a]	—		
$\Theta_{\epsilon 77}$	1.541	25.929	1.277	23.603		
$\Theta_{\epsilon 88}$	.377	21.447	.339	19.110		
$\Theta_{\epsilon 99}$	.363	21.924	.272	18.196		
$\Theta_{\epsilon 10,10}$	.185	10.389	.185	11.132		
$\Theta_{\epsilon 11,11}$	50.597[a]	—	50.597[a]	—		
$\Theta_{\epsilon 12,12}$	.089	5.806	.092	5.992		

Table 5 (cont'd)

Parameters	ML estimates	t-values	GLS estimates	t-values
$\Theta_{\epsilon 13,13}$	.515	21.952	.482	20.414
$\Theta_{\epsilon 14,14}$	.500	26.060	.453	24.337
$\Theta_{\epsilon 15,15}$	.767	27.133	.674	24.906
$\Theta_{\epsilon 16,16}$	.161[a]	—	.161[a]	—
$\Theta_{\epsilon 12,2}$	-.068	-6.610	-.059	-5.702
$\Theta_{\epsilon 13,3}$	.252	12.205	.224	10.837
$\Theta_{\epsilon 14,4}$	.107	8.303	.096	7.709
$\Theta_{\epsilon 15,5}$	.203	10.153	.176	9.113
$\Theta_{\epsilon 54}$	.406	15.794	.354	14.061
$\Theta_{\epsilon 15,14}$	.242	13.800	.199	12.038
$\Theta_{\delta 11}$	.538[a]	—	.538[a]	—
χ^2	482.1		389.8	
d.f.	102		102	
p	.000		.000	
GFI	.962		.970	
AGFI	.943		.954	
RMSR	.188		.517	
Δ	.951		.858	
ρ	.948		.853	

a: λ's and θ's were fixed at $\alpha^{1/2}\ \sigma$ and $(1-\alpha)\sigma^2$, respectively.
b: Constrained parameters to 1.0.

model, and it was concluded the model is adequate in terms of the relative fit. Therefore, despite the rejection of the model based on the χ^2 test, Bentler and Bonett's normed fit index indicated that the model accounted for a significant proportion of information, from a pragmatic point of view. Further, any achievement in increasing the fit would be trivial. Overall, the global measures of fit indicated the hypothesized model had overall adequacy and satisfactory fit.

Hypotheses Test

A large number of hypotheses based on theoretical grounds and previous empirical findings were developed in Chapter III. The structural model in Figure 3 incorporates these hypotheses. The following section will discuss the test of these hypotheses. Table 5 reports the key parameter values obtained for testing hypotheses by estimating the revised model of Figure 7 after the validation of measurement. The discussion will be based mainly on the ML results, supplemented by GLS and OLS results.

Hypothesis 1a: Stress (STRS83) has a negative, direct impact on perceived health (HLTH83).

Hypothesis 1b: Stress (STRS85) has a negative, direct effect on perceived health (HLTH85).

The hypotheses predicted stress to have a negative direct effect on health. For the 1983 data, the

hypothesized effect of stress on perceived health was supported (γ_{11} = .52, t = -1.72, p < .10). However, hypothesis 1b was rejected (β_{53} = .005, t = .160). The results indicated that the impact of stress on perceived health was marginally significant in 1983.

Hypothesis 2: Perceived health (HLTH83) has a negative, direct effect on stress (STRS85).

The results indicated the effect of perceived health on stress at a later time was insignificant (β_{31} = .013, t = .441). Thus, the hypothesis was rejected.

Hypothesis 3: Perceived health of past years (HLTH83) has a positive, direct effect on present perceived health (HLTH85).

The hypothesis was supported (β_{51} = .260, t = 8.66, p < .001). The results were consistent for all three estimation methods: ML, GLS, and OLS. The results indicated that middle aged individuals with poor perceived health in 1983 also perceived their health to be poor in 1985.

Hypothesis 4: Perceived health (HLTH83) has a positive, direct effect on economic well-being (EWB85).

The posited effect was marginally significant (β_{41} =.036, t = 1.702, p < .10). Thus perceiving health to be good in 1983 contributed to a higher level of economic well-being in 1985.

Hypothesis 5: Economic well-being (EWB85) has a positive, direct effect on perceived health (HLTH85).

Hypothesis 5 examined the effect of economic well-being on perceived health. It was not supported. The coefficient for the hypothesis was insignificant (β_{54} = .057, t = 1.268). The results were consistent for all three methods.

Hypothesis 6a: Stress (STRS83) has a negative, direct impact on quality of family life (QFL83).

Hypothesis 6b: Stress (STRS85) has a negative, direct impact on quality of family life (QFL85).

The hypothesized effect of stress on quality of family life (QFL) was significant (γ_{21} = -.356, t = - 10.763, p < .001, β_{63} = -.072, t = -2.852, p < .01). The results indicated that stress in 1983 had a negative impact on QFL in 1983. The results were similar for 1985. Consistent results were observed by all three different estimation methods. The finding supported the conclusion that among middle aged individuals, quality of family life at any one time was affected by the stress from recent events.

Hypothesis 7: Quality of family life (QFL83) has a negative, direct effect on stress (STRS85).

The reverse effect of quality of family life on stress was significant (β_{32} = -.103, t = -4.583, p < .001). Thus, hypothesis 7 was supported. It was concluded that as family

life deteriorated, individuals felt more stress; likewise, as the quality of family life increased, stress levels decreased.

Hypothesis 8a: Perceived health (HLTH83) has a positive, direct effect on quality of family life (QFL83).

Hypothesis 8b: Perceived health (HLTH85) has a positive, direct effect on quality of family life (QFL85).

The posited effect of perceived health on quality of family life was rejected in both years (β_{31} = .013,t = .441, and β_{65} = .039, t = 1.564).

Hypothesis 9: Economic well-being (EWB85) has a positive, direct influence on quality of family life (QFL85).

The results indicated the hypothesis was significant (β_{64} = 0.064, t = 1.684, p < .10). Economic well-being had direct positive influence on quality of family life.

Hypothesis 10: Quality of family life of past years (QFL83) has a positive, direct effect on present quality of family life (QFL85).

The hypothesis was supported (β_{62} = .340, t = 16.965, p < .001). The results indicated that quality of family life in 1985 was influenced by the quality of life at an earlier time.

Hypothesis 11: Perceived health (HLTH85) has a positive, direct impact on quality of life (QOL85).

The results indicated that perceived health was significantly related to the individual's QOL. The coefficients for the effects of perceived health were significant at $p < .05$ level ($\beta_{75} = .057$, $t = 2.676$).

Hypothesis 12: Stress (STRS85) has a negative, direct impact on quality of life (QOL85).

The results indicated that the direct effect of stress on quality of life was insignificant ($\beta_{73} = .002$, $t = .086$). Thus hypothesis 12 was rejected.

Hypothesis 13: Economic well-being (EWB85) has a positive, direct impact on quality of life (QOL85).

The findings supported the hypothesis ($\beta_{74} = .291$, $t = 8.680$, $p < .001$). It was concluded that greater economic well-being resulted in higher levels of quality of life.

Hypothesis 14: Quality of family life (QFL85) has a positive, direct effect on quality of life (QOL85).

The effect was significant ($\beta_{76} = .706$, $t = 29.231$, $p < .001$), and thus it was concluded that quality of family life was a strong predictor of quality of life.

In sum, the results indicated that people's quality of

life was affected by their perception of health, their economic well-being, and their quality of family life. Stress did not directly influence individuals' evaluations of quality of life.

Hypothesis 15: Among middle-age individuals, the levels of influence of the independent variable (STRS83) and the intervening variables are causally related to the level of quality of life.

Hypothesis 15 examined the overall structural model. As described earlier in this chapter, although the overall model was rejected based on the χ^2 test, other indices strongly supported an adequate level of fit. Thus, it was concluded that the hypothesized model adequately represented the causal relationships among the latent constructs.

Parsimonious Model

Figure 8 contains the parsimonious model; that is, the refined model which does not contain paths that are statistically insignificant. In the present study, the parsimonious model was obtained by constraining all the insignificant paths, t-values less than $\pm$ 1.645 ($p = 0.10$), to be zero. The results of the χ^2 difference test showed that the difference between the hypothesized model (Figure 7) and the parsimonious model (Figure 8) is not significant. The statistical comparison between the hypothesized model

and the parsimonious model is given in Table 6.

Table 6 χ^2 Difference Test for Parsimonious Model

Models	χ^2	df	p	GFI	AGFI	RMSR
Overall effect model	482.1	102	.000	.962	.943	.188
Parsimonious model	486.8	108	.000	.962	.946	.245
χ^2 Difference	$d\chi^2 = 4.7$		ddf = 6		p > .05	

Based on the results of χ^2 difference test and the almost identical results of GFI, AGFI, and RMSR, it was concluded that the parsimonious model, as a whole, represented the causal relationship among the constructs as well as the hypothesized model. The parsimonious model would be more desirable because of its relative simplicity.

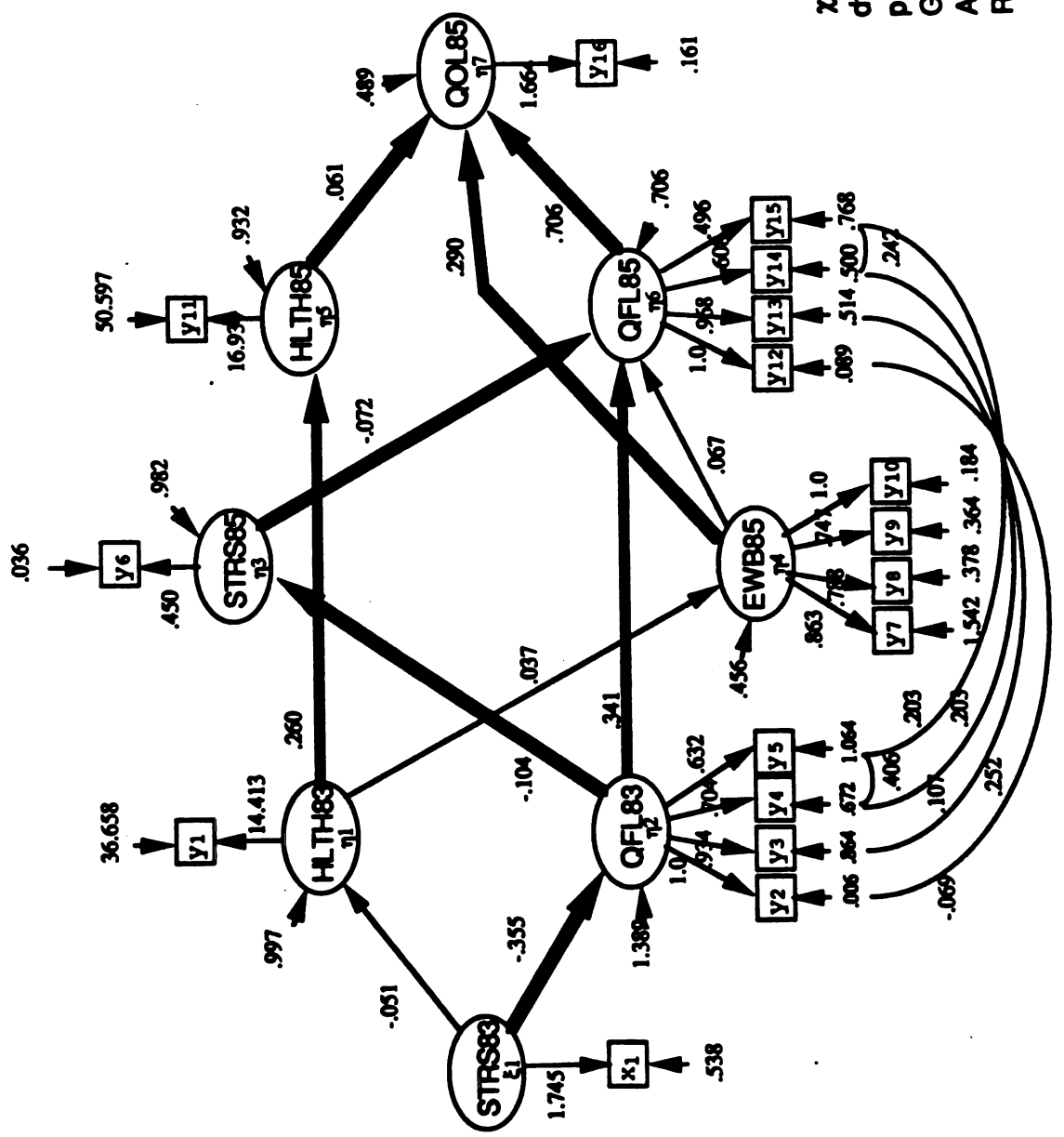

Figure 8 Parsimonious Model

Chapter V

SUMMARY, DISCUSSION, AND IMPLICATIONS

The main purpose of this research was to develop a model of quality of life and to empirically test the relationships between selected dimensions of quality of life. The dimensions of quality of life tested were quality of family life, perceived health, economic well-being, and stress. Quality of life, in this study, was based on the conceptualization of Campbell and his associates (1976). In contrast to numerous studies on quality of life and life satisfaction, not much has been known about the quality of life of middle aged people, the focus of this study.

The theoretical perspective of the present study was a family ecological approach, examining humans in their environments. The primary focus was on the effects of environmental dimensions, particularly those related to family life, on the evaluation of an individual's quality of life as an outcome of interaction between individuals and their environments.

The findings of this study were based on the data collected for the regional research project, NC-164. The data were obtained from two different periods of time, 1983 and 1985. The longitudinal data set was particularly

helpful in hypothesizing and testing the direction of causality among related concepts. It was considered especially useful for capturing the dynamic processes and the cumulative effects of causal indicators on quality of life.

Hypotheses were developed based on theoretical and empirical grounds. Prior to the testing of these hypotheses, the measures of the constructs were examined for adequacy. Internal consistency via coefficient alpha was used to test the reliability of each scale and confirmatory factor analysis was used to examine the unidimensionality of each scale. Discriminant validity was tested via a series of pairwise comparisons using confirmatory factor analysis. These tests screened the adequacy of each measure. Reliability scores of all of the measures were greater than the conventionally accepted criterion. The results of confirmatory factor analysis assured unidimensionality of the measures. An adequate level of discriminant validity was found.

Tests of hypotheses were based on the hypothesized structural model using LISREL. Hypotheses were tested via significance and direction of individual parameter estimates. Maximum likelihood estimates were compared with generalized least square estimates along with ordinary least square estimates to check the robustness of parameter estimates.

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Discussion of Major Findings

The present study investigated the effects of demands and resources of the environment on the satisfaction of family life and quality of life. It was found that individual evaluations of quality of life are influenced by past experiences. Longitudinal data made possible the findings which are useful in the explanation of cause and effect relationships. In this study time, identified as part of the natural environment, is an important component in predicting quality of life.

The effect of quality of family life on quality of life was strongly supported. It was the strongest predictor of quality of life of the middle aged individuals. This research confirms many other studies about quality of life which have found that satisfaction with family life is one of the highest predictors of overall quality of life (Andrews & Withey, 1976; Campbell, 1981; Campbell et al., 1976; Bubolz et al., 1980; Sontag et al., 1979; Walker et al., 1990).

Another important dimension in predicting quality of life was economic well-being. Measured by objective and subjective components, it had a significant impact on quality of life. The finding confirmed other research (Akerman & Paolucci, 1983).

Of special interest was the effect of economic well-being on the quality of family life. It was found to be

rather weak. This weak effect may be due to the characteristics of the sample population. The middle years of life are characterized as a time when children are becoming independent and launched, and economic resources are relatively high due to less demand compared to the other stages of the life cycle.

Perceived health was a dimension which had a significant impact on quality of life. This is consistent with previous research (Campbell, 1981; Campbell et al., 1976; Edwards & Klemmack, 1973; Near et al., 1978). Because personal health problems may increase as people get older, health concerns may be especially salient to those in their middle years of life. Stress had a marginally negative effect on their perceived health. Therefore, it can be concluded that stress had a negative indirect effect on quality of life through perceived health among the middle aged.

Perceived health, measured by health symptoms, had an indirect effect on quality of life through economic well-being. The results are consistent with previous findings (Kratzer, C., 1991). The effect of perceived health on economic well-being may be attributed to the interference of health problems with the ability to work and, thus, to have financial needs met. This finding supports the family resource management model, which identified health as one kind of family resource. In this study, having more

resources in terms of good health would bring more economic or financial satisfaction, and result in a higher quality of family and quality of life.

A direct effect of stress on quality of life was not found. However stress had a direct, negative impact on quality of family life. Higher stress levels reduced the quality of family life. Based on family ecological theory, reciprocal interactions between stress and quality of family life were hypothesized and examined. For example, the effect of stress on quality of family life was hypothesized to be negative, and this effect would further negatively affect stress. The results of this study support the interactive causations of stress and quality of family life. That is, stress (STRS83) negatively affected quality of family life (QFL83) which, in turn, affected degree of stress at a later time (STRS85). As quality of family life in 1983 decreased, stress levels rose in 1985.

Although previous research found that stressed people were more likely to have illness, depression, anxiety, low self-confidence (Caplan et al., 1980; Kahn et al., 1964; Rabkin & Streunig, 1976), the present study did not support the previous findings. One possible explanation might be related to the measure of the latent construct, perceived health. In the present study, perceived health was operationalized by asking twelve items of general difficulties which can be an indicator of illness. The

respondents answered with the frequencies of the symptoms, most of which were physical rather than psychological, and quite different from those used in the other studies. The results of the present study seem inconsistent with the previous findings.

This study has demonstrated the usefulness of using a family ecological model along with a family resource management model to study quality of life. From an ecological perspective, the evaluation of quality of life can be assessed as an outcome of functioning of the family ecosystem over time, based on satisfaction with various dimensions of the environment.

It is evident that family life affects quality of life. Economic well-being measured in objective as well as subjective terms is another important predictor variable. Perceived health, a measure of human resources, affected people's evaluation of quality of life. Stress, being an outcome, or product of interactions between the organism (individual) and the environment (family, other family members, or work), indirectly influenced quality of life. The effect was mediated through quality of family life. This result supported other research which hypothesized that stress declines with age (Herzog & Rodgers, 1986). It has been argued that stress may be created by "daily hassles" that people experience when carrying out routine transactions with the environment (Kanner, Coyne, Schafer, &

Lazarus, 1981). For individuals in their middle years, these daily hassles decline relative to those in earlier stage in life cycle, as they become released from many of the family roles and constraints that make life difficult. Thus, the effect of stress on quality of life may not be as great for those people in middle years compared to their younger years.

From the family resource management model, perception of quality of life can be considered as an assessment of the extent to which demands are met with available resources through processes of planning and implementing. This study focused on the effect of inputs (demands, goals, and resources) on quality of life as an output. The findings of this study examined four major dimensions, representing demands and resources, which affect quality of life. These are stress, health, economic well-being, and quality of family life.

Relationships with one's spouse and children and other members outside the nuclear family can be a source of stress, as well as an important resource which can play an important role in evaluating quality of family life. Stress related to economic environment, including work environment, and time demands in family life were included in the stress variable. Perceived health, as an indicator of level of health, was an important contributor to quality of life. Good health enables one to attain and manage resources

whereas poor health imposes additional demands upon resources. Economic well-being represents the assessment of overall availability of economic resources for meeting needs and achieving goals.

In doing a secondary analysis, the present researcher acknowledged that this study has mainly two limitations. The first limitation related to the sample of the original data set. The original study, Regional project NC-164, drew its sample from the population of middle years individuals. Particularly, the data were collected from husbands and wives between 35-65 years of age with at least one child, using a probability sampling method. The original sample was gathered with more emphasis on rural populations. Thus, the findings of the present study can only be generalized to those individuals in their middle years of life cycle.

The second limitation relates to the issue of measurement. The perceived health variable was operationalized by creating a scale from questions related to frequency of various symptoms or difficulties. These questions hardly captured the objective and subjective levels of health which the present researcher conceptualized.

Implications

Implications for Future Research

Efforts to improve quality of life must focus on ways to enhance quality of family life, with particular attention to the dimensions which have been identified as making significant contributions to quality of life. Endeavors to improve quality of life must consider the family as an ecosystem in which inputs of demands and resources from the environment impact on the family and in which family actions and conditions feedback to the environment.

The results of the present study have implications for future research in this area. Continuous work with quality of life in identifying influential factors is imperative. There might be other dimensions which may influence individuals' evaluation of quality of life. A holistic approach developing a predictable model for quality of life to include such dimensions as community environment, housing, work satisfaction, and leisure, is strongly recommended. It is also strongly recommended that research efforts include time dimension via longitudinal data sets.

Examination of the usefulness of the model of the present study with other populations is desirable. There might be some differences in structural relationships in other subgroups. For instance, quality of life of those in their early stages of life cycle might be determined by different influential dimensions. Structural differences

between men and women, or rural and urban groups might be revealed.

In today's world, where countries do not exit in isolation, cross-cultural studies of quality of life are worthwhile. People in different cultures have different value systems forming their social cultural norms. It can not be denied that compared to the United States, Korea, the home country of this researcher, has substantial, historical differences in family and social structures. Although Korea has undergone rapid social and economic changes, there may be pertinent characteristics that distinguished it from other culture. A comparative study of quality of life in Korea would provide an opportunity to investigate the universality of the model.

Implications for Family Ecological Theory

Utilizing a family ecological framework, the study was designed to determine quality of life over time in terms of cause and effect relationships. The findings from this study suggest some important implications for family ecological theory.

The results of this study indicated that one of major considerations in doing research on quality of life from an ecological perspective is the inclusion of the time dimension. This study found that what happened in the past had a causal influence on well-being at a later time. For

instance, the research points out that stress from total environments at one point in time had influences on quality of family life, which, in turn, affected stress in the later year. Since humans and families exist in and over time, and across periods of time through generations (Morgan, 1985), and are dynamic and ever changing, the inclusion of the time dimension will provide an opportunity to explore the family's movement and change through time. Thus, for the sake of family ecological theory development it is important to more clearly enunciate the time dimension. This study illustrated that there are both change and stability in the family ecosystem.

Another consideration for the researcher oriented with ecological theory is to conceptualize quality of life as an outcome of the family system and multiple indicators, recognizing that quality of life encompasses several interrelated dimensions. It was originally assumed, in the research of quality of life by Campbell and his associates (1976), that people's experiences and behavior derive from interactions with their environment. The environments were classified as various domains such as family, job, health, and so forth. The findings of this study confirm the dependence of quality of life on such domains of interest as family life and health. Inclusion of more domains or environments in an attempt for a holistic approach is strongly recommended for ecological theory development.

Finally, qualitative research is profitable in addition to quantitative research in terms of ecological theory development. Qualitative research, such as indepth interviews, may have theoretical value in investigating the standards individuals use to evaluate quality of life and the relative importance of various dimensions as well as the evaluation process. Both types of research are necessary to inform policy makers about the dimensions and conditions of the ecosystem which are most valued.

Implications for Practice

According to Hunter and Sundel (1989), the major gap in practitioner knowledge about the middle years has been the lack of research. The availability of empirically validated knowledge of middle years could be useful to help professionals concerned with middle age adulthood. Therefore, the results of this present study have important implications for practitioners who seek to help people improve their sense of well-being. The findings of the present research showed what were the strong predictors of quality of life.

Among them satisfaction with family life was the strongest predictor for quality of life. Professionals can help middle aged individuals to have a higher level of quality of family life. They could help couples to communicate and spend time together around issues of

importance to each individual to bring higher marital satisfaction. The middle years of the life cycle are often characterized by role overload, due to dual role expectations from children and aging parents. Professionals and counselors might help families in their middle years to get aid from support systems, such as relatives, friends, neighbors, and public or private social services (Hunter & Sundel, 1989).

Stress was shown as an important predictor of quality of life. Although the effect was not direct, it had a strong influence through quality of family life. Counselors and therapists can help midlife individuals to implement stress reduction techniques. Professionals can also help middle aged people evaluate their resources to cope with the stresses. The identified individual and environmental resources could be used to reduce the amount of stress, and result in increased family life satisfaction and a higher quality of life.

In this study, economic well-being which was measured in objective and subjective terms, was another predictor of one's evaluation of quality of life. In previous studies, objective income alone explained only a small amount of variance in quality of life (Inglehart & Rabier, 1986). However, this study provided a more complete idea of how families evaluate their level of economic well-being. It was found that economic well-being was based on not only the

objective measure of per capita income, but also on its adequacy in relation to family needs and goals. Additionally, changes in the family financial situation over time played an important role in determining economic well-being. Educational programs designed to teach family resource management skills, and efficient use of resources are recommended.

APPENDICES

APPENDIX A

Table 7 Correlation Coefficients, Means, and Standard Deviations

	HLTH83	SFL83	SSP83	SCH83	SCE83	STRS85	PCI84	MEAN	S.D.
HLTH83	1.000							30.201	15.647
SFL83	-.004	1.000						5.435	1.232
SSP83	-.009	.773	1.000					5.569	1.478
SCH83	-.037	.724	.542	1.000				5.568	1.196
SCE83	-.025	.602	.422	.721	1.000			5.253	1.312
STRS85	.012	-.114	-.089	-.072	-.068	1.000		2.796	.488
PCI84	.029	.084	.055	.082	.104	-.016	1.000	2.567	1.372
CFI85	.020	-.029	-.058	-.009	-.039	-.038	.203	3.151	.814
IAD85	.028	.070	.039	.051	.064	-.057	.456	3.067	.787
CFS85	.045	.022	-.016	.031	.007	-.049	.313	2.928	.801
HLTH85	.220	.012	.039	.009	-.008	.006	.011	22.141	18.366
SFL85	-.018	.375	.372	.310	.287	-.124	.045	5.591	.998
SSP83	-.029	.305	.446	.236	.204	-.192	.055	5.656	1.176
SCH85	-.029	.286	.214	.364	.277	-.011	.032	5.717	.917
SCE85	-.033	.239	.166	.283	.394	-.036	.046	5.460	1.007
QOL85	.022	.286	.251	.227	.202	-.088	.156	11.449	1.711
STRS85	-.043	-.267	-.237	-.163	-.140	.120	-.035	2.527	1.893

Table 7 (cont'd)

	CFI85	IAD85	CFS85	HLTH85	SFL85	SSP85	SCH85	SCE85	QOL85	STRS83
CFI85	1.000									
IAD85	.352	1.000								
CFS85	.596	.527	1.000							
HLTH85	.059	.043	.026	1.000						
SFL85	-.019	.083	.050	.052	1.000					
SSP85	-.021	.088	.058	.030	.759	1.000				
SCH85	-.033	.027	.021	.023	.598	.466	1.000			
SCE85	-.062	.039	-.030	.038	.470	.307	.596	1.000		
QOL85	.093	.253	.178	.091	.632	.538	.470	.342	1.000	
STRS83	-.014	-.069	-.032	-.042	.120	-.102	-.064	-.089	-.064	1.000

APPENDIX B

QUESTIONNAIRE (1983)

We would like to have some background information about your family to help us in our study. Please fill in the following information about each member of your household, identifying each person by their relationship to you.

First, think about yourself.

Q1 Sex: M F (circle one) Mo. & Yr. of Birth_____ Yrs. of School Completed_____
Marital Status_____ If Married, Mo. & Yr.of Marriage____

Next, think about each of your children, starting with the oldest child. We will be asking questions about each of your children later in this questionnaire. Please make sure your answers are from oldest to youngest in each instance.

Q2	Sex	Birth Date Mo. Yr.	Yrs. of School Completed	Living at Home Yes or No	(If NO) Reason for Leaving	Date Left Mo. Yr.	% of Support You Provide
a. Child 1	M F						
b. Child 2	M F						
c. Child 3	M F						
d. Child 4	M F						
e. Child 5	M F						
f. Child 6	M F						

(add on if necessary)

Finally, think about each other member of your household.

Q3	Relationship to You	Sex M or F	Birth Date Mo. Yr.	Yrs. of School Completed	Marital Status	% of Support You Provide
a.						
b.						
c.						

Religious Preference:

Q4 ____Catholic ____Protestant ____Jewish ____Other (please specify)

Q5 Which of the following best describes your racial or ethnic identification?

_____Black
_____Chicano (Mexican-American)
_____Native American (American Indian)
_____White (Caucasian)
_____Oriental
_____Other (please specify)
_____

Q6 How many years have you lived in your present community? _____

Q7a. What is the size of the community in which you live? (circle one)

1. Less than 2,500 persons and outside an urbanized area
2. More than 2,500 persons but less than 50,000 persons
3. 50,000 or more persons

b. (If you live in a community of less than 2,500 persons) Is your home on less than 1 acre of land or on a city or suburban lot?

1. Yes (skip to Q8)
2. No

c. (If no) Do you live on a farm?

1. Yes
2. No (skip to Q8)

d. (If you live on a farm of more than 1 acre) Did your farm produce $1,000.00 or more in sales of crops, livestock, or other farm products during the preceding year?

1. Yes
2. No

Please read each of the events listed below and mark whether it was experienced by any family member in the last three years. If yes, please circle the number showing how disturbing it was and indicate whether it occurred in the last twelve months.

Q8 FAMILY LIFE EVENTS A. Internal to the Family	Has This Event Happened to Your Family In The Last Three Years?	How Disturbing Was This Event? NOT	SLIGHTLY	MODERATELY	QUITE	EXTREMELY	Did It Occur In The Last 12 Months?
a. Death of a member	Yes No	1	2	3	4	5	Yes No
b. Marriage of a member	Yes No	1	2	3	4	5	Yes No

	Has This Event Happened To Your Family In The Last Three Years?		How Disturbing Was This Event? NOT	SLIGHTLY	MODERATELY	QUITE	EXTREMELY	Did It Occur In The Last 12 Months?	
c. Member moves out of home (for independence, for added schooling, for job, for marriage)	Yes	No	1	2	3	4	5	Yes	No
d. Member moves back (unemployed, divorced, or separated, etc.)	Yes	No	1	2	3	4	5	Yes	No
e. Non-member (renters, boarders, etc.) moved into home	Yes	No	1	2	3	4	5	Yes	No
f. Marital separation occurs	Yes	No	1	2	3	4	5	Yes	No
g. Periodic absence of family member due to work demands	Yes	No	1	2	3	4	5	Yes	No
h. Family pet dies	Yes	No	1	2	3	4	5	Yes	No
i. Pregnancy of unmarried member	Yes	No	1	2	3	4	5	Yes	No
j. Member demanding of new privileges, exemptions from family rules, choice of friends, dates, etc.	Yes	No	1	2	3	4	5	Yes	No
k. Adult child has trouble achieving independence	Yes	No	1	2	3	4	5	Yes	No
l. Household chores pile up	Yes	No	1	2	3	4	5	Yes	No
m. Family took a stressful vacation	Yes	No	1	2	3	4	5	Yes	No

This Question Continues On The Next Page

	Has This Event Happened To Your Family In The Last Three Years?	How Disturbing Was This Event? NOT	SLIGHTLY	MODERATELY	QUITE	EXTREMELY	Did It Occur In The Last 12 Months?
B. Family, School and Work							
n. Member drops out of school before completing training	Yes No	1	2	3	4	5	Yes No
o. Member returns to school after time away	Yes No	1	2	3	4	5	Yes No
p. Major wage earner loses or quits job	Yes No	1	2	3	4	5	Yes No
q. Major wage earner starts or returns to work	Yes No	1	2	3	4	5	Yes No
r. Member given promotion	Yes No	1	2	3	4	5	Yes No
s. Member changes to new job or shifts career	Yes No	1	2	3	4	5	Yes No
t. Major wage earner retires from work	Yes No	1	2	3	4	5	Yes No
u. Member accepts time consuming, unpaid assignment in voluntary association (scouting, church, or service agency)	Yes No	1	2	3	4	5	Yes No
v. Outside activities draw adult members away from family	Yes No	1	2	3	4	5	Yes No
w. Member's hours/ scheduling of work change	Yes No	1	2	3	4	5	Yes No

	Has This Event Happened To Your Family In The Last Three Years?		How Disturbing Was This Event? NOT	SLIGHTLY	MODERATELY	QUITE	EXTREMELY	Did It Occur In The Last 12 Months?	
x. Member has major conflict with boss and/or others at work	Yes	No	1	2	3	4	5	Yes	No
C. Family, Relatives and Close Friends									
y. Relatives/in-laws become intrusive (offer unwelcome advice, gifts)	Yes	No	1	2	3	4	5	Yes	No
z. Death of husband's or wife's parents	Yes	No	1	2	3	4	5	Yes	No
aa. Death of brother or sister	Yes	No	1	2	3	4	5	Yes	No
bb. Death of close friend and confidant	Yes	No	1	2	3	4	5	Yes	No
cc. Married children "freeze out" parents	Yes	No	1	2	3	4	5	Yes	No
dd. Member breaks up with close friend or confidant	Yes	No	1	2	3	4	5	Yes	No
ee. Relative dies (not parent or sibling)	Yes	No	1	2	3	4	5	Yes	No
D. Family and Health									
ff. Major wage earner experiences serious illness or accident	Yes	No	1	2	3	4	5	Yes	No
gg. Member experiences serious emotional problems	Yes	No	1	2	3	4	5	Yes	No

This Question Continues On The Next Page

	Has This Event Happened To Your Family In The Last Three Years?		How Disturbing Was This Event? NOT	SLIGHTLY	MODERATELY	QUITE	EXTREMELY	Did It Occur In The Last 12 Months?	
hh. Child member experiences serious illness/accident	Yes	No	1	2	3	4	5	Yes	No
ii. Aged parent(s) becomes seriously ill or disabled requiring direct care	Yes	No	1	2	3	4	5	Yes	No
jj. Member experiences menopause	Yes	No	1	2	3	4	5	Yes	No
kk. Aged parent committed to institution or placed in nursing home	Yes	No	1	2	3	4	5	Yes	No
E. Family, Household Finance and the Law									
ll. Husband's or wife's parents or siblings require financial assistance	Yes	No	1	2	3	4	5	Yes	No
mm. Cut in total family income	Yes	No	1	2	3	4	5	Yes	No
nn. Expenses exceed total family income requiring going into debt	Yes	No	1	2	3	4	5	Yes	No
oo. Family takes a major loss in stock market, bank failure, bad debts, etc.	Yes	No	1	2	3	4	5	Yes	No
pp. Family receives windfall funds (inheritance, lottery win, or other unanticipated gain)	Yes	No	1	2	3	4	5	Yes	No

	Has This Event Happened To Your Family In The Last Three Years?	How Disturbing Was This Event? NOT	SLIGHTLY	MODERATELY	QUITE	EXTREMELY	Did It Occur In The Last 12 Months?
qq. Member starts receiving public assistance in the form of food stamps, rent subsidy or AFDC	Yes No	1	2	3	4	5	Yes No
rr. Member takes out or refinances a loan to cover increased expenses	Yes No	1	2	3	4	5	Yes No
ss. Family member involved with courts; robbed or assaulted, arrested for crime or minor misdemeanor, jailed, or involved in lawsuit	Yes No	1	2	3	4	5	Yes No
tt. Family forced to dip heavily into family savings	Yes No	1	2	3	4	5	Yes No
uu. Member taking on additional jobs	Yes No	1	2	3	4	5	Yes No
vv. Member experiencing demotion, job bumping, or retooling	Yes No	1	2	3	4	5	Yes No
F. Other Events Not Covered							
ww. _____	Yes No	1	2	3	4	5	Yes No
xx. _____	Yes No	1	2	3	4	5	Yes No

Please Go On To The Next Page

We're interested in the health of each member of your family. Please use the codes given below to indicate how often the following items apply to members of your family.

1 Never
2 Seldom
3 Sometimes
4 Frequently
5 Almost Always

For example, if child 1 smokes "frequently" and child 4 smokes "sometimes" and no one else in the family smokes, then you would answer:

Oldest ⟶ Youngest

	SELF	CHILD 1	CHILD 2	CHILD 3	CHILD 4	CHILD 5	CHILD 6
smoked cigarettes, cigars, or pipe.....	1	4	1	1	3	1	

Q18 How often have members of your family:

Oldest ⟶ Youngest

	SELF	CHILD 1	CHILD 2	CHILD 3	CHILD 4	CHILD 5	CHILD 6
a. had trouble sleeping.....							
b. had accidents.....							
c. been irritable.....							
d. been depressed.....							
e. smoked cigarettes, cigars, or a pipe....							
f. used prescription drugs.....							
g. had a weight problem.....							
h. used alcohol.....							
i. found it difficult to relax.....							
j. had headaches.....							
k. had muscle tension, nervous indigestion or anxiety.....							
l. had colds or flu.....							

Q25 In general, which of the following best describes any changes in your total family income over the past 3 years?

a. increased more than 25%
b. increased 5 to 25%
c. changed less than 5% (plus or minus)
d. decreased 5 to 25%
e. decreased more than 25%
f. fluctuated up and down over the 3 years.

Q26 To what extent do you think your income today is enough for you to live on?

a. can't buy some necessities
b. can meet necessities only
c. can afford some of the things we want but not all we want
d. can afford about everything we want
e. can afford about everything we want and have some left over

Q27 Thinking about your family's overall financial condition -- what you own, owe, earn, are able to buy, and so on -- which of the following best describes any change in your overall financial condition over the past 3 years?

a. much worse
b. worse
c. same (skip to Q29)
d. better
e. much better

Q28 If your financial condition has changed during the past 3 years, please describe the change(s) below.

_____

_____

For each item listed below, think about the amount of money your family spends for family members now living in your household. Over the past 3 years, how has the amount you spend changed? In general, do you feel that the amount you spend today is:

Q29		Lot Less	Less	No Change	More	Lot More
a.	Food eaten at home	1	2	3	4	5
b.	Food eaten away from home	1	2	3	4	5
c.	Clothing purchases	1	2	3	4	5
d.	Clothing repairs and alterations	1	2	3	4	5

f. Hopeful	1	2	3	4	5	6	7	Discouraging
g. Rewarding	1	2	3	4	5	6	7	Disappointing
h. Brings out the best in me	1	2	3	4	5	6	7	Doesn't give me much chance

Please circle the number which best describes how satisfied you are with your life as a whole.

Q42 Completely Dissatisfied	1	2	3	4	5	6	7	Completely Satisfied

Please circle the number which best describes how satisfied you are with your family.

Q43	Completely Dissatisfied						Completely Satisfied
a. Your family life	1	2	3	4	5	6	7
b. Your relationship with your spouse	1	2	3	4	5	6	7
c. Your relationship with your children	1	2	3	4	5	6	7
d. The relationship your children have with each other	1	2	3	4	5	6	7

Please circle the number which best describes how happy you are with your marriage. The middle point represents "happy".

Q44 Extremely Unhappy	1	2	3	4	5	6	7	Extremely Happy

APPENDIX C

QUESTIONNAIRE (1985)

We would like to have some background information about your family to help us in our study. We are especially interested in what has happened in the last two years. Please circle appropriate letter or fill in the blank with your answers. First think about yourself.

Q1 What is your sex?

a. Male
b. Female

Q2 What is the date of your birth? Mo. _____ Yr._____

Q3 How many years of school have you completed?_____

Q4 What is your religious preference? (Circle the letter)

a. Catholic
b. Protestant
c. Jewish
d. Other (please specify)_____

Q5 Have you moved to a different home in the last two years?

a. No
b. Yes →

Q6 (IF YES) please circle the appropriate letter
a. Moved within the same community
b. Moved to a different community

Q7 Do you live on a farm?

a. No
b. Yes, less than one acre
c. Yes, more than one acre →

Q8 (If more than one acre) Did your farm produce $1,000.00 or more in sales of crops, livestock, or other farm products during the preceeding year?

a. No
b. Yes

Q9 What is your marital status? _____

Q10a Has your marital status changed in the last two years? (Please circle)

a. No
b. Yes →

Q10b (IF YES) How has it changed? (Circle more than one category if appropriate)

a. Became widowed
b. Became divorced
c. Became separated or living apart
d. Remarried Mo._____ Yr. _____

Next, think about each of your children, starting with the oldest child. We will be asking questions about each of your children later in this questionnaire. Please make sure your answers are from oldest to youngest in each instance.

Q11		Sex (Circle) Male/Female	Birth Date Mo. Yr.	Yrs. of School Completed	Living at Home Yes or No	% of support You Provide
a.	Child 1	M F			Y N	
b.	Child 2	M F			Y N	
c.	Child 3	M F			Y N	
d.	Child 4	M F			Y N	
e.	Child 5	M F			Y N	
f.	Child 6	M F			Y N	
g.	Child 7	M F			Y N	
h.	Child 8	M F			Y N	
i.	Child 9	M F			Y N	
j.	Child 10	M F			Y N	
k.	Child 11	M F			Y N	
l.	Child 12	M F			Y N	

We are interested in the changes that have taken place in your household.

Q12 Have any of your children left home in the last 2 years? (Please circle the letter)

a. No
b. Yes

Q13 → (IF YES) Please indicate on the chart below, the number of which child left, the reason for leaving, and the date.

Q14 Have any of your children returned home to live with you in last 2 years?

a. No
b. Yes

Q15 → (IF YES) Please indicate on the chart below, the number of which child returned, the reason, and the date.

Child Number (as listed above)	Reason for Returning	Date (Approx)	Reason for Leaving	Date (Approx)

Please read each of the events listed below and mark whether it was experienced by any family member in the last two years. If yes, please circle the number showing how disturbing it was.

Q19 EVENT	Has This Event Happened to Your Family in....				How Disturbing Was This Event?				
	Last 12 mos		Yr. Before the last 12 mos.		Not at all	Slightly	Moderately	Quite	Extremely
I. IMMEDIATE FAMILY									
a. Death of a member	Yes	No	Yes	No	1	2	3	4	5
b. Marriage of a member	Yes	No	Yes	No	1	2	3	4	5
c. Member moves out of home (for independence, for added schooling, for job, for marriage)	Yes	No	Yes	No	1	2	3	4	5
d. Member moves back (unemployed, divorced, or separated, etc.)	Yes	No	Yes	No	1	2	3	4	5
e. Non-member (renters, boarders, etc.) moved into home	Yes	No	Yes	No	1	2	3	4	5
f. Marital separation occurs	Yes	No	Yes	No	1	2	3	4	5
g. Periodic absence of family member due to work demands	Yes	No	Yes	No	1	2	3	4	5
h. Family pet dies	Yes	No	Yes	No	1	2	3	4	5
i. Pregnancy of unmarried member	Yes	No	Yes	No	1	2	3	4	5
j. Member demanding of new privileges, exemptions from family rules, choice of friends, dates, etc.	Yes	No	Yes	No	1	2	3	4	5
k. Adult child has trouble achieving independence	Yes	No	Yes	No	1	2	3	4	5
l. Household chores pile up	Yes	No	Yes	No	1	2	3	4	5
m. Family took a stressful vacation	Yes	No	Yes	No	1	2	3	4	5

EVENT	Has This event Happened to your Family In...				How Disturbing Was This Event?				
	Last 12 mo		Yr. Before the last 12 mos.		Not at all	Slightly	Moderately	Quite	Extremely
II. SCHOOL AND WORK									
n. Member drops out of school before completing training	Yes	No	Yes	No	1	2	3	4	5
o. Member returns to school after time away	Yes	No	Yes	No	1	2	3	4	5
p. Major wage earner loses or quits job	Yes	No	Yes	No	1	2	3	4	5
q. Major wage earner starts or returns to work	Yes	No	Yes	No	1	2	3	4	5
r. Member given promotion	Yes	No	Yes	No	1	2	3	4	5
s Member changes to new job or shifts career	Yes	No	Yes	No	1	2	3	4	5
t. Major wage earner retires from work	Yes	No	Yes	No	1	2	3	4	5
u. Member accepts time consuming, unpaid assignment in voluntary association (scouting, church, or service agency)	Yes	No	Yes	No	1	2	3	4	5
v. Outside activities draw adult members away from family	Yes	No	Yes	No	1	2	3	4	5
w. Member's hours/ scheduling of work change	Yes	No	Yes	No	1	2	3	4	5
x. Member has major conflict with boss and/or others at work	Yes	No	Yes	No	1	2	3	4	5
III. RELATIVES AND CLOSE FRIENDS									
y. Relatives/in-laws become intrusive (offer unwelcome advice, gifts)	Yes	No	Yes	No	1	2	3	4	5
z. Death of husband's or wife's parents	Yes	No	Yes	No	1	2	3	4	5

EVENT	Has This Event Happened to Your Family In...				How Disturbing Was This Event?				
	Last 12 mos.		Yr. Before the last 12 mos.		Not at all	Slightly	Moderately	Quite	Extremely
aa. Death of brother or sister	Yes	No	Yes	No	1	2	3	4	5
bb. Death of close friend and confident	Yes	No	Yes	No	1	2	3	4	5
cc. Married children "freeze out" parents	Yes	No	Yes	No	1	2	3	4	5
dd. Member breaks up with close friend or confident	Yes	No	Yes	No	1	2	3	4	5
ee. Relative dies (not parent or sibling)	Yes	No	Yes	No	1	2	3	4	5
IV. HEALTH									
ff. Major wage earner experiences serious illness or accident	Yes	No	Yes	No	1	2	3	4	5
gg. Member experiences serious emotional problems	Yes	No	Yes	No	1	2	3	4	5
hh. Child member experiences serious illness/accident	Yes	No	Yes	No	1	2	3	4	5
ii. Aged parent(s) becomes seriously ill or disabled requiring direct care.	Yes	No	Yes	No	1	2	3	4	5
jj. Member experiences menopause	Yes	No	Yes	No	1	2	3	4	5
kk. Aged parent committed to institution or placed in nursing home	Yes	No	Yes	No	1	2	3	4	5
V. HOUSEHOLD FINANCE AND LEGAL ISSUES									
ll. Husband's or wife's parents or siblings require financial assistance	Yes	No	Yes	No	1	2	3	4	5
mm. Cut in total family income	Yes	No	Yes	No	1	2	3	4	5
nn. Expenses exceed total family income requiring going into debt	Yes	No	Yes	No	1	2	3	4	5
oo. Family takes a major loss in stock market, bank failure, bad debts, etc.	Yes	No	Yes	No	1	2	3	4	5

EVENT	Has This Even Happened To Your Family In....				How Disturbing Was This Event?				
	Last 12 mos.		Yr. Before the last 12 mos.		Not at all	Slightly	Moderately	Quite	Extremely
pp. Family receives windfall funds (inheritance, lottery win, or other unanticipated gain)	Yes	No	Yes	No	1	2	3	4	5
qq. Member starts receiving public assistance in the form of food stamps, rent subsidy or AFDC	Yes	No	Yes	No	1	2	3	4	5
rr. Member takes out or refinances a loan to cover increased expenses	Yes	No	Yes	No	1	2	3	4	5
ss. Family member involved with courts; robbed or assaulted, arrested for crime or minor misdemeanor, jailed, or involved in lawsuit	Yes	No	Yes	No	1	2	3	4	5
tt. Family forced to dip heavily into family savings	Yes	No	Yes	No	1	2	3	4	5
uu. Member taking on additional jobs	Yes	No	Yes	No	1	2	3	4	5
vv. Member experiencing demotion, job bumping, or retooling	Yes	No	Yes	No	1	2	3	4	5
VI. OTHER EVENTS NOT COVERED									
ww. _____	Yes	No	Yes	No	1	2	3	4	5
xx. _____	Yes	No	Yes	No	1	2	3	4	5

Q20 Of the events just considered that happened in your family during the last 2 years, which one had the most impact on your family?

_____

Q21 What resources were important to you in coping with this event?

_____

We're interested in the health of you and the children living at home now. Please use the codes given below to indicate how often the following items apply to members of your family.

1. Never
2. Seldom
3. Sometimes
4. Frequently
5. Almost Always

For example, if child 1 had trouble sleeping "frequently" and child 4 "sometimes" and no one else in the family had trouble sleeping, then you would answer:

	Self	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6	Child 7	Child 8
had trouble sleeping---	1	2	1	1	4	1			

Q27 How often has each family member living in your household:

	Self	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6	Child 7	Child 8
a. had trouble sleeping									
b. had accidents									
c. been irritable									
d. been depressed.									
e. smoked cigarettes, cigars, or a pipe									
f. used prescription drugs									
g. had a weight problem									
h. used alcohol									
i. found it difficult to relax . .									
j. had headaches									
k. had muscle tension, nervous indigestion or anxiety									
l. had colds or flu									

Q32 Do you have any other job in addition to your main job?

a. No
b. Yes ——→

Q33 (IF YES) What is your job title?_____

Q34 What is the attitude of your spouse toward your additional job? (Please circle the number using the following scale).

NOT							
	1	2	3	4	5	6	7
SUPPORTIVE							VERY SUPPORTIVE

Q35 Are you currently in the military Service?

a. No
b. Yes ——→

Q36 (IF YES) Please circle the appropriate answer.

a. Employed full-time member of the Army.
b. Employed full-time member of a military service other than the army.
c. Part-time member of Army Reserve or Army National Guard Unit.
d. Part-time member of a military service other than the Army.

Q37 Next, think about your total family income for 1984 received by you and all family members who live with you. This is the total income before taxes. Be sure to include all sources of income such as earned income, investments, social security, your own business, job-related benefits, welfare benefits, and so on. If your family farms or has its own business, indicate net farm or net business income before taxes. (Circle the letter of the category that is closest to your total family income.

a.	$4,999 or less	k.	$50,000-$54,999
b.	$5,000-$9,999	l.	$55,000-$59,999
c.	$10,000-$14,999	m.	$60,000-$64,999
d.	$15,000-$19,999	n.	$65,000-$69,999
e.	$20,000-$24,999	o.	$70,000-$74,999
f.	$25,000-$29,999	p.	$75,000-$79,999
g.	$30,000-$34,999	q.	$80,000-$84,999
h.	$35,000-$39,999	r.	$85,000-$89,999
i.	$40,000-$44,999	s.	$90,000-$94,999
j.	$45,000-$49,999	t.	$95,000 and up

Q38 Now, think about your personal income before taxes for 1984. Be sure to include all sources of income that you receive personally; such as earned income, investments, social security, your own business, job-related benefits, welfare benefits, rent and so on. If you farm or have your own business, we would like to indicate your net farm or net business income before taxes.

a.	No personal income	l.	$50,000-$54,999
b.	$4,999-or less	m.	$55,000-$59,999
c.	$5,000-$9,999	n.	$60,000-$64,999
d.	$10,000-$14,999	o.	$65,000-$69,999
e.	$15,000-$19,999	p.	$70,000-$74,999
f.	$20,000-$24,999	q.	$75,000-$79,999
g.	$25,000-$29,999	r.	$80,000-$84,999
h.	$30,000-$34,999	s.	$85,000-$89,999
i.	$35,000-$39,999	t.	$90,000-$94,999
j.	$40,000-$44,999	u.	$95,000-$99,999
k.	$45,000-$49,999	v.	$100,000 and up

Q39 If you had a family business or farm, did you experience a net loss in the last year? (Please circle the letter).

a. No
b. Yes
c. Question does not apply to me.

Q40 In general, which of the following best describes any changes in your total family income over the past 2 years?

a. increased more than 25%
b. increased 5 to 25%
c. changed less than 5% (plus or minus)
d. decreased 5 to 25%
e. decreased more than 25%
f. fluctuated up and down over the 3 years.

Q41 To what extent do you think your income today is enough for you to live on?

a. can't buy some necessities
b. can meet necessities only
c. can afford some of the things we want, but not all we want
d. can afford about everything we want
e. can afford about everything we want and have some left over

Q42 Thinking about your family's overall financial condition -- what you own, owe, earn, are able to buy, and so on -- which of the following best describes any change in your overall financial condition over the past 2 years?

a. much worse
b. worse
c. same (go to question 44)
d. better
e. much better

Q43 If your financial condition has changed during the past 2 years, please describe the change(s) below.

Q44. Did a family member take a second or third job?

a. No
b. Yes

Q45 Did a family member work overtime?

a. No
b. Yes

Q46 Did a family member, who was not working, go to work?

a. No
b. Yes

Here are some words and phrases which we would like you to use to describe how you feel about your present life. Please circle the number which best describes where you stand in describing your feelings.

Q57	a.	Boring	1	2	3	4	5	6	7	Interesting
	b.	Miserable	1	2	3	4	5	6	7	Enjoyable
	c.	Useless	1	2	3	4	5	6	7	Worthwhile
	d.	Unfriendly	1	2	3	4	5	6	7	Friendly
	e.	Empty	1	2	3	4	5	6	7	Full
	f.	Discouraging	1	2	3	4	5	6	7	Hopeful
	g.	Disappointing	1	2	3	4	5	6	7	Rewarding
	h.	Doesn't give me much chance	1	2	3	4	5	6	7	Brings out the best in me

Please circle the number which best describes how satisfied you are with each of the following:

Q58			Completely Dissatisfied						Completely Satisfied
	a.	Your life as a whole	1	2	3	4	5	6	7
	b.	Your family life	1	2	3	4	5	6	7
	c.	Your relationship with your spouse	1	2	3	4	5	6	7
	d.	Your relationship with your children	1	2	3	4	5	6	7
	e.	The relationship your children have with each other	1	2	3	4	5	6	7

Please circle the number which best describes how happy you are with your marriage. The middle point represents "happy".

Q59	Extremely Unhappy	1	2	3	4	5	6	7	Extremely Happy

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