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THE INFLUENCE OF AGE DIFFERENCE IN MARRIAGE ON LONGEVITY

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THE INFLUENCE OF AGE DIFFERENCE IN MARRIAGE ON LONGEVITY

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CHAPTER 1

INTRODUCTION

According to mortality statistics, persons who are married live longer than non-married persons. Surprisingly, little research has explored the dynamics of the marital dyad to determine why this is so. The dyad is considered to be the simplest level of social integration. Additionally, the marital relationship is a fundamental arena for dyadic communication. It would seem reasonable to assume that both the internal and external perception of marital roles could exert a great deal of influence on the individual. The inferential nature of that influence is an assumption of this study which cannot be proven at this time. If the findings of the present study indicate the possible influence of role relationships on longevity, further study in the area will be warranted.

Initially, the communication dynamics of marital dyads of varying age differences were to be the focus of this study.

Role relationships, and the communication patterns of those relationships, were to be explored in order to ascertain whether the dynamics of the role relationships in marriage could influence longevity. However, information which combined interpersonal and intrapersonal factors in marital communication, with longevity data was not available. The record keeping system of the State of Oklahoma precluded locating enough persons to meet the requirements of the study, and no national data provided enough specific information to directly explore communication related factors. Because of these limitations, the hypothesis of the present study was designed to test only the influence of age difference between marriage partners on longevity. This study was designed to use available national demographic data to determine whether there were any significant findings with the focus on age difference in marriage. It was reasoned that data trends and significant relationships could later be explored with a particular emphasis on the influence of interpersonal and intrapersonal factors. Such an approach would allow subsequent research studies to focus on age groups or variables with demonstrated significance.

Another reason for taking a more general approach was the lack of literature in the communication field which was related to the marital dyad and age differences. A review

of the current literature revealed only one study which combined age difference, marriage and communication. This study (Illig, 1978) attempted to demonstrate techniques to analyze interactive aspects of communication using elderly, young, married, and friendship dyads. Although this study contained the essential elements of the present study it was not applicable to the study since it did not explore age difference within the confines of the marital dyad.

At this time neither the necessary data nor the research foundation is available to devise a study which could test interpersonal and intrapersonal effects in marriage on longevity. There was some tangetial support for the supposition that age-related role relationships do exert a powerful influence on both marriage and longevity. Evidence of this influence will be discussed further in the review of the literature in Chapter 2. Now, a brief overview of the study will be provided in the following paragraph.

A review of the literature will be presented in two general areas. First longevity research will be discussed from the standpoint of both historical and current literature. Then marriage and age difference research will be reviewed. The third chapter will outline the method of the present study and describe the sources of the demographic data used in

the study. The fourth chapter presents the results of the study and clarifies those findings. Finally, the last chapter discusses the results along with conclusions and suggestions for future approaches in the study of communication related influences on longevity.

CHAPTER 2

REVIEW OF LITERATURE

Historical Introduction

From ancient times to the present day the search for prolongation of life and restoration of youth has been continuous. Although efforts to understand factors contributing to longevity have taken a more empirical approach in the last century, the underlying motivation for such research has probably altered little since ancient times. Old age and its accompanying physical changes have been dreaded in many cultures, particularly in western civilizations. In part, old age has been feared because it is the prelude to death. Since antiquity, the inevitability of death has no doubt compelled humans to seek the secrets of life.

The quest for longevity can be found in ancient literature, and can be divided into three main themes; (1) the antediluvian theme that suggests people lived longer in the past, (2) the rejuvenation theme which promises the possibility of restoration

of youth, and (3) the hyperborean theme which assumes that there exist unknown societies or cultures blessed with long life (Birren and Clayton, 1975). Each of these will be briefly discussed.

The antediluvian theme is drawn from historical literature and oral tradition. In the book of Genesis the life spans of Methuselah (969 years), Adam (930 years), Seth (912 years), and Noah (950 years) exemplify this theme. The Trobrianders and Ainu in North Japan combine themes in their belief that their forefathers rejuvenated themselves by shedding their skin (Birren and Clayton, 1975).

The rejuvenation theme is both ancient and modern. Ponce de Leon's search for the "fountain of youth" is one well-known example. The application of creams and lotions in older times, and the injection of hormones and other substances in more modern times, are all outgrowths of the rejuvenation theme.

The hyperborean theme, which implies genetic proclivity or a social or physical environment conducive to long life, still holds fascination for a number of writers and researchers (Leaf, 1973; Halsell, 1976; and Benet, 1976). Reports persist of regions in the world--primarily in the USSR--which are blessed with an inordinate number of centenarians. The two

geographically small and isolated areas of Vilcabamba, Ecuador and the land of Hunza in the Pakistani part of Kashmir have also been touted as areas of long-life. High incidence of persons over 100 years old, as well as persons with life spans as great as 170 years have been reported in these areas.

Review of Current Longevity Research

In the past three centuries the study of longevity and aging has become more systematic. Birren and Clayton (1975) identify an early empirical period in the study of gerontology from about the early 1700s to the early 1900s. In this early period Benjamin Franklin experimented with lightning as a potential rejuvenator and Frances Bacon advocated scientific systematic study of aging. A Belgian named Quetelet is often referred to as the father of modern gerontology. During this early empirical period he suggested that man's traits varied in degrees and that these differences were measurable.

From these beginnings longevity study has grown into a major area of research. The following review of the literature is not intended to be a comprehensive review of the longevity field, but rather a review of those factors related to longevity which are germane to the present study. The hypothesis of the present study is that age differences

in marriage are related to longevity. Consequently, after a discussion of the various general factors related to longevity, the research on age differences in marriage and its relationship to long life will be reviewed.

Fundamentally, all researchers agree that every species, including human beings, has a life span. Life span refers to the theoretical length of time the species can survive under the most favorable conditions. The biological limitations of life span have altered very little, if any, in the last two thousand years (Hauser, 1976). Schmeck (1981) reported that the greatest authenticated case pertaining to human longevity, was a Japanese man who lived to be 114 years old. For humans, most scientists have concluded that maximum life span is in the range of 110-120 years. While researchers do agree that there is limit to life span, there is less agreement as to what factors influence the wide variation in human mortality. The following discussion provides an overview of genetic, biological, and sex-related determinates of longevity.

Genetic Factors

Numerous genealogical studies have been conducted which suggest that there is a genetic basis for long life (Bell,

1918; Wilson and Doering, 1926; Pearl, 1931; Kallmann, 1957; Wyshak, 1978). Lansing's (1959) statement that "the best way to assure oneself of long life is to choose long-lifed parents" is only partly humorous; but it is, nevertheless, the underlying theme of heredity research. For example, Kallmann (1957) studied twins in an effort to document the genetic determinant of longevity. He found that identical twins--that is, twins derived from the same egg cell and therefore containing identical genes--had more similar life spans than non-identical twins.

Animal studies demonstrate a genetic determination of longevity from which it might be inferred that humans are influenced likewise. However, Rose and Bell (1971) pointed out that some researchers assume there are no genetically determined long-lived humans and environmental factors explain all variations in life expectancy. Rather than having a genetic base, the likelihood that parents create environments for their children which are similar to their own, confounds longevity findings.

Biological Factors

Recently the biological basis of longevity has received a great deal of attention. Three theories predominate and are presented briefly below.

A recent research area concentrates on the molecular level of aging. This approach includes both the study of the mechanisms involved in aging and the deterioration of biological information in its most reduced form, i.e., the DNA molecule (Medvedev, 1975). One illustrative theory of aging posits that the progressive damage to DNA results in the effects we call aging.

A second theory suggests that there is an "inborn clock" or specific life span built into each cell which predetermines how long it will survive. Support for this theory has been amassed in the laboratory with experiments which show that normal cells will not keep reproducing indefinitely. However, bone marrow cells transplanted from older mice into younger mice seem to be able to survive from generation to generation, thus suggesting that laboratory conditions may cause the demise of cells, rather than an "inborn clock" (Sullivan, 1981).

A third theory is that aging is under hormonal control. Some aging effects in mice have been retarded by extraction of the pituitary gland, along with injections of various pituitary hormones to maintain health (Sullivan, 1981).

Aside from the biological determinants of life span, there are certain obvious factors related to physiology which contribute to overall health and most probably to longevity; such as execise and nutrition. Woodruff (1975) noted that moderate exercise has been found to result in improved physiological functioning in the aged, for example.

Sex Differentials

In 1970 life expectancy at birth in the United States was 67 years for males and 75 years for females (Cutler and Harootyan, 1975). Although sex differentials in mortality are influenced by social factors there also appears to be a basic genetic difference. In the last century women had a higher mortality rate than men due to lower level of health care and complications related to pregnancy. In 1900 women outlived men by three years and by 1965 the gap had widened to seven years (Bengtson and Haber, 1975). In the past 30 years, without exception, women have enjoyed increasingly lower mortality rates than men (Kitagawa and Hauser, 1973). There appears to be a biological basis, corroborated through animal and human studies, which suggests that the female is genetically superior in terms of longevity to the male (Palmore and Jeffers, 1971). Rose and Bell (1971) noted

that "genetically based secondary sex characteristics (which produce differences in behavior, rate of metabolism, and body structure)" were believed to extend female life span.

Sexual Functioning

The relationship between sexual functioning and longevity is a tenuous one. However, continued sexual functioning has been linked with longevity since ancient times. As an elixir to King David in his old age, his servants urged that he be brought the fairest virgin in Israel. In both ancient India and China, sexual organs of wild animals were ingested in order to improve vigor and offset the decline of age (Puner, 1974). Additionally, Puner noted:

> Within the past hundred years, particularly in Europe, doctors and surgeons have acquired fame and notoriety for experiments with injections or transplants of testicular material from healthy young animals in older animals or humans to bring about 'new enjoyment of life.' Among the doctors are Charles Edouard Brown-Sequard, Jurgen W. Harms, Eugen Steinach, and Serge Voronoff, with the last perhaps, the best known for his transplants of monkey glands in men (p. 255).

Puner (1974) stated that there is no empirical evidence that aging of the body as a whole depends on the activity or failure of the sexual glands per se. However, the question remains to be answered whether there is a kernel of truth

in this approach which has been perpetuated in the mythology surrounding longevity since ancient times.

Jewett (1973) suggests that there may be a relationship between sex drive and long life. However, he cautions that original vitality may result in continued sex drive and longevity rather than sex drive increasing life span.

Studies in areas of the world noted for increased longevity consistently report the importance of love and sex for long life. Halsell (1976) stated that the Vilcabambas consider sex one of the keys to a long life. Benet (1976) reported that an active sex life well into old age is one of the prime characteristics of the long-lived people of the Caucasus. Leaf (1973) who led expeditions to the Caucasus, Vilcabamba and the Hunza regions declared that all three cultures had four common features: (1) strong family ties, (2) strenuous daily exercise, (3) a nutritious, well-balanced diet, and (4) an active sex life into advanced old age.

Interpersonal and Social Factors Related to Longevity

While acknowledging the central importance of genetic and physical factors, Rose and Bell (1971) stressed the importance of social influences on longevity. They confirmed that social and interpersonal influences form an overlay on

physiological factors and consequently cannot be separated in the study of human longevity.

The variables considered in this category which are important to the present study are social status and income, the self-system, number of children, marriage, and marital roles. Interpersonal relationships, both quantitative and qualitative, play an important role as age often brings increased isolation and lowered levels of contact and communication with others.

Palmore and Jeffers (1971) state that as for social factors related to longevity, it is well known that upper-class persons and whites live longer than their counterparts. Additionally, married persons enjoy lower mortality rates than do their non-married cohorts (Kitagawa and Hauser, 1973; Carter and Glick, 1970). The influence of these factors will be discussed separately in the following paragraphs.

Social class. The three main components of social class are occupation, income, and education (Rose and Bell, 1971). The enormity of the task of isolating cause and effect is evident in examining these variables. Since higher education leads to higher status jobs and therefore higher income, safer and more desirable working environments may result. Consequently, each of these variables may result in the

positive fulfillment of the other, with the final result being a life situation more conducive to longevity.

Kitagawa and Hauser (1973) cautioned that although occupation, income, and education are related, they should be treated as independent variables in the study of mortality when possible. For the present study income was a measurable variable and therefore will be discussed briefly.

Among white family members Kitagawa and Hauser (1973) found that low income males in families earning under $2,000 (in 1960) had 80% higher mortality than males from families with incomes of $10,000 or more. However, they noted that after age 65, the mortality ratio decreased to 15%.

Number of children. Findings related to the number of children and mortality are contradictory. Arvay and Takacs (1966) linked increased longevity in women to hormonal stimulation during pregnancy.

However, Kitagawa and Hauser (1973) noted that high fertility in women may result in shorter life.

Rose (1964) found that long-lived male veterans had a far lower average number of children than would be expected for families in their generation. There is the possible confound of fewer children being related to high socio-economic status. However, Rose speculated that the link

between a small number of children and increased longevity might be as follows:

> Fathers with less children have less responsibility, financial obligation and strain. By the same token, the wives can devote more of their time to the care of their husbands. Consequently, the husbands are able to live longer (Rose, 1964, p. 33).

The self-system. Palmore and Jeffers (1971) determined that holding a positive view of life and a positive self-concept was a major factor contributing to longevity. Lieberman (1971) emphasized that there is a relationship between psychological functioning and survival, however, good explanations for the interrelationship of psychological factors and survival have yet to be found. Lieberman (1971) found that maintaining a stable self-system and a high degree of hope were positively correlated with survival, while non-survivors appeared to be less warm, less spontaneous and generally less motivated persons overall.

One plausible explanation for increased longevity based on psychological well-being can be found in the field of psychophysiology. Psychophysiology is an area concerned with the interrelationship of physiological systems and behavior. Woodruff (1975) observed that geropsychologists have been so concerned with physiological age changes and

how they affect people psychologically, that they have ignored the impact psychological behavior has on physiology. Improved psychological functioning or improvement in environment may, in fact, result in improvement at a biochemical or physiological level.

Marital status. Marital status has been a much researched predictor of longevity. Persons who are married have a greater life expectancy at all ages except females 20-24. Biological selection may be operating. Perhaps only the healthier and more desirable marry, while the less healthy or less desirable are screened out (Rose and Bell, 1971; Carter and Glick, 1970). Verbrugee (1979) in a discussion of marital status and mortality identified three popular explanations for lower mortality rates among married persons. The first explanation is the aforementioned "selection theory." The second is that married persons are happier and less stressed than non-married persons and as a consequence engage in less risk taking which would result in illness or injury. The third belief is that married persons have more social support for their health problems, thereby reducing the severity of illness leading to mortality.

Puner (1973) noted that life expectancy figures show that married people, both men and women, live longer than single, widowed, or divorced persons. Mortality rates are 29% higher for single men than for married men, 42% higher for widowed men, and 54% higher for divorced men. The death rate is 15% higher for single women, 26% higher for widows, and 43% higher for divorced women. (Women do not appear to be as sensitive to the advantages of marital status as do men.)

Marriage roles. To insure longevity, Palmore and Jeffers (1971) emphasized the importance of maintaining a role in society. Marriage is an extremely important institution which enables one to maintain a role in society. McDermott (1980) addressed the fundamental nature of the dyad in creating and maintaining one's self-concept. Smith and Williamson (1977) stated that the dyad is the simplest level of communication and one of the basic levels of social integration. The reciprocal influence of communication in the marital dyad is discussed by Wilmot (1975). The impact of marriage and marital roles extends beyond the psychological and social level to the physical level as well.

The nature of marriage roles is addressed in Gove's (1973) study which explored the influence of psychological states and life-styles associated with the different marital roles. His findings suggest that married persons are more psychologically equipped to fight disease and decline than are non-married persons. Overall, the rewards incurred by marriage do grant better health and longer life. However, within the marriage framework role-relationships do not necessarily always create a positive influence. Jourard (1971) noted that familial roles (when not suited to an individual) can result in "stressing untenable situations which culminate in physical illness" (p. 103).

The marital dyad is apparently greatly influenced by the role-relationships which are sanctioned by society. Udry (1971) suggested marriages which essentially opposed a society's values are often victims of a great deal of interpersonal conflict and stress. Fox, Bulusu and Kinlen (1979) speculated that deviation from the usual marriage patterns may actually increase mortality. They stated, "Conformity to the social norm of the man being older than his wife is associated with relatively lower mortality for both parties than the converse case" (p. 126).

Review of Age Differences in Marriage

Age difference and the special social and interpersonal circumstances created by it are the fundamental concern of this study.

In a review of literature on social and personal traits of mates Udry (1971) found that almost without exception studies concluded that in physical, social and psychological characteristics, mates were more alike than they were different. Homophily is a term which refers to the perceived degree of similarity of various attributes of two persons. McCroskey, Richmond, and Daly (1975) defined homophily as a multi-dimensional construct assessing perceived similarity between people along the dimensions of attitude, background, value and appearance. Heterophily refers to the opposite condition, that is, one in which two persons are perceived to be dissimilar. One relatively neglected area of study of homophily and heterophily in marriage is age of partners. Although age differences have been studied demographically, little attention has been given to the interpersonal consequences of age homophily and heterophily in marriage.

The largest age gaps in marriage are found in the remarriage of a man to a woman who is marrying for the first time.

The next circumstance which is most likely to result in large age difference is that of two persons who are both re-marrying (Carter and Glick, 1970). Trends show as men get older they tend to marry relatively younger women. Generally men at age 20 marry women one year younger, while at age 37, they choose spouses 6 years younger (Udry, 1971). Twenty percent of grooms over 65 attract brides under 45, compared to only 3% of older women who are married to men under 45 (Treas, 1975).

Carter and Glick (1970) noted that men in social groups with relatively low economic status married women whose ages differ more from their own than do men in groups with higher economic status. Census data, as well as a recent study by Spanier and Glick (1980) confirm that black men marry women who are much younger in higher proportion than do white men.

Interpersonal Factors

As previously mentioned, Verbrugee (1979) suggested that one explanation for lower mortality rates in married persons is that they are happier and less stressed than non-married persons. It seems logical then to explore the dynamics of marriages with large age differentials to determine whether they enjoy the same degree of happiness and success as marriages with smaller age differentials. Udry (1971)

believed that the complete inconsistency of the results in previous studies on age differences implied that the relative age of spouses was not a significant factor in the success of marriage. Udry concluded that "whatever other unstudied differences might be created by husband-wife age differentials, the effect on the success of the marriage is negligible" (p. 281).

However, Bumpass and Sweet (1972) found that among women who married very young, marital instability decreased with greater age differences between them and their husbands until the age difference became "large enough to be socially significant." Marriages with large age differences and marriages in which the wife was older than the husband were subject to higher rates of divorce. Three main factors were associated with these findings: (1) consensus in values decreases as age differences increase; (2) the power structure of the family may be jeopardized, especially when the wife is older; (3) persons who marry with great age disparity may have personal characteristics that lower their probability of marital success.

Two studies have examined the effect of age differentials on the power structure of the marital dyad. Blood and Wolfe (1960) reported that when husbands were ten or more years older than their wives they were more influential than when age differences were reduced. With large age differences,

the older spouse in a marriage tends to be more dominant and powerful in the relationship. Presser (1975) suggested that women married to older men "may feel less assertive (and their husbands more powerful) because of the discrepancy in age and achievement" (p. 197).

The younger woman-older man relationship may be beneficial for both parties if they are seeking power or status from marriage. Seidenberg (1972) contended that by marrying an older man a woman can achieve economic and social rewards without years of struggle. Furthermore, such a marriage enables her to attain a status she can rarely acquire on her own. This certainly could be a motivating factor for some women. However, the assumption that wealthy older men are more frequently involved in marriages with younger women may be invalid.

Sontag (1972) noted that when older men marry extremely young women as in the cases of Pablo Casals, Charles Chaplin, William O. Douglas, Strom Thurmond or more recently, Fred Astaire, people view such a marriage as unusual but plausible. She stated, "for a man a late marriage is always good public relations. It adds to the impression that despite his advanced age, he is still to be reckoned with." Such a marriage asserts the older man's masculinity and makes a

statement about his power, his ability to possess and his continued worth to society. Sontag suggested that for the older woman such a marriage is often greeted with dismay by society and is an infrequent occurrence. This is a logical extension of the finding that age-appropriate behavior is more narrowly defined for women than it is for men (Neugarten, Moore, and Lowe, 1965).

Longevity Factors

The effect of age difference in marriage on longevity is a relationship that has received historical attention although mainly within the confines of the older man-younger woman relationship. There is little research which examines whether the link between the older man and younger wife, as a relationship which prolongs life, is only a myth, or whether it has some generalizable basis in fact. Certainly, there is a long tradition of literature and folklore associated with older men and continued virility which is related to having a younger wife. Rosenfeld (1976) pointed out that Sophocles produced both literature and progeny late in life. Jewett (1973) noted that history documents many individuals of advanced years who married younger women and fathered children in their later years. He cited the example of

Rabbi Joseph Caro (1488-1575) who when he married for the second time had a son in his 70th year, and upon marrying a third time had another son at age 83.

In the current literature there are three studies which directly address the influence of age differences between spouses on longevity. They are: (1) Rose's (1964) study of Spanish American War veterans, (2) Rose and Bell's (1971) research on longevity in which they explored the effect of younger wife along with 68 other variables, and (3) an English population study which explored age difference and mortality in marriage (Fox, Bulusu and Kinlen, 1979).

The primary purpose of Rose's (1964) study was to generate hypotheses for future studies in social and interpersonal factors related to longevity. It should be noted that the findings on age difference in marriage were only a small part of the total study. Subjects comprised a long-lived sample (ages 72 to 92) and no control group was available or used in the study. Rather, Rose was looking for discriminating factors which had enabled these men to exceed normal life expectancy. The subjects differed from the general population in regard to marital status:

> Ninety-two percent of the sample were married, considerably higher than 40%, the proportion of the adult male population married in 1910...Ninety-two percent married in the sample compares with 58% of all males 75 years and over in the general population who are married (Rose, 1964, p. 33).

Rose (1964) concluded that these subjects married at a later age than the average population and as a result had younger than average wives. Marrying a younger wife was presumed to be conducive to longevity since she was less likely to be lost by death and the benefits of her care would be continuous. Marrying younger spouses enabled the men to maintain a spouse into old age, thereby affording him unbroken nurturing or caretaking. Matter (1979) found that individuals who were married longer and younger had greater life expectancies. This finding lends credence to the caretaking hypothesis but Matter's conclusions about early marriage contradict the sample characteristics in Rose's study of long-lived veterans who married at a later age.

Rose and Bell (1971) conducted a more recent study which explored the younger wife hypothesis, along with a number of other social variables. Their sample consisted of 500 white males from the Boston area. Males were chosen over females because "it would have been more difficult to construct an instrument for females" and because females are rarely survived by their spouses which creates difficulty in locating

a reliable informant. Whites were chosen over blacks because they comprise a larger part of the whole population. Also, in the Boston area blacks comprise 10% of the population so it would have been more difficult to locate enough persons for the sample. Additionally, restrictions were placed on age-at-death, exclusion of violent death, and unavailability of informant. All persons who died before age 50 were excluded from the sample as were all persons who died of suicide, accident, or violent death. Finally, the surviving informant had to reside in the Boston area since information was gathered through personal interviews.

Rose and Bell (1971) divided age difference between spouses into nine categories ranging from 10 years or more older, to 10 years or more younger. Nine percent of the total sample fell in the 10 years or younger category, while the greatest number fell in the range of spouse younger by one to six years. They found that having a younger wife was a good predictor of longevity, presumably because of the continuous care she provided. They also found that the health variable was made more important by being married to a younger wife. They suggested that perhaps a younger wife takes better care of her husband but also makes special demands which require a better health level from her husband.

Another plausible explanation might be that the man makes extra demands on himself when married to a younger wife which in turn enhance health and longevity.

A third study, conducted in England, using population statistics, had the opposite hypothesis on the relationship of age differences to longevity. Fox, Bulusu and Kinlen (1979) determined that marriages in which the wife is older, or much younger than her husband may contribute to, or be associated with, higher mortality than marriages between couples of similar ages. In part, the authors say this may result because widowed and divorced persons have a higher mortality overall and they are more likely to enter into marriages with age disparity.

These authors found that the age combination in which the husband is either the same age or slightly older than his wife are associated with lower morbidity than are other combinations. Men married to much older or much younger women were subject to higher mortality than men married to women only a few years younger than themselves. Women married to much younger or much older men were also generally subject to greater mortality, thus suggesting that adherence to social norms results in reduced mortality for both men and women.

Noting the high mortality rate of men who marry women more than 20 years of age younger than themselves, the authors stated that the death rates are at the level expected only for sick people. They deduced that there may be a tendency toward the sick and lonely marrying young "nurses," or for the young marrying in the anticipation of inheriting wealth. As a consequence, the authors suggested that mortality rates in marriages with large age differences may be reflecting the ill-health which was the basis for the marriage.

CHAPTER 3

METHOD

The Hypothesis

The hypothesis of the present study is that there is a positive relationship between longevity of the male and age differences in spouses. It is predicted that males who select younger mates will live longer. The following section will explain sample characteristics, experimental variables, experimental procedures, and other information relevant to the study's design.

Sample

One of the samples for this study was taken from the National Mortality Followback Survey, 1966-1968 (National Center for Health Statistics, 1968).[1] This survey was available through the Catalog of Public Use Data Tapes (U. S. Department of Health and Human Services, 1980), and had an N of 19,529. Persons in the sample were between the ages of 35-84 and were all deceased between 1966 and 1968. For the

[1]Any interpretations or conclusions reached reflect the analysis of the author of this study. The National Center for Health Statistics is only responsible for the initial data.

present study however the particular information needed was derived from the sample of those who died in 1968 only. Information on spouse age was only available in the 1968 survey which had been expanded from the 1966 and 1967 questionnaire. The original N for the present study was 6765.

The National Mortality Followback Survey sample was obtained from deaths reported for 1966-68 in the Current Mortality Survey. The Current Mortality Survey is a 10% sample of all deaths in the United States. The National Mortality sample represented 1/26th of all deaths reported in the Current Mortality Survey for the three-year period of 1966-1968. The National Mortality Followback Survey had a final sample of 1/260 of all deaths which occurred to persons ages 35-84 during this three-year period. All the information for the mortality survey was collected by mail. A questionnaire was sent to each death record informant whose address was given on the death certificate (see Appendix A). The National Center for Health Statistics sample included data from the questionnaire along with information from the death certificate, excluding the name of the deceased.

For the present study, the date of birth of both husband and wife, and the date of death of the husband were obtained from the National Mortality Followback Survey questionnaire.

Additional information, also available from the same questionnaire on income, number of children, and age of youngest child was available and was also used. The present study used only information on married white males, since the N for non-whites and women was too small.

A second sample, that of all married white males by age of spouse, was available in the 1970 Census of Population, Subject Reports, Marital Status (U. S. Bureau of the Census, 1970). Data for this information is based on a five-percent sample of the U.S. population (see Appendix B).

Procedure

Both samples were narrowed by the parameters of married, white males between the ages of 50-79 married to women 10 years older to 25 years younger. The National Mortality Survey sample for the year of 1968 had an N of 1578. The Bureau of the Census survey was converted into percentages for the present study. However, for all married men between 50-79, married to women 10 years older to 25 years younger, N = 15,185,295.

An overview of the design which was used to test the hypothesis is provided in Table 1. Further explanation of the variables and procedures will follow.

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A second sample, that of all married white males by age of spouse, was available in the 1970 Census of Population, Subject Reports, Marital Status (U. S. Bureau of the Census, 1970). Data for this information is based on a five-percent sample of the U.S. population. (See Appendix B)

Procedure

Both samples were narrowed by the parameters of married, white males between the ages of 50-79 married to women 10 years older to 25 years younger. The National Mortality Survey sample for the year of 1968 had an N of 1578. The Bureau of the Census survey was converted into percentages for the present study, however for all married men between 50-79, married to women 10 years older to 25 years younger, N = 15,185,295.

An overview of the design which was used to test the hypothesis is provided in Table 1. Further explanation of the variables and procedures will follow.

TABLE 1

Overview of Study Design

Wife: Difference in Age (by 5 year intervals)	Husband: Age (by 5 year intervals)					
	50-54	55-59	60-64	64-69	70-74	75-79
4 intervals younger						
3 intervals younger						
2 intervals younger						
1 interval younger						
Same interval						
1 interval older						

Independent variable. The age difference between spouses is the most important independent variable. This independent variable used six 5 year age divisions (see Table 1). The six age classifications accounted for about 90% of the total sample for marriages of white males within any five year interval.

Note that even though spouse age differences are in five year intervals the actual age difference can vary by more than five years for each age division except in the "same interval" division. This variation occurs as a logical function of categorical data. For example, a man who is 50-54 married to a woman one 5 year interval younger than himself may be actually 10 years older if he is at the top of the husband's age in the interval (54) and his spouse is at the bottom of the wife's age in the one year younger interval (45). On the other hand, in the "same interval" the wife and husband would both be on the same category (50-54, for example) and consequently could be no more than five years apart. It should be clear that marriages in which the wife was more than ten years older, and marriages in

which the wife was more than twenty-five years younger were not included.[2]

The other independent variable was the age of husband at death. For our hypothesis the later years were critical, but the age categories begin at age 50. It was calculated on a proportionate basis and was divided into six, 5 year intervals of 50-54, 55-59, 60-64, 65-69, 70-74, and 75-79. The upper limits of the intervals were established largely by the pragmatics of available information from Census data. The lower limits extended to age fifty, because deaths before age fifty tell little about longevity. Rose and Bell (1971) justify this same cut of point, noting that (1) most deaths occur after age 50, and (2) that deaths before age 50 are not likely to be related to age as much as to disease which is not primarily age-related.

Dependent variable. The dependent variable was slightly more complex. It was based upon differential mortality estimates. It was, in fact, the difference between estimates

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[2] One exception was the age division for 75-79 year old men. Due to the grouping of census information all marriages of wives older than 80, married to 75-79 year old men were considered as a cohort.

of husband mortality rates and marriage rates; one based upon the National Mortality Followback Survey (NCHS, 1968) and the other upon survey information from the 1970 Census of Population, Subject Reports, Marital Status (Bureau of the Census, 1970). The former provided the estimated proportion of those who died who were in a particular categorization. The latter provided an estimate of the proportion of all living persons who were in that particular category. The difference between these two estimated proportions was the operational definition for differential mortality. The smaller the difference, the less chance that the age difference between spouses interacts with the husband's age in some meaningful, or significant way. The larger the difference between the two estimates, the opposite possibility exists. The implications of this operationalization are explored below.

Experimental design. Since the basic data sample was comprised of deceased persons it was necessary to compare findings from the data to the population at large. Otherwise it was not apparent whether fewer persons died in marriages with large age differences between spouses or whether fewer people were married to spouses who were much younger--or older.

The problem encountered with using data of "deceased only" was that the assumption cannot be made that the number who die are an unbiased estimate of the number of people.

The data which provided the necessary information to identify the percentages of those still alive in each cohort was derived from the 1970 Census of the Population, Special Reports, Marital Status, Table 10 (U.S. Bureau of the Census, 1970). This table provided husbands' and wives' ages in five year intervals from age 14 through age 80. However, the present study was only concerned with the subsample of married white males 50-79 years of age married to women between 10 years older and 25 years younger (see Table 2).

Table 3 presents both sets of estimates together, the mortality estimates from the Mortality Survey (National Center for Health Statistics, 1968) and the estimates of those actually extant by comparable categories. This table is for white males only. Husbands' ages are grouped by 5-year intervals, while age differences between spouses are grouped by intervals from one 5-year interval older to four 5-year intervals younger.

TABLE 2

"Age of Wife by Age and Race of Husband" and husband's marriages in percentages by age of wife.
Percentages based on sample population only.

	All married couples	Age of wife (years)											
		30-34	35-39	40-44	45-49	50-54	55-59	60-61	62-64	65-69	70-74	75-79	80 & over
Total	15,185,295												
Husband (years)													
50-54	4,030,797	34 191	107 808	467 859	1 590 379	1 530 090	300 470	--	--	--	--	--	--
55-59	3,581,472	--	36 445	133 047	498 635	1 409 314	1 264 548	150 102	89 381	--	--	--	--
60 & 61	2,967,846	--	--	20 199	72 869	256 439	580 578	197 656	112 672	45 566	--	--	--
62-64		--	--	19 408	63 967	198 364	564 360	327 317	356 876	151 575	--	--	--
65-69	2,157,773	--	--	--	42 022	121 314	364 733	281 745	549 708	674 781	123 470	--	--
70-74	1,515,223	--	--	--	--	37 573	103 319	83 746	193 033	568 925	449 722	78 905	--
75-79	932,184	--	--	--	--	--	32 634	24 647	58 362	188 981	341 952	245 956	39 652
Percentage by age of wife													
50-54	100%	.85	2.6	11.6	39.4	37.9	7.4	--	--	--	--	--	--
55-59	100	--	1.01	3.7	13.9	39.3	35.5	6.68	--	--	--	--	--
60-65	100	--	--	1.3	4.6	15.3	38.5	33.5	--	--	--	--	--
65-69	100	--	--	--	1.9	5.6	16.9	38.5	31.2	5.7	--	--	--
70-74	100	--	--	--	--	2.4	6.8	18.2	37.5	29.6	5.2	--	--
75-79	100	--	--	--	--	--	3.5	8.9	20.2	36.6	26.3	4.2	

*Information derived from Table 10, 1970 Census of Population, Subject Reports, Marital Status (U.S. Bureau of the Census, 1970.

TABLE 3

Percentages of white males married to wives between 25 years younger and 10 years older, compared to the percentage of deceased white males for each category

Data Sets--Possible Age Variation

Wife: Difference in Age (by 5 year intervals)	Age of Married White Males (deceased and living)											
	50-54		55-59		60-64		65-69		70-74		75-79	
	% Dead	% Alive	% Dead	% Alive	% Dead	% Alive	% Dead	% Alive	% Dead	% Alive	% Dead	% Alive
4 intervals younger	.40	.85	--	1.01	1.25	1.33	2.62	1.94	1.50	2.47	1.92	3.50
3 intervals younger	3.16	2.67	2.05	3.71	3.74	4.61	7.86	5.62	5.99	6.81	7.35	8.9
2 intervals younger	13.04	11.6	10.26	13.92	15.58	15.3	16.59	16.9	19.10	18.26	15.97	20.27
1 interval younger	34.78	39.45	34.87	39.35	34.58	38.57	30.57	38.5	37.83	37.54	23.96	36.68
Same interval	36.76	37.95	43.08	35.30	37.07	33.5	35.81	31.27	31.84	29.68	22.04	26.38
1 interval older	11.86	7.45	9.74	6.68	7.79	6.64	6.55	5.72	3.75	5.2	28.75	4.25

*Percentages of alive white married males derived from Table 10, 1970 Census of Population, Subject Reports, Marital Status (U.S. Bureau of the Census, 1970).

*Percentages of deceased white married males derived from the National Mortality Followback Survey 1966-1968.

The simplest and most economical analysis was by Chi square. The Chi square presents various opportunities for summing over columns, as well as obtaining the Chi square for the entire table. It was also possible to examine the Chi square contribution of each category separately.

CHAPTER 4

RESULTS

First the results of the age difference and longevity hypothesis will be reported followed by a discussion of items for which correlations were run. Tables 4-9 present the basic data by which the hypothesis of age differences between spouses and longevity of the male was tested. Each table represents the age of death of husbands by 5-year intervals: 50-54, 55-59, 60-64, 65-69, 70-74, 75-79. Age differences between husband and wife provided the basis for the row labels. In Tables 4-9 5-year intervals correspond to the Census table. The basic data for "percentage alive" were obtained from the 1970 Census of Population, Subject Report, Marital Status (U.S. Bureau of the Census, 1970). The Census table presented the number of white males ages 14-80+ by 5-year intervals and the ages of their wives in the same manner. From these data the proportions of white males aged 50-79 with wives ranging from 10 years older to 25 years younger were computed. In order to obtain the "predicted" values for the statistical tests in Tables 4-9, the proportions of men married to women

in each of the six age intervals was computed by determining what percentage each cell was of the total number of alive married white males in that cohort. The inference was drawn that the same percentage of persons married to women of any given interval should die unless there was some intervening variable. This procedure produced a "predicted" percentage of men who should have died if there were no differences due to spouse age difference.

The proportion of deceased husbands or the "percentage dead" was obtained from the National Mortality Followback Survey by first defining the sample according to the same specifications as the Census sample described above. Six cohorts were created of deceased men 50-54, 55-59, 60-64, 65-69, 70-74, 75-79. Percentages were derived in the same manner as for the "alive percentages." The number of deceased persons in each cell of individual cohorts was divided by the total number of deceased persons in the cohort to establish what percent of the entire cohort each individual cell comprised.

Tables 4-9 are presented on the following pages and consist of the percentages of deceased and alive persons which were derived as described previously. Also, the frequency for each cell was obtained from the National Mortality Followback Survey data. Finally, the Chi square calculations for each cell and for each cohort were calculated and included on each table.

TABLE 4

Age of Husband: 50-54 years old

Age of Wife	% Dead	% Alive	Mortality Frequency	Chi Square
30-34	.40	.85	1	.61
35-39	3.16	2.67	8	.23
40-44	13.04	11.6	33	.45
45-49	34.78	39.45	88	1.40
50-54	36.76	37.95	93	.09
55-59	11.86	7.45	30	6.60
Totals	100%	100%	253	9.38

TABLE 5

Age of Husband: 55-59 years old

Age of Wife	% Dead	% Alive	Mortality Frequency	Chi Square
35-39	0	1.01	0	1.96
40-44	2.05	3.71	4	1.44
45-49	10.26	13.92	20	1.87
50-54	34.87	39.35	68	.99
55-59	43.08	35.30	84	3.34
60-64	9.74	6.68	19	.02
Totals	100%	100%	195	9.62

TABLE 6

Age of Husband: 55-59 years old

Age of Wife	% Dead	% Alive	Mortality Frequency	Chi Square
40-44	1.25	1.33	4	.02
45-49	3.74	4.61	12	.53
50-54	15.58	15.3	50	.02
55-59	34.58	38.57	111	1.33
60-64	37.07	33.5	119	1.46
65-69	7.79	6.64	25	.64
Totals	100%	100%	321	4.00

TABLE 7

Age of Husband: 65-69 years old

Age of Wife	% Dead	% Alive	Mortality Frequency	Chi Square
45-49	2.62	1.94	6	.58
50-54	7.86	5.62	18	2.04
55-59	16.59	16.9	38	.01
60-64	30.57	38.5	70	3.74
65-69	35.81	31.27	82	1.8
70-74	6.55	5.72	15	.28
Totals	100%	100%	229	8.53

TABLE 8

Age of Husband: 70-74 years old

Age of Wife	% Dead	% Alive	Mortality Frequency	Chi Square
50-54	1.50	2.47	4	1.02
55-59	5.99	6.81	16	.26
60-64	19.10	18.26	51	.10
65-69	37.83	37.54	101	.02
70-74	31.84	29.68	85	.42
75-79	3.75	5.2	10	1.08
Totals	100%	100%	267	2.96

TABLE 9

Age of Husband: 75-79 years old

Age of Wife	% Dead	% Alive	Mortality Frequency	Chi Square
55-59	1.92	3.50	6	2.27
60-64	7.35	8.9	23	.86
65-69	15.97	20.27	50	2.83
70-74	23.96	36.68	75	13.80
75-79	22.04	26.38	69	.23
80+	28.74	4.25	90	442.32
Totals	100%	100%	313	462.31

A perusal of the Chi square value in the last rows of Tables 4-9 shows that only the age 75-79 was significant. Since this significance was heavily influenced by the cell representing wives who were 80 years old and older, it must be interpreted with caution. In this cell it can be seen that many more men died than would have been predicted by the percent of those married from population figures. On the other hand, examination of the cell representing wives who were 70-74 years old shows that a lower proportion of husbands died than expected. Thus, the two cells contributing most in terms of mortality to the Chi square significance actually went in opposite directions. Despite this, findings did support the hypothesis. Older wives represented an unusual marriage pattern which presumably leads to atypical role interaction, communication, and family power structures and therefore perhaps contributes to increased mortality among husbands. The younger wives reflected the most typical and acceptable marital arrangement, leading to more traditional roles, regular interaction and communication and male dominance in the family structure. As a consequence of the more typical role relationships it is suggested that the husbands had lower rates of mortality.

Alternatively, the Chi square values from Tables 4 9 can be summed to give a combined Chi square value with the appropriate degrees of freedom. When degrees of freedom = 25, X^2 = 496.8 which is significant at the .001 level ($p < .001$). Inspection of Tables 4-9 shows little consistency, except for the adjacent wife cohorts which support the hypothesis in general that men with older wives die more than expected while men with wives younger live longer than expected.

The hypothesis was too weakly supported to warrant extensive statistical analysis. However, two correlations were run to test the relationship between age difference and income, and age difference and number of children. It should be noted that these correlations were not directly related to the hypothesis. Rather, future research might incorporate these factors and therefore the relationship was explored in the present study. First the findings regarding age differences between spouses and income of husband will be discussed. The relationship between husband's income and age differences between spouses was computed separately for each of the husband's age cohort groups. For the husbands aged 50-54, 55-59, 60-64, and 65-69 there were no significant correlations between income and age differences between spouses.

TABLE 10

Age Difference by Income

	Husband Cohorts					
	50-54	55-59	60-64	65-69	70-74	75-79
Correlation	.06	.03	-.01	-.04	-.13	-.16
Significance	.35	.64	.82	.53	.04	.005
N	251	194	319	227	262	307
Mean Income	8.06	8.2	7.45	6.62	6.06	5.65

5 = $2,000-$2,999 annual income
6 = $3,000-$3,999 annual income
7 = $4,000-$4,999 annual income
8 = $5,000-$6,999 annual income

For the two older age husbands' cohort groups, however, the relationships were significant and negative. For husbands aged 70-74 the correlation was -.13 ($p < .04$) and for husbands aged 75-79, the correlation was -.16 ($p < .005$). All of this information is presented in Table 10. It should be noted that the husbands with the youngest wives did have a higher income than those with same age or older wives within the cohort.

Age differences between spouses and number of children was another correlation analysis. Age differences between spouses, as in the analysis above, were coded into 6 stepwise intervals as follows: 1 = wives 4 intervals younger than their husbands, 2 = wives 3 intervals younger, 3 = wives 2 intervals younger, 4 = wives 1 interval younger, 5 = same 5 year interval, and 6 = wives 1 interval older. Thus, the direction of age difference in the correlation was from the youngest wife (25 years younger) to the least young wife (10 years older). Number of children was coded from 1-9, with 1 = no children and 9 = 8 children. As in the analysis above these correlations were computed separately for the husbands' age cohorts: 50-54, 55-59, 60-64, 65-69, 70-74, 75-79. These results are summarized in Table 11.

TABLE 11

Age Difference by Number of Children

	Husband Cohorts					
	50-54	55-59	60-64	65-69	70-74	75-79
Correlation	-.37	-.31	-.34	-.26	-.17	.06
Significance	.0001	.0001	.0001	.0001	.006	.3
N	253	195	321	229	267	257
Mean Number of Children	2.4	1.7	1.5	1.2	1.2	1.2

1 = none; 2 = 1 child; 3 = 2 children;
4 = 3 children; 5 = 4 children;
6 = 5 children; 7 = 6 children;
8 = 7 children; 9 = 8 children

There was a significant negative correlation in every cohort except the 75-79 year old cohort. The greater the age difference between spouses the fewer number of children. There was no relationship between the number of children and age difference in the last, and only significant cohort. Consequently, the findings do not reveal any important relationships for the hypothesis.

CHAPTER 5

DISCUSSION

The following discussion will begin with a review of the most significant findings and conclude with methodological considerations of longevity studies in general.

There were few significant findings, and no consistent pattern across the cohorts with regard to longevity and age differences between spouses. This hypothesis was not sufficiently supported to warrant further discussion. There was support, however, for an alternative interpretation; namely, age-appropriate marital roles and longevity. This explanation was supported by the finding in the "one interval younger" category across all age cohorts that suggests that lower mortality was associated with having a wife one to ten years younger. Moreover, the "one interval older" resulting in increased mortality for men in all but one cohort supports this supposition, as well.

Interpersonal and Intrapersonal Factors

Seidenberg (1972) pointed out that there are strong social norms which govern acceptable marriage patterns.

He noted that "it is an accepted universal custom, an almost inalienable right no matter what social strata are involved, that older men have free and uninhibited access to younger women. It is the exception in courting, mating, and marriage, that the woman is older" (p. 9). Differing role relationships, as defined by age homophily or heterophily, do seem to have been an influence on the cohorts. The socially acceptable marriage of an older man and younger woman resulted in lower mortality. The opposite situation, that of an older woman and younger man, resulted in extremely high mortality for the male.

The marriage of an older man to a younger woman provides the usual benefits of the important concomitants of the dyadic relationship. In addition, such a marriage may be particularly socially rewarding. A relationship with even a slightly younger woman may promote a positive self-concept while enabling the older man to maintain a positive and perhaps envied role in society. He may become more vital in his own eyes and create a positive spiral of social and personal reinforcement. On the other hand, a society which tends to categorize women as growing "old" before their male counterparts is unlikely to offer a great deal of positive reinforcement for the older woman-younger man relationship, particularly in the case of extreme age differences.

The "Caretaking" Hypothesis

In addition to the general interpersonal factors, there is the "caretaking" hypothesis advanced by Rose (1964) and Rose and Bell (1971). Having a wife between one and ten years younger is life enhancing. Possibly it is her "caretaking" ability which influences her husband's mortality. However, this high level of significance is not maintained with wives 11-25 years younger. If the caretaking hypothesis is valid it would suggest that wives more than 11 years younger, despite their younger age and presumed vitality, do not care for and nurture their aging husbands. Also, lending credence to the caretaking hypothesis is the sixth cell in the 75-79 year old cohort (spouse age 80+). It could be argued that having a wife older and perhaps less capable of caring for her husband results in greater mortality for the male. The extreme finding in this cell would seem to denote that physical, interpersonal, and intrapersonal factors may be operant.

Marital Roles

The thesis of this study is that marital roles exert a powerful influence on marriage partners and longevity. Although the issue of marital roles has been addressed in the discussion on interpersonal and intrapersonal factors, it deserves special and more specific consideration in this final discussion.

Marital roles are obviously defined not only from the outside by society, but from within. The roles and their suitability are greatly defined by the members of the marital dyad. The powerful proscriptions of roles, as defined by society, are well documented in general research. This issue has been addressed in current longevity research, as well. As mentioned, the strong study by Fox, Bulusu and Kinlen (1979) hypothesized that conformity to the expected social norms in marriage patterns decreased mortality while non-conformity increased mortality.

Interestingly, with the exception of Gove (1973) research has ignored intrapersonal or interpersonal elements in role relationships which may influence longevity. The extent to which non-traditional roles can disrupt a marriage has been explored only in terms of the power structure. Berko, Wolvin and Wolvin (1980) noted that traditional roles to some extent offered a sanctuary from stress. They reported that when traditional roles in marriages are questioned,

> This stress increases the need for good communication patterns in order to allow a couple to cope with conflicts about who is responsible for what role and about how to deal with the need for changes and adjustment to those changes (p. 6).

Could it be that traditional role-relationships avoid some stress-producing situations that non-traditional relationships engender? Research pertaining to communication and age difference in marriage is an unexplored area which if pursued might reveal some interesting influences. This was an underlying, but unprovable assumption of the present study.

Special Concerns of Longevity Research

Next we turn our attention to certain methodological considerations relevant to most longevity studies in general. Longevity research is extremely complex. The extrapolation of longevity theory from a wide assortment of related variables has been an arduous task (Rose and Bell, 1971). These authors noted that deductive approaches are not appropriate when theory is lacking, as is the case in longevity research. As a result, inductive approaches using a multivariate method have often been used to generate and test hypotheses.

Palmore and Jeffers (1971) stated that longevity studies have typically been subject to three main problem areas. They are: (1) problems with accurate and reliable measures of longevity, (2) accounting for secular changes, and (3) controlling for age. These three areas are discussed in the following paragraphs. The extent to which the present study is confounded by these problems is explained.

Measurement of longevity. Longitudinal studies provide one method of documenting mortality over a great length of time, but measurement of longevity has been a problem in part because of the length of the human life span. Conducting research on a living population is time consuming, expensive, and often impractical because in a given sample of 60 year old persons the researcher could conceivably have subjects who died forty or more years apart. Since the life time of the researcher is subject to the same frailties as his/her subjects the length of time involved in longevity research has proved frustrating. Currently the Duke Longitudinal Study, the Philadelphia Geriatrics Center study, and the Baltimore HIMN Longitudinal Study provide examples of longitudinal research (Palmore and Jeffers, 1971).

Another possible approach is to begin with a living population and follow-up this population in a few years to see which people died. Then a comparison between those persons still living and those persons who have died is made to identify traits which may contribute to longevity or mortality. This is a general medical model. Palmore and Jeffers (1971) pointed out that this method suffers from incomplete information because there is no way to determine how long the living subjects will continue to live. However, such a method does

not require the expense and time of a longitudinal study, which accounts for all subjects until time of death.

Palmore (1971) reported a third method used in the Duke Longitudinal Study. Since all subjects had not yet died, the number of years of actual survival of persons who had already died were considered. Also, an estimate of when subjects still living would die was made based on actuarial tables of life expectancy with regard to age, sex, and race. Because most of the subjects were in their 80's or over at the time, researchers believed that errors in calculated "years until death" would be relatively small.

A fourth approach, that of retrospective studies, deals with persons in a known group who are all deceased. The uncertainty of age of death is obviously eliminated by this method, as well as the time and expense encountered in a longitudinal approach. The main difficulty in this type of study is that data gathered after death are often subject to distortion due to the fact that information is often gathered from relatives or others. Aside from the difficulty of secondary information, secular changes, or changes in society, pose another reliability problem. Secular changes are a greater threat to reliability in retrospective studies, for the more dated

the sample, the more likely that findings may be subject to secular change.

In the present study, the National Mortality Followback Survey was gathered upon the receipt of the death certificate by sending surveys to informants. This study is a retrospective study and therefore control over "age of death" and control over "date of birth" are possible. Although this survey was admittedly subject to the problems imposed with secondary sources the respondents were contacted immediately after the decedent's death which should help reduce distortion and deletion of information over time.

Secular changes. Secular changes refer to changes in society and in the behavior patterns of persons studied. Rose and Bell (1971) pointed out that the rate of social change and the length of human life are the two factors which influence aging research. They noted that because life expectation and social change both seem to be increasing, the secular effect will become an even more important methodological issue. Secularity can be controlled for but not eliminated. Rose and Bell (1971) stated that the basic principle in the control of secularity is control of birth year. Subjects born in the same year presumably will live under similar environmental and societal conditions. Cohorts, or groups born at

the same time, are subject to less secularity than subjects born decades apart. Within-cohort design compares a group of persons with the same year of birth, while cross-cohort or cross-sectional analysis compares persons born in different time periods.

Often studies have grouped cohorts by ten year intervals on the basis of birth dates. Although this may control for secularity in some instances it does not always provide reliability since the rate of societal change is so rapid. Bumpass and Sweet (1970) reinforced this point when they remarked that "persons born only five years apart may formulate values and expectations in quite different contexts."

All studies which incorporate the study of social factors over a long period of time are plagued with the problem of secular change. However, in this study, secularity has been controlled by the use of within-cohort groups. Cross-sectional data were tabulated, but conclusions were drawn cautiously since age-at-death ranges from 50 to 79 years in cross-cohort data.

Changing marital patterns will be an unavoidable secular effect in this study. For example, the average age at first marriage of both men and women has apparently been declining for the past century in the United States according to 1970

Census Statistics (Carter and Glick, 1970). Also we have no information about the number of marriages, a factor certainly subject to secular effects. If as Fox, Bulusu and Kinlen (1979) observed, the conformity to social norms in age patterns of marriage has a relationship to longevity, then any change in attitudes or values could effect the generalizability of findings over time.

Controlling for age. It is necessary to control for age of subjects because naturally older subjects are more likely to die due to the effects of old age. In order to determine what other factors are influencing longevity or lack of it, the general effect of age must somehow be controlled. Palmore and Jeffers (1971) cautioned that even within a ten year age group the older persons will have a greater mortality than the younger ones. Although age matching within a five year age group provides much better control, it is still subject to some variation in death due to age alone. Two other methods which have been used to help control for age are isolating persons of the same age and comparing those who die before their life expectancy with those who die after and matching individual persons by age and then analyzing mortality (Palmore and Jeffers, 1971).

In the present study the general effect of age should not confound results. Age-at-death was analyzed in five year

intervals from age 50 to 79. Although there could be some variation of death attributed to age, alone, it should not be substantial. Within each interval date-of-birth and age-at-death were controlled. Data analysis between cohorts would have a large variation of date-of-birth and should be interpreted carefully. The end-of-life variable does not pose a problem, since all persons were deceased in 1968, and all information was reported by 1969.

Conclusions

The present study explored the relationship between longevity and age differences in marriage. The study of longevity is best viewed as a combination of physical, interpersonal and intrapersonal factors. Although limitations are established by biological determinants, interpersonal and intrapersonal factors are important predictors of longevity.

Research in the area of age difference has been undertaken in the field of communication and in studies of marriage and family. However, previous research has taken a developmental approach to age difference. For example, research examines children compared to adolescents, or the interaction of young couples compared to the interaction of old couples. The concern of this dissertation was with the interaction of

couples in marriages with large or unusual age differences. After an extensive search it appears that this topic has received no attention in communication research.

Although this study produced no conclusive findings, it seems clear that adherence to social norms is related to longevity. This warrants further examination. Numerous interpersonal and intrapersonal variables could also be examined, among them, stress, power, happiness, role satisfaction, and perceived levels of accuracy and understanding in communication. Additionally, since the relevance of age difference in marriage may change over the duration of a marriage, studies which combine both developmental and interactive approaches might be useful tools for examining age differences in marriage and its consequences.

The use of cross cultural data might be another approach which could be taken to further examine the hypothesis and help corroborate the "social norms" and "interpersonal" explanations advanced in this study. The opposite findings (concerning longevity and a much younger wife) of the American study conducted by Rose and Bell (1971) and the English study conducted by Fox, Bulusu and Kinlen (1970) suggest that differential mortality has certain social aspects. One can

deduce that cultural or social differences in the marriage roles account for opposite effects in mortality in this instance.

Finally, one feature of this study, which distinguishes it from much of the current research in communication, is the use of demographic data. Although such an approach results in more inferential thinking, it has an obvious practical advantage over the laboratory setting. The results of the study show enough significant relationships to suggest that further investigation of the dynamics of age difference in relationships might prove valuable. Admittedly there are many confounds in longevity study, and it is difficult to control all variables, but the area itself is an expanding one which could benefit greatly from more attention by researchers in communication.

APPENDIX A

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
WASHINGTON, D.C. 20201

NATIONAL CENTER FOR
HEALTH STATISTICS

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The U. S. Public Health Service is conducting a national mortality survey to collect information about the smoking habits and personal characteristics of persons who have recently died. The present study is one of several being undertaken by the Public Health Service to obtain more information about the relationship between smoking and health. A recent report on smoking and health, which was prepared by a committee of experts appointed by the Surgeon General, has called attention to smoking as a health problem and to the need to collect more facts about this problem.

It is crucial to the success of this study to obtain the information requested on the enclosed form for the decedent named below. Our records indicate that you are very likely to have this information. Please complete and return the enclosed form whether the decedent smoked or not. If you do not know the exact answer to a question, give your best estimate whenever possible.

The information that you provide will be held strictly confidential and it will be used for statistical purposes only. Neither your identity nor that of the decedent will ever be disclosed.

For your convenience, a return preaddressed envelope which requires no postage is enclosed.

Sincerely yours,

Monroe G. Sirken

Monroe G. Sirken, Ph.D.
Chief, Division of Health
Records Statistics

Name of Deceased Person _____ File Number _____

I4-1-MR

APPENDIX B

Table 10. Age of Wife by Age and Race of Husband: 1970—Continued

(Data based on 5-percent sample, see text. For minimum base for derived figures (percent, median, etc.) and meaning of symbols, see text)

United States	All married couples	Age of wife (years)															Median age of wife
		14 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 and 61	62 to 64	65 to 69	70 to 74	75 to 79	80 and over	
WHITE																	
Total	**40 740 647**	**789 421**	**4 118 781**	**4 786 304**	**4 283 858**	**4 214 955**	**4 506 469**	**4 557 585**	**3 977 274**	**3 318 403**	**1 121 254**	**1 414 052**	**1 760 295**	**1 081 753**	**543 333**	**266 910**	**42.6**
Husband:																	
14 to 19 years	281 241	192 096	43 772	2 913	3 652	8 445	9 494	8 377	6 374	3 287	671	269	595	496	255	545	18.4
20 to 24 years	2 713 140	480 582	2 028 771	157 965	15 519	6 668	7 733	6 881	3 958	1 798	696	635	578	317	173	866	22.2
25 to 29 years	4 349 534	75 785	1 676 914	2 334 010	197 588	35 659	14 146	6 549	2 428	2 011	731	550	779	344	190	1 850	25.9
30 to 34 years	4 126 674	12 046	253 782	1 733 394	1 839 776	222 101	43 986	11 782	4 040	1 973	418	531	816	495	188	1 346	30.2
35 to 39 years	4 122 549	6 897	61 726	379 021	1 627 730	1 721 848	251 085	50 629	13 608	4 728	980	766	1 058	709	238	1 526	35.0
40 to 44 years	4 474 295	4 835	24 010	107 124	431 897	1 634 189	1 847 913	333 320	63 117	16 681	2 519	2 114	2 043	723	567	3 243	40.1
45 to 49 years	4 510 059	4 008	13 566	41 146	108 765	418 299	1 669 135	1 851 690	313 863	65 314	8 933	6 052	4 562	1 574	533	2 619	45.0
50 to 54 years	4 134 575	4 038	7 294	15 416	34 191	107 808	467 859	1 590 379	1 530 090	300 470	32 566	23 953	14 346	3 180	945	2 040	49.5
55 to 59 years	3 668 842	4 065	3 868	7 067	12 405	36 445	133 047	498 635	1 409 314	1 264 548	150 102	89 381	46 441	8 925	2 213	2 386	54.0
60 and 61 years	1 309 081	1 186	909	1 418	2 599	6 676	20 199	72 869	256 439	580 578	197 656	112 672	45 566	7 591	1 527	1 196	57.5
62 to 64 years	1 723 035	639	983	1 481	2 265	6 637	19 408	63 967	198 364	564 360	327 317	356 876	151 575	22 818	4 287	2 058	60.0
65 to 69 years	2 207 017	1 008	762	1 993	2 629	4 492	13 241	42 022	121 314	364 733	281 745	549 708	674 781	123 470	19 543	5 576	63.5
70 to 74 years	1 551 812	475	609	873	1 315	2 302	4 888	12 593	37 573	103 319	83 746	193 033	568 925	449 722	78 905	13 534	67.9
75 to 79 years	953 646	514	650	658	689	1 307	2 006	4 460	11 178	32 634	24 647	58 362	188 981	341 952	245 956	39 652	72.2
80 years and over	615 147	1 247	1 165	1 825	2 838	2 079	2 329	3 432	5 614	11 989	8 527	19 150	59 249	119 437	187 813	188 473	76.8
Median age of husband	45.3	22.1	25.0	29.8	35.3	40.3	45.2	50.0	55.2	60.0	63.5	66.0	69.5	74.1	78.3	80.0	...
Percent by age of husband	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	...
Husband:																	
14 to 19 years	0.7	24.3	1.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	–	–	–	–	0.2	...
20 to 24 years	6.7	60.9	49.3	3.3	0.4	0.2	0.2	0.2	0.1	0.1	0.1	–	–	–	–	0.3	...
25 to 29 years	10.7	9.6	40.7	48.8	4.6	0.8	0.3	0.1	0.1	0.1	0.1	–	–	–	–	0.7	...
30 to 34 years	10.1	1.5	6.2	36.2	42.9	5.3	1.0	0.3	0.1	0.1	–	–	–	–	–	0.5	...
35 to 39 years	10.1	0.9	1.5	7.9	38.0	40.9	5.6	1.1	0.3	0.1	0.1	0.1	0.1	0.1	–	0.6	...
40 to 44 years	11.0	0.6	0.6	2.2	10.1	38.8	41.0	7.3	1.6	0.5	0.2	0.1	0.1	0.1	0.1	1.2	...
45 to 49 years	11.1	0.5	0.3	0.9	2.5	9.9	37.0	40.6	7.9	2.0	0.8	0.4	0.3	0.1	0.1	1.0	...
50 to 54 years	10.1	0.5	0.2	0.3	0.8	2.6	10.4	34.9	38.5	9.1	2.9	1.7	0.8	0.3	0.2	0.8	...
55 to 59 years	9.0	0.5	0.1	0.1	0.3	0.9	3.0	10.9	35.4	38.1	13.4	6.3	2.6	0.8	0.4	0.9	...
60 and 61 years	3.2	0.2	–	–	0.1	0.2	0.4	1.6	6.4	17.5	17.6	8.0	2.6	0.7	0.3	0.4	...
62 to 64 years	4.2	0.1	–	–	0.1	0.2	0.4	1.4	5.0	17.0	29.2	25.2	8.6	2.1	0.8	0.8	...
65 to 69 years	5.4	0.1	–	–	0.1	0.1	0.3	0.9	3.1	11.0	25.1	38.9	38.3	11.4	3.6	2.1	...
70 to 74 years	3.8	0.1	–	–	–	0.1	0.1	0.3	0.9	3.1	7.5	13.7	32.3	41.6	14.5	5.1	...
75 to 79 years	2.3	0.1	–	–	–	–	–	0.1	0.3	1.0	2.2	4.1	10.7	31.6	45.3	14.9	...
80 years and over	1.5	0.2	–	–	0.1	–	0.1	0.1	0.1	0.4	0.8	1.4	3.4	11.0	34.6	70.6	...
Percent by age of wife	**100.0**	**1.9**	**10.1**	**11.7**	**10.5**	**10.3**	**11.1**	**11.2**	**9.8**	**8.1**	**2.8**	**3.5**	**4.3**	**2.7**	**1.3**	**0.7**	...
Husband:																	
14 to 19 years	100.0	68.3	15.6	1.0	1.3	3.0	3.4	3.0	2.3	1.2	0.2	0.1	0.2	0.2	0.1	0.2	...
20 to 24 years	100.0	17.7	74.8	5.8	0.6	0.2	0.3	0.3	0.1	0.1	–	–	–	–	–	–	...
25 to 29 years	100.0	1.7	38.6	53.7	4.5	0.8	0.3	0.2	0.1	–	–	–	–	–	–	–	...
30 to 34 years	100.0	0.3	6.1	42.0	44.6	5.4	1.1	0.3	0.1	–	–	–	–	–	–	–	...
35 to 39 years	100.0	0.2	1.5	9.2	39.5	41.8	6.1	1.2	0.3	0.1	–	–	–	–	–	–	...
40 to 44 years	100.0	0.1	0.5	2.4	9.7	36.5	41.3	7.4	1.4	0.4	0.1	–	–	–	–	0.1	...
45 to 49 years	100.0	0.1	0.3	0.9	2.4	9.3	37.0	41.1	7.0	1.4	0.2	0.1	0.1	–	–	0.1	...
50 to 54 years	100.0	0.1	0.2	0.4	0.8	2.6	11.3	38.5	37.0	7.3	0.8	0.6	0.3	0.1	–	–	...
55 to 59 years	100.0	0.1	0.1	0.2	0.3	1.0	3.6	13.6	38.4	34.5	4.1	2.4	1.3	0.2	0.1	0.1	...
60 and 61 years	100.0	0.1	0.1	0.1	0.2	0.5	1.5	5.6	19.6	44.4	15.1	8.6	3.5	0.6	0.1	0.1	...
62 to 64 years	100.0	–	0.1	0.1	0.1	0.4	1.1	3.7	11.5	32.8	19.0	20.7	8.8	1.3	0.2	0.1	...
65 to 69 years	100.0	–	–	0.1	0.1	0.2	0.6	1.9	5.5	16.5	12.8	24.9	30.6	5.6	0.9	0.3	...
70 to 74 years	100.0	–	–	0.1	0.1	0.1	0.3	0.8	2.4	6.7	5.4	12.4	36.7	29.0	5.1	0.9	...
75 to 79 years	100.0	0.1	0.1	0.1	0.1	0.1	0.2	0.5	1.2	3.4	2.6	6.1	19.8	35.9	25.8	4.2	...
80 years and over	100.0	0.2	0.2	0.3	0.5	0.3	0.4	0.6	0.9	1.9	1.4	3.1	9.6	19.4	30.5	30.6	...

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