

SPATIAL TEMPORAL EXPERIENCES AND SELF-ASSESSED
HEALTH IN THE OLDER ADULT

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SPATIAL TEMPORAL EXPERIENCES AND SELF-ASSESSED
HEALTH IN THE OLDER ADULT

ABSTRACT

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The relationships between spatial, or non-linear, temporal experiences and self-assessed health in the older adult were examined. Newman's (1986) model of health, in which time is a major concept, and Cottle's (1967) spatial conceptualization of time provided direction for the study. Temporal variables included dominance and relatedness as described in the Circles Test.

The sample consisted of 42 females and 4 males who resided in retirement centers. The mean age of the subjects was 80.5 years. Self-assessed health scores ranged from 1-10, with a sample mean of 6.89 (SD = 2.3). Drawings, in the shape of circles to represent the three time zones, were analyzed in terms of dominance (size) and relatedness (degree to which circles touch or overlap). None of the subjects drew the continuous configuration representing a linear relationship. The past was viewed as the dominant time zone by 72% of the subjects. The mean self-assessed health score for this group was 6.5

(SD = 2.44). Subjects (15%) drawing the future as the dominant zone had a mean self-assessed health score of 8.7 (SD = 1.25). Temporal dominance categories, in order of dominant to least dominant zone, were examined. Of the total drawings, 59% were of the past > present > future configuration.

The correlation between temporal relatedness and self-assessed health scores was not significant (r = .016, p = .46). No significant differences were observed in self-assessed health scores when subjects were grouped by time zone dominance (F = 2.72, p = .08) and time zone dominance categories (F = 1.42, p = .23). Interactions were not significant when the variables of age and gender were introduced. A t-test (t = -2.57, df = 44) demonstrated that the difference between the groups in terms of assistive device use was statistically significant (p = .01). Subjects who reported "no assistive device use" had significantly higher self-assessed health scores.

The lack of a significant relationship between the temporal variables of dominance and relatedness and self-assessed health underscore the difficulties associated with the conceptualization of the time variable. Anecdotal material provided by the subjects revealed differences in patterns of expression about the different time zones.

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CHAPTER I

INTRODUCTION

Time, or temporality, as an experience and as a dimension, has for centuries occupied a central and recurring theme in the writings and reflections of philosophers, psychologists, and physicists. Time, as it permeates all human experiences, is a mystical and wondrous concept that has fascinated and captivated both present and past civilizations.

Fraser (1975) observed that some of the earliest manifestations of time are reflected in the paleolithic records and in the stories of creation. Morris (1985) expanded the idea in a discussion of the shift from a cyclical to a linear outlook on time. Ancient civilizations believed that historical events followed cyclic patterns and that these patterns were somehow reflected in the nature of time itself. Today, western culture perceives time as linear, or a succession of the past, present, and future (Cottle, 1976; Luce, 1974). In addition, Trivers (1985) traced the evolution of time in terms of modern science and noted the contribution of Galileo, Barrow, Newton, and Einstein.

The concept of the temporality of the self or the psychogenetic development of the consciousness of time was explored by both Piaget (1969) and the French psychologist, Fraisse (1963). Kummel (1966), in an examination of the nature of time, suggested that time has no reality apart from man's experience and thoughts. Man is "the only being on earth with an 'awareness' of time, a being for whom the problem of time is not merely one of theory but one which is supremely and intimately related to the conduct of his life" (Kummel, 1966, p. 32).

An important aspect of time is also one's conceptualization of it. Research by Cottle (1967, 1976) explored both linear and spatial conceptions of time in an effort to understand how individuals perceive the temporal horizon. The concept of time includes both subjective and objective properties. The spatial conceptualization refers to the way an individual perceives time flow subjectively, while the linear conceptualization reflects how the person perceives time flow objectively, how it is measured by the individual.

Research today reflects this continuing interest and fascination with time, as experiences of time have been related to a broad range of rhythmic patterns in man. These areas of study have included body temperature, body

movement, sleep/wake patterns, and changes in perceptions of space/time (Fitzpatrick, 1980). Moreover, studies by Newman (1976, 1982, 1983, 1987) have suggested that perceived temporal duration may be an indicator of an individual's basic rhythm or tempo that might be helpful in assessing the individual's health. In essence, time awareness and time as experienced by an individual may be indicators of health.

Problem Statement

The problem of the study was:

What are the relationships between spatial, or non-linear, temporal experiences and self-assessed health in the older adult?

Purpose of the Study

Even though numerous investigations of time perception across the life span have been conducted, the relationship of time, as a correlate of health, remains virtually untouched. Research focusing on spatial temporal experiences and self-assessed health provides the opportunity to concentrate on the individual's own experiences of time. This perspective may permit discoveries about subjective time without a reliance on some external or mechanistic measure.

The specific objectives of the study were:

1. To determine the relationships between spatial temporal experiences in terms of both relatedness and dominance of time zones (past, present, and future) and self-assessed health.
2. To examine differences among self-assessed health scores when subjects are grouped according to time zone dominance categories.
3. To determine the relationship of various demographic variables and self-assessed health.

Rationale for the Study

An analysis of the research on temporal experiences indicates that terminology, methodology, and comparability are indeed complex. Terms used include: time perception, time estimation, over-estimation of time, underestimation of time, time focus, time attitudes, time flow, temporal perspectives, and temporal orientation. These problems are intensified when the researcher tries to distinguish between subjective experiences of time and linear or clock time (Fitzpatrick, 1980).

Smith (1984) suggested that research on temporal experiences could be further broadened so as to include the lived experience of time. The judgment of a 40-second interval, in terms of measuring temporal duration, offers

only a unidimensional perspective of clock time. This perspective fails to capture temporality as a subjective experience.

Various investigations of time perception across the life span suggest that subjective time increases with age. Newman (1982) found that the consciousness index (a ratio of objective and subjective time) increased with age and that certain moods, such as depression, may be accompanied by a diminished sense of time (Newman & Gaudiano, 1984). As well, Engle (1984) stressed that time, as a correlate of health, should not be ignored because time may illuminate dimensions of health as yet unknown.

Also, much has been written about the fact that greater numbers of people are surviving to old age and that with this increase, greater demands will be placed on meeting the unique health care needs of the elderly. Often, these individuals are labeled as unhealthy because of aging and the presence of multiple chronic illnesses. In addition, self-assessment of health is usually studied in the context of the medical paradigm--the absence of disease. Engle and Graney (1985) pointed out that the validity criterion for self-assessment of health is often the physician assessment following a medical examination. These beliefs about older adults' health are inconsistent

with the nursing theoretical formulations of Rogers and Newman (Engle, 1984).

This very paradox demonstrates the need for more research with a focus on the time-health relationship in the older adult. If, as suggested by the literature, the trend is toward increased subjective time with age, and if time is an indicator of health, then nursing is in an excellent position to test both theory and practice (Newman & Gaudiano, 1984). Moreover, Engle (1988) stressed the importance of supporting theory reformulation at a middle-range level. Learning more about the spatial temporal experiences of older adults would aid in the linkage of gerontological nursing practice to a nursing grand theory, such as Newman's (1983) conceptualization of health.

Additionally, research findings by both Newman (1976) and Engle (1984, 1986) suggest that linear measurements of time may not offer a holistic indicator of the meaning of time for an individual. The linear construct reflects western culture and is bound to the clock. A measure utilizing spatial, or non-linear, time is more consistent with the underlying conceptualization of the Newman framework. The implication is that nursing could assist older adults to expand their experience of time and thus improve the quality of life (Newman & Gaudiano, 1984).

Conceptual Framework

The framework for the study was based on the work of Newman (1979, 1983, 1986) and Cottle (1967, 1976). The framework embodies the conceptual dimensions of spatial temporal experiences as described by Cottle and the Newman model of health.

Newman's (1979, 1983, 1986) conceptual model is based on a synthesis of the concepts of health and illness. The conceptualization embodies health as the expansion of consciousness and recognizes the presence of dynamic, changing relationships which portray different degrees of health and illness. The basic concepts which constitute this view of health are movement, time, space, and consciousness. Newman believes that operationalism of this model of health can be approached by describing evolving patterns of consciousness in terms of the integration of movement-space-time.

The foundation for Newman's (1983) basic assumptions is a definition of health which is based on Hegel's dialectic process of the fusion of opposites--one point of view fuses with the opposite point of view and brings forth a new, synthesized view. Therefore, disease fuses with its opposite, nondisease, and brings forth a new concept,

health. From this synthesized view of health, the following basic assumptions developed:

1. "Health encompasses conditions heretofore described as disease" (Newman, 1983, p. 163).

Though nearly everyone of adult age has some conditions that could be termed disease or, in medical terms, pathology, few of these persons actually consider themselves ill. Even persons with chronic, debilitating diseases often do not consider themselves ill. Each person is a whole person and the disease is a part of the total being.

2. "These disease conditions can be considered a manifestation of the unitary pattern of the person" (Newman, 1983, p. 163).

This statement is based on the assumption by Rogers (1970) that pattern and organization identify man and reflect his wholeness (p. 65). Disease is viewed as a clue to the pattern of the person's life and may not even be considered by the individual. This pattern of the individual is reflected in the energy exchange within man and between man and his environment.

3. "The pattern of the person that eventually manifests itself as disease is part of a larger ongoing

pattern" (Newman, 1983, p. 164). The pattern of the individual exists prior to the development of the disease.

4. "Elimination of the disease condition in itself will not change the pattern of the person" (Newman, 1983, p. 164).

The disease of a person is not something to be eradicated but something to be understood in terms of the larger whole.

5. "If developing a disease is the only way an individual can manifest itself, then that is health for that person" (Newman, 1983, p. 164).

Disease may be regarded as an integrating factor, and as such, is important in the development of the individual. This integration of self, in turn, frees energy for expanding consciousness.

6. "Health is the expansion of consciousness" (Newman, 1983, p. 164).

Health is equated with life. The life process is directed toward expanded consciousness. Health is that process of developing awareness of self and environment together with increasing ability to perceive alternatives and to respond in a variety of ways. The movement of the person is in the direction of expanding consciousness. This definition of health is placed within the totality of

the life process. Moreover, the definition recognizes the characteristics of pattern, rhythmicity, and increasing complexity of the individual's awareness and interaction with the environment.

Additionally, Newman (1983) pointed out that the synthesized view of health as expressed in the basic assumptions is both applicable and appropriate in terms of family health. The major concepts of movement, time, space, and consciousness are relevant for understanding the dynamics of family systems. Space and time dimensions are important in the family and may be expressed in terms of coordinated movement of language between members, private time, shared time and space, distancing, and coordinated time. In sum, the interactive pattern of the family is viewed as a manifestation of expanding consciousness.

Newman (1983) proposed five general propositions that interrelate the concepts of movement, space, time, and consciousness to provide direction for better understanding the expansion of consciousness as an expression of health. The interrelationships of these concepts are postulated as follows: (a) movement is a reflection of consciousness, (b) time is an index of consciousness, (c) time is a function of movement, (d) movement is a means whereby time

and space become a reality, and (e) time and space have a complementary relationship.

Movement is the first correlate of health and is the means of becoming aware of self. The individual perceives reality and, therefore, becomes aware of self. Newman (1986) observed that when we come into being in the physical world, we exist in time and space with a limited sense of self. It is through movement that we expand our knowledge of ourselves, others, and the environment.

Body movement pattern is an identifiable characteristic of each individual and is specific to each individual. This pattern of movement reflects the overall organization of the thought and feeling processes of a person. If a person feels upset or disorganized, the rhythm and intensity of gait will reflect this change. Movement is also integral to relationships with others and allows the individual to approach others or to avoid others. Language requires a rhythm of muscular activity. Restriction in terms of movement, space, and time is also a factor in interpersonal relationships. Movement is a pivotal choice in the evolution of human consciousness (Newman, 1983, 1986).

Time, as a correlate of health within the Newman model, includes a sense of time perception. Newman (1979,

1983, 1986) used Bentov's (1977) conceptualization of perceived duration of time as an index of consciousness. When an individual's subjective time is greater than any objective time (clock time), the ratio indicates a higher level of consciousness than for the individual whose subjective time equals clock time. Newman postulated this increase in perceived duration reflected an altered state of consciousness in which the person experienced more time available than is actually demonstrated by the clock time. This offers support for expanding consciousness across the life span.

The complementarity of space and time is visible in everyday experiences. When one's life is restricted by either physical or social immobility, one's time is increased. On the other hand, the highly mobilized person lives in a world of expanded space and compartmentalized time (Newman, 1983, 1986).

Newman (1983) defined consciousness as the informational capacity of the system. Consciousness may be observed in terms of the quantity and quality of responses to stimuli. Newman proposed that the development of the individual is toward higher and greater frequency of energy exchange with the total system. The expansion of consciousness is what life and health are all about.

In the Newman (1983) model of health it does not matter where a person is in the process. No experience is irrelevant. What is important is that the person get in touch with his or her own pattern of interaction and recognize that whatever it is, the process is in progress and the experience is one of expanding consciousness. Newman believes that the paradigm of health is relational, probabilistic, unitary, qualitative, and innovative.

For nursing, pattern recognition is the essence of practice. Today, nurses are functioning in both the old and the new paradigms of health. The old paradigm, predominantly the medical model, is based on the concept of health as the absence of disease. Once a disease is identified, efforts are directed at eliminating the disease. The disease is viewed as an entity in and of itself. The new paradigm focuses on the wholeness of the person in interaction with the environment. Nursing practice involves accepting the pattern of interaction as a process of evolving consciousness. Disease is a manifestation of that pattern rather than an external entity. Recognition of the pattern is basic to responding to the individuality of another person (Newman, 1986).

The phenomena of temporal experiences described by Cottle (1967, 1976) incorporates both spatial and linear

conceptualizations of time. According to Cottle, spatial conceptualization refers to the way one perceives time flow subjectively, while linear conceptualization reflects how the individual perceives the flow of time objectively--how time is measured. An area of interest in the spatial conceptualization is the idea of temporal relatedness, or the sense of perception of the past, present, and future.

Temporal dominance, or the fact that some individuals perceive one time zone as being more significant, represents another dimension in man's temporal horizon. Cottle (1976) cited personal, social, and cultural reasons for this perception. Cottle pointed out that the future is the dominant time zone when the values associated with the American culture are examined. On an individual basis, any time zone may be perceived as dominant.

How the individual perceives the future is also related to the distinction between linear and spatial conceptions. With the linear conception, the individual cannot know the future because of the successive nature of moments. The individual must await the entry of future moments into the present to experience them. In the spatial conceptualization, the individual correlates past, present, and future moments and recognizes the linearity of time (Cottle, 1976).

Cottle (1976) stated that one cannot experience the phenomenon of time until it is spatialized or until the individual "detimes" it. One infers what time is, even while one experiences it. Cottle asserted that the spatial conception does not imply that past, present, and future instants are mixed up with one another or that they occur simultaneously. Individuals know that there is a period of time not yet experienced and a period already experienced. The fact that expectations, recollections, and sensations of events that occur in the present come into consciousness demonstrates the spatial conception of time. However, it is important to realize that linear and spatial conceptions of time are relevant in understanding what time means to an individual.

In sum, time is a major concept in both of the presented frameworks. For Newman (1983), time is a correlate of health (consciousness), while for Cottle (1976), a spatial conceptualization of time represents the subjective aspects. Therefore, this study explored the concept of time as an indicator of consciousness (health).

Assumptions

The research was based on the following assumptions:

1. Men and women conceptualize time both objectively and subjectively (Cottle, 1976).

2. Men and women have orientations, periodically, to the past, present, and future (Cottle, 1976).

3. Health is viewed as a process of living--as a synthesis of disease and nondisease (Newman, 1983).

Research Questions

The research was conducted to answer the following questions:

1. What is the relationship between temporal relatedness, as measured by the Circles Test, and the self-assessed health of older adults, as measured by the score on the Self-Assessment of Health Scale?

2. Is there a difference on the self-assessed health scores of older adults, as measured by the score on the Self-Assessment of Health Scale, when subjects are grouped according to temporal dominance (past, present, future), as measured by the Circles Test?

3. Is there a difference on the self-assessed health scores of older adults, as measured by the score on the Self-Assessment of Health Scale, when subjects are grouped according to temporal dominance categories, as measured by the Circles Test?

4. Is there an interaction between (a) temporal dominance, as measured by the Circles Test; and (b) gender in regard to self-assessed health of older adults, as

measured by the score on the Self-Assessment of Health Scale?

5. Is there an interaction between (a) temporal dominance, as measured by the Circles Test; and (b) age in regard to self-assessed health of older adults, as measured by the score on the Self-Assessment of Health Scale?

Definition of Terms

The following terms were defined for the study:

1. Older adult--those individuals 65 years of age or older.
2. Spatial (non-linear) temporal experiences--the way in which an individual perceives time subjectively, the way the individual feels about time as measured by the Circles Test (Cottle, 1976).
3. Temporal relatedness--a variable generated by the Circles Test which assesses the extent to which an individual perceives the relatedness of the past, present, and future. When operationalized, relatedness is the degree to which drawings show circles (representing time zones) touching one another or, in some cases, partially or completely overlapping (Cottle, 1976).
4. Temporal dominance--the perception that one time zone is more significant (relative) than the other time

zones as measured by the size of the circles drawn in the Circles Test (Cottle, 1976).

5. Temporal dominance categories--represent the six possible arrangements of the three time zones. These arrangements are: (a) past, present, future; (b) past, future, present; (c) present, future, past; (d) present, past, future; (e) future, past, present; and (f) future, present, past.

6. Self-assessment of health--the score on a 10-rung Cantril Ladder representing "your health today." The higher the score, the more healthy the individuals perceive themselves to be.

Limitations

The major limitations of the study were:

1. An accidental sampling technique was utilized.
2. Subjective time is personal and experiential; therefore, subjective time is difficult to measure quantitatively.
3. Temporal perceptions change because individuals are living in time.
4. Motor skills, in terms of drawing, may have been affected by the older age of the participants.

Delimitations

The delimitations of the study were:

1. The study was limited to those older adults who volunteered to participate.
2. The sample was limited to adults 65 and older.
3. The sample was limited to older adults in retirement centers.

Summary

The interrelationships between time and health in the older adult have been presented within the framework of the Newman (1979, 1983, 1986) model of health. The phenomenon of spatial temporal experiences, as described by Cottle (1967, 1976), offers a measure of time that focuses on the subjective aspects of man's temporal experiences. The research explored the relationships between spatial experiences of time and self-assessed health in the older adult. Specific assumptions were stated, research questions formulated, and terms defined as part of this chapter.

CHAPTER II

REVIEW OF LITERATURE

This chapter addresses the major concepts of time in relation to both movement and health. Time, from a general perspective, is examined first and then the concept as related to both movement and health is reviewed within the context of specific research studies.

Time

The concept of time has fascinated humans over the centuries. In ages past, conceptualizations of time were dramatically different from what they are today. Ancient civilizations did not share the modern view of time as a linear continuum that stretches into the indefinite future. For these peoples, time was cyclic in character. Various myths attest to the fact that these civilizations believed that eventually the world would be destroyed and that it would be recreated so that a new cycle could begin (Morris, 1985).

Today, members of Western civilization tend to think of time as something that stretches in a straight line into the past and the future. This manner of thinking reflects the heritage of Christianity; for the early Christian

writers stressed the importance of individual historical events that could not be repeated. The linear concept of time also strongly influenced Western thought and the whole idea of progress. Without the linear concept of time, it would be difficult to conceive of time as an abstract quantity that can be broken down into hours, minutes, and seconds. The notion of abstract time began with the invention of the clock and Galileo's investigation of falling bodies (Morris, 1985).

Trivers (1985), in tracing the evolution of time in terms of modern science, noted that Galileo treated time as a spatial dimension (a geometric straight line) and that Issac Barrow believed in the ultimate relation of time and motion. In the 17th century, Issac Newton defined absolute and mathematical time as flowing uniformly without reaction to anything else in the universe. Finally, in 1905, Albert Einstein published his special theory of relativity dealing with the four-dimensional continuum formed by the union of space and time.

Fraser (1987) noted that the study of time can be facilitated if the individual assumes the existence of five distinct temporalities. These temporalities form a hierarchy of increasing complexity, as temporality proceeds from the world of electromagnetic radiation (atemporality)

to nootemporality, or noetic time. Noetic time is the temporal reality of the mature human mind, characterized by clear distinction among future, past, and present, by unlimited horizons of futurity and pastness, and by the mental present. In between these worlds are (a) biotemporality or biological time, the temporal reality of living organisms; (b) eotemporality, or the time of the 'physicist's t ' (Fraser, 1987, p. 368); and (c) the time of elementary particles, prototemporality. Fraser stated that time has its origins in the life process, in the creativity of the mind, and in the social conventions and modes of communication.

Capra (1983) asserted that notions of space and time greatly influence one's map of reality. These notions of space and time serve to order things and events in the environment and, therefore, the notions are especially important as one attempts to understand nature through science and philosophy. Capra pointed out that Eastern philosophy has maintained that space and time are constructs of the mind and like all other intellectual concepts are relative, limited, and illusory. Eastern mystics link the notions of space and time to particular states of consciousness. Through meditation, the Eastern mystics realized that the conventional notions of space and

time are not the ultimate truth. Capra proposed that these refined notions of space and time are similar to the notions of modern physics, as exemplified by the theory of relativity.

Time, for Hall (1983), is not the Western world view of time as a singular entity, but rather the belief that time is a cluster of concepts, events, and rhythms that cover a diverse and rich range of phenomena. Time offers a means of gaining insight into culture and cultural developments. In essence, time is a core system of cultural, social, and personal life. Everything, then, occurs within some kind of time frame. Time functions as organizer, integrator, and synthesizer.

Hall (1983) proposed nine types of time: biological, personal, physical, metaphysical, micro, sync, sacred, profane, and meta. The experience of the flow of time in different contexts, settings, and psychological states is referred to as personal time. Physical time represents the work of the physicists and astronomers to explain the universe.

Micro time is culture-specific time. So-called monochronic time (M-Time), or one-thing-at-a-time and polychronic time (P-Time), many-things-at-a-time, are examples. American time is, on the surface, monochronic

and dominates the worlds of business, government, the professions, entertainment, and sports. However, in the home, P-Time takes over. While polychronic time focuses on people, M-Time is oriented to tasks, schedules, and procedures.

Sync time can be traced back to the development of "talking pictures" in which there was a need to synchronize the sound track with the visual film record. Hall (1983) noted that different people move to different beats and that each culture has its own beat. With interactions, people synchronize with each other in a very precise way.

Sacred or mystic time is imaginary time--"one is 'in' the time" (Hall, 1983, p. 24). Sacred time is repeatable and does not change--like a story. Profane time represents that part of life which is explicit, talked about, and formulated. In the western world, profane time can be demonstrated by the various elaborated systems that mark minutes and hours, months, years, and centuries.

Lastly, meta time refers to all the theories, discussions, and preoccupations focusing on the nature of time. Although not a time in the true sense, meta time represents an abstraction from different temporal events. Hall stated that the lack of consistency between the

theories of time is due to individuals looking at one kind of time from the perspective of another kind of time.

Zentner (1966) examined the social time-space relationship and expressed the opinion that neither time nor space are objectively "there" in some psychologically given sense. Zentner said that these phenomena are socially invested with meaning and value according to the experiences of members of a society. In technologically advanced societies, the number of alternative uses to which temporal and spatial resources may be allocated are increasingly more numerous and the corresponding value attached to them is comparatively high. This theme is echoed by Strumpf (1986) who noted that Westerners have been considerably influenced by technology and the idea that time is a valuable commodity.

Kantor and Lehr (1975), in a descriptive theory of family process, proposed the thesis that family members accomplish life goals of affect, power, and meaning through the way in which the members and their families regulate the access dimensions of space, time, and energy. Dimensions, as defined in this open family systems model, are the physical and conceptual fields of interactional activity. Within these fields, families regulate the activities of people, objects, and events. The access

dimensions are vital because without space there is no place for an event; without time, no sequence; and without energy, no vitality.

Time, for Kantor and Lehr (1975), is viewed as a social variable that is based on a distance-regulation concept. Family members establish rhythms that are either in phase or out of phase with each other, as well as the world at large. The crucial question confronting both the family and each member focuses on how time is allocated. Both clock time and calendar time are believed to affect the movements of the family members.

Three temporal mechanisms with various submechanisms further delineate the time access dimension formulated by Kantor and Lehr (1975). Orienting, clocking, and synchronizing comprise the major temporal dimensions. Orienting focuses on the selection and maintenance of attitudes and behaviors toward the past, present, and future. A submechanism of integrating enables families to organize their experiences of past, present, and future and nontemporal events into a pattern for interrelating events experienced in different spheres of time.

Clocking as a temporal mechanism is centered on the daily cycles of time and with regulation of the sequence, frequency, duration, and pace of immediately experienced

events from moment to moment and hour to hour. Kantor and Lehr (1975) stated that these phenomena are the most immediate observable influences on family behavior. A family's clocking pattern--when to start and finish things, how fast to move (pacing) and even how much time to give specific events--reveals what a family considers most important. Finally, synchronizing is the mechanism by which a family develops and maintains a program for regulating the total use of time.

According to Kummel (1966), no single definition of time is possible because time as a concept is conditioned by man's understanding of it. For humans, time is intimately linked to the conduct of life. Humans are the only beings who can determine the order and content of time. Kummel stressed the need to examine the specific nature of the relationship between past, future, and present and to reconcile the conceptions of time as flowing and enduring. A theory of time must include both characteristics--duration and succession. Duration emerges from the stream of time and it is within this background that awareness of succession is possible. For Kummel, the notion of past and future is inherent in the present.

Schilder (1981) further proposed the view that man's "sense of time" includes a realization of finitude. This

realization is what separates man from the rest of creation and it has directed the destiny of civilization. An individual's view of life and the world as well as individual preferences and values are essentially a view of time. The ability to experience and estimate time occurs gradually as the child matures, with the general agreement that the time sense increases with diminishing egocentricity. However, the abstract concept of time duration, which is so characteristic of technologic societies where goods cost time or money, is absent in many other cultures. The relationship of personal experience to conventional units of time is obviously dependent upon one's cultural setting. In essence, intellectual, emotional, and perceptual experiences are intermingled with time. In other words, the individual "experiences" time.

Rogers (1970) proposed a conceptual model for the nursing profession based on the life process of man and his continuous interaction with the environment. A major assumption is that the life process evolves irreversibly and unidirectionally along the space-time continuum. Additionally, Rogers' model focuses on wholeness, person/environment, pattern/organization, and man's capacity for the higher, complex processes of the mind. Inherent in Rogers' (1980) conceptual framework of unitary

human beings is the idea that the human field and the environmental field are not static entities but change over time through a process of mutual interaction.

Doob (1971) discussed time in terms of the psychological present--what is on one's consciousness--the one absolute instant. Doob operationalized the definition of time as the "awareness that an activity has ended, is being experienced, may have to be renounced, or can be anticipated as good" (p. 8). The awareness involves a temporal judgment that includes both duration and succession. Man, therefore, is able to distinguish recollection from the past, experience in the present, and anticipation about the future.

The question of temporal relatedness, or the sense of perception of the past, present, and future was the focus of Cottle's (1967, 1976) research. Utilizing the Circles Test, a means of measurement that focuses on a spatial conception of time, Cottle explored how individuals perceive the relatedness of time zones. Respondents were asked to draw the three time zones as circles. Variables include relatedness, or the degree to which circles touch or overlap, and dominance, or the size of the largest circle relative to the other two.

Navy personnel attending a 16-week training course served as respondents; the group included 428 men and 102 women. The results of the study disclosed several interesting findings. Of the participants, 60% drew the atomistic configuration (circles totally unrelated) and the future emerged as the most significant or dominant time zone, with the past being the least significant.

The Circles Test, along with a series of other time-focused tests, was included in a replicated research study that included 300 high school seniors in Chicago and Boston. Results were almost identical to those of the military trainees. Again, the future emerged as the dominant time zone for both sexes (Cottle & Klineberg, 1974).

Mentzer and Schorr (1986), in a study designed to test concepts of the Newman health model, tested 40 institutionalized women, 65 to 96 years old, to explore the relationship between perceived control, age, and perceived duration of time, as calculated into a consciousness index. Perceived duration of time was represented as a ratio of subjective time/objective or clock time.

The duration of time was measured by the production method in which subjects told the researcher when they believed an interval of 40 seconds had elapsed. While the

subjects mentally visualized the sweep of a second hand of a clock, the researcher recorded the actual number of seconds that had elapsed. If, during the production method of a 40-second interval, the subject believed 40 seconds of clock time had passed, but according to the clock only 17 seconds had elapsed, then the subject manifested increased perceived duration of time and perceived more time available. The increased perceived duration of time equaled an increased consciousness index.

Findings failed to relate perceived duration of time to either age or perceived control. However, a significant relationship was found between higher consciousness indexes and perceived situational control determined by others. Results also indicated that subjects who had been institutionalized for long periods of time perceived themselves as determining control over daily activities (Mentzer & Schorr, 1986).

From a methodological perspective, the sample did not represent those adults 65 and over who live at home, who are still active in their life's work, and who possibly may directly influence their perceived control over their daily activities. Additionally, the identified trend that increased perceived duration/higher consciousness indexes may be positively related to other-determined perceived

situational control may support the constructs of the Newman model.

Mentzer and Schorr (1986) contended that the results may reflect the life patterning of this cohort of aged women. In sum, these aged women may be manifesting a pattern that developed over the course of their lives and a pattern that represents their mode of participation in everyday experiences.

A study by Newman and Gaudiano (1984) focused on the occurrence of depression in the elderly as an explanation for conflicting findings regarding the experience of decreased subjective time in the elderly. The investigators hypothesized that depression would be negatively related to subjective time. The sample was 68 ambulatory elderly women (65 and over). The women completed a depression inventory and were then tested in regard to subjective time by having them give a production estimate for a 40-second interval.

With data analysis, a correlation coefficient of .35 ($p < .002$) was obtained. The hypothesis was supported, as higher levels of depression were related to longer production estimates, which indicated an underestimation of the 40-second interval or a decreased subjective time. However, no reliability data on the use of the depression

inventory with an elderly population were presented and the correlation, though significant, was not high. Baum, Boxley, and Sokolowski (1984) examined the relationship between psychological well-being and subjective speed of time (time perception). Subjects included 296 institutionalized and community dwelling elderly. The study hypothesis was that those elderly who perceived time as moving quickly would be healthier emotionally than those who subjectively saw time as slow. The hypothesis was supported in that faster time perception was associated with better psychological functions--less clinical depression, an enhanced sense of purpose and control, and "younger" perceived age. Additionally, time moved slower for the institutionalized and inactive community elderly. The results suggest that time perception as a diagnostic indicator could be used with other screening tools in the clinical setting.

Smith (1975, 1979, 1984), in a series of replicated studies based on the Rogers' model for nursing, explored the effect of auditory information on temporal duration, or the judgment of a 40-second interval. The subjects were all confined to bed. Each subject received one of three forms of auditory information. At four periods during the 150 minutes of auditory information, the subject was asked

to produce a 40-second interval by depressing a button. This first study was conducted in New York city. Findings demonstrated significant changes in the perceived duration of a 40-second interval based on the type of auditory environment. The individuals exposed to a quiet environment judged that time passed more slowly than those exposed to a continuous program of auditory tapes.

A second study was conducted in Columbus, Ohio and none of the proposed hypotheses were supported. No significant changes in duration were found for subjects exposed to the same conditions of quietness and continuous auditory information. However, a state of restfulness was related to a shortened duration experience (Smith, 1979). The third study, conducted in Pittsburgh, further investigated the relationship between duration and the perception of restedness/tiredness found in the Columbus study. Again, there was no significant difference in the production of a 40-second interval for the subjects at rest, in both the organized and quiet environment (Smith, 1984).

In discussing implications for future research on time, Smith (1979, 1984) addressed problems associated with operationalizing time as a mechanistic construction. With this approach, emphasis is placed on clock time, rather

than on time as a subjective process or as a lived experience. Time, therefore, is viewed only within the unidimensional perspective of clock time.

Kuhlen and Monge (1968) investigated rates or the sense of time passage in the adult years in two groups of subjects. The first group included 144 male and 153 female graduate students. Ages ranged from 21 to 61, with a mean age of 28.5 years. The second group was composed of 96 males and 143 females and was more representative of the general population. Ages ranged from the 20s to the 80s, with a mean age of 49.4 years.

Results suggested that filled time is sensed as going more rapidly than unfilled time. Data also implied that as age increases during the adult years, people become less future-oriented. The idea is that these individuals have a feeling that the time available for achieving goals is less and there are fewer important objectives in the upcoming 10-15 years. However, in one measure of future orientation (thinking about future versus past) the decline with age failed to achieve statistical significance (Kuhlen & Monge, 1966).

Strumpf (1986) conducted a study to identify differences in time experience among nursing home residents (N = 50). Three instruments for measuring subjective time

were utilized. These tools included: (a) the Time Metaphor Test, which consists of 25 images considered to be poetic of time's passage; (b) the Time Opinion Survey, which assesses attitudes about the passage of time; and (c) the Time Reference Inventory, which measures the direction and extent of time orientations.

In addition, anecdotal comments about perceiving time were examined. Three groups participated in the exploratory study--17 individuals from independent living, 17 from intermediate care, and 16 from skilled care. The majority of the participants were 75 years of age or older.

These older adults considered their health good (40%) or fair (24%) in spite of having one to four major health problems and receiving numerous medications. Overall, no significant differences were found among the three groups. However, an examination of the anecdotal material, though certainly not quantifiable, provided some revealing differences in patterns of temporal expression. Those residents in residential (independent) living appeared to be aware of a changing relationship with time. These particular residents expressed happiness with the past, an enjoyment of the present, and a dread of the future. Although the residents thought mostly about the present, they had pleasant memories of the past. They believed that

the future is unknown and some stated that the future was in the Lord's hands.

The intermediate care residents appeared to struggle with the impact of institutionalization. These individuals reported that entering the institution was a big decision and that thinking now about past events and people was upsetting. The individuals living in skilled care appeared to struggle with both recognizing and accepting the end of life (Strumpf, 1986).

In another study, Strumpf (1987) utilized the same measures of temporal experiences, but focused on older persons residing in the community. Eighty-six women from a large urban senior center comprised the sample. Ages ranged from 65-88, with a mean of 74 years. Other tools administered in the study included measures of psychological well-being (primarily life satisfaction and self-concept). Each participant was also provided an opportunity to comment on the way she experienced time.

Most of the women in the study were present-oriented, or spent an equal amount of time thinking about the past, present, and future. These women appeared satisfied with life and possessed considerable self-esteem. Although active, the women did not appear concerned about a lack of time to get things done. These women also displayed a

preference for the past in terms of it being the most important and enjoyable time in their lives. Strumpf (1987) found this particularly important because the older adult need not be past-oriented or fixed in the past to enjoy their memories and recognize the significance of them. The author suggested that this reminiscence should be more realistically described as providing a feeling of continuity and thus preserving a sense of personal significance. Strumpf's (1987) conclusions again pointed out that existing conceptions of time are incomplete and that current temporal measures fail to capture fully the temporal world of the elderly.

An Israeli study conducted by Lomranz, Friedman, Gitter, Shmotkin, and Medini (1985) explored the meaning of time-related concepts across the life span. The sample was composed of 388 participants who rated five time-related concepts by use of Semantic Differential Scales.

The concepts were: time, past, present, and future with each group rating its own life stage. The participants were divided into six, age-based groups to represent different life stages: childhood, adolescence, young adulthood, adulthood, late adulthood, and old age. Adults 65 years and older comprised the old age group. This aged group included 41 elderly individuals (16 males

and 25 females) in their 60s and early 70s with a mean age group of 65.9 years.

The Semantic Differential questionnaire was constructed using scales defined by bipolar adjectives. Three groups with five scales each represented the three factors of the Semantic Differential: evaluation (E), potency (P), and activity (A). Participants were asked to rate the following concepts: time, past, present, and future. The relationship between age and the meaning of the concepts was analyzed.

Data analysis indicated that individuals of different ages differ significantly in the way they feel about most of the time-related concepts. The ratings of the past showed a significant tendency to increase with progressive age, while ratings of the future decreased.

Stability across the life span characterized the ratings of the present (Lomranz et al., 1985). Further analysis showed that the concept of time revealed two trends. A positive correlation was obtained between age and the activity and potency factors of the tool. However, a negative correlation emerged between age and the evaluation factor. The negative correlation was due to a remarkable drop of the evaluation (E) ratings of the oldest group. Lomranz et al. (1985) suggested that the findings

reflect the reconciliation which older people experience in their relation to time and life. This reconciliation may, for the aged, render the notion of time active and potent, but not necessarily valuable. The idea is posited that time may lead older people to evaluate time more negatively because time may be running out for them.

A life drawing measure representing an adaptation of Cottle's (1976) nonverbal approach to the life graph technique was used by Whitbourne and Dannefer (1985-86) to explore two components of time orientation: temporal dominance and future extension. The researchers predicted that age would be associated with greater past dominance and less extension into the future. Subjects included 47 men and 47 women with an age range of 24-60 years.

Testing involved the use of a life drawing technique in which the participants were asked to draw their life on a sheet of paper in whatever way they liked. The participants then marked the drawing by using segments to represent important eras or periods they had lived through. The only words on the paper, oriented horizontally, were "draw your life" at the top of the page and "year and/or age" at the bottom. One year later the participants were recontacted by mail and asked to do another life drawing.

Additionally, a single item question asked the participant about changes since the last drawing.

Scoring technique involved assigning temporal dominance to that portion of the life drawing that had the most disproportionate emphasis in terms of relative size. Designated periods by the participants were measured and divided by the number of years it was intended to represent. In the sample, the period with the largest ratio was classified as either past or present since no future periods received the largest ratio designation. Scoring of the future extension dimension was a two-way categorization depending on whether or not the future was portrayed in the drawing.

A log-linear analyses approach was used to examine separately the collected data in terms of the effect of age (over 40 and under 40 years), sex, work status, and geographic mobility on temporal dominance and future extension. Results showed that age was related to past temporal dominance, as those over 40 years old were more past oriented (75%). This relationship for age was significant only for men. The test-retest data analysis from 55 respondents demonstrated the reliability of both time perspective measures. If life changes had occurred,

movement tended to be from the past to present temporal dominance.

Neugarten (1979), in an article considering relationships between time, age, and the life cycle, pointed out that for the aged both new and old issues are present. Examples of the issues included those related to: (a) renunciation, such as adapting to losses of work, friends, and spouses; (b) reconciliations with significant others and with one's achievements and failures; (c) resolution of grief over the death of others and of the approaching death of self; and (d) the maintenance of a sense of integrity. This issue of integrity is concerned with what one has been rather than a focus on what one is.

With old age comes the triumph of survivorship and the realization that one has shared a wide range of experiences. The older adult knows from having lived through both physical and psychological pain that recovery does come, and with it the ability to deal with what lies ahead. Neugarten (1979) proposed that with the passage of time, life becomes more complex and enriched.

Time and Movement

Early research on the Newman model of health was done by the theorist herself. In sequential research studies (1972, 1976, 1982), Newman explored the concepts of time

and movement. The first study by Newman (1972) investigated the effect of accelerated and decelerated rates of walking on judgment of a 40-second interval in 52 healthy male subjects. Subjects were asked to produce a 40-second interval while walking on a treadmill. Three rates of walking--preferred rate, accelerated rate, and decelerated rate--were used for time estimation.

No restrictions were placed on how subjects estimated the time. Analysis of variance failed to support the hypothesis that accelerated movement would be related to an accelerated rate of subjective time and decelerated movement would be related to a decelerated rate of subjective time. However, intragroup variation was quite large; thus the relationship between individual gait tempo and time estimation was examined. A low correlation with time estimation (production method) and individual gait tempo suggested that individuals with faster gait tempos tended to overestimate an interval of time while those with slower gait tempos tended to underestimate the time interval.

Newman's (1976) study replicated part of her 1972 study. However, predominantly female graduate students ($N = 90$) were included in this study. Also, an attempt to control for conscious compensation in relation to time

estimation was introduced. While the subjects walked at three different imposed rates on the treadmill, they were asked to estimate a 40-second interval by two methods. Subjects estimated the interval by activating a buzzer at the beginning of the interval and again when they believed 40 seconds had elapsed. Additionally, subjects read a chart of random numbers while estimating an interval of time (conscious compensation).

The primary hypothesis that one's preferred rate of walking would be negatively related to time estimation was not supported either under controlled conscious compensation or under freedom to compensate timing mechanisms. However, Newman (1976) found significant ($p < .001$) differences in time estimation when the imposed walking rates varied from the preferred walking rate. These findings suggested that when an individual is walking at a rate slower than one's preferred rate, the perception of the duration of a time period is less than it would be walking at the usual tempo. Findings supported the theoretical position that amount of movement is directly related to time estimation. Newman (1983) later contended that these experiments were locked into a physical view of movement-space-time.

In 1982, Newman again studied the relationship between time and movement. Newman also explored subjective time as a developmental phenomenon of man's expanding consciousness. In this study, 85 subjects between 60 and 88 years of age were tested. Findings related to the relationship between age, movement (preferred walking rate), and time (perceived duration of a 40-second interval) were compared to previous data on two younger age groups. The age-time and movement-time relationships were not confirmed, but a trend toward increased subjective time with age was suggested when comparisons were made across a broader age group. Another key finding was that time production estimates varied significantly by sex and that women overestimated time more than men. Of major interest is the suggestion that this and other studies of duration may not offer a valid empirical indicator of subjective time because emphasis is placed on an awareness of clock time.

Tompkins (1980) addressed the Newman research in a study of the relationship between restricted and unrestricted joint movement and perceived duration of time. Subjects included 64 college students who walked a circular tract at a preferred tempo. Both a one joint restriction (ankle) and a two joint restriction (ankle and knee) of

either leg significantly shortened perceived duration and significantly decreased cadence as compared to their production estimates when subjects walked without restriction. These findings are consistent with Newman's (1972, 1976) research findings.

The study of altered time perception in relation to immobility in a hospital setting was examined by Stewart (1986). Subjects included 24 orthopedic patients, 17-64 years old. As predicted, the findings provided support for the interrelatedness of the four concepts central to the Newman model of health. Time perception was linked to both movement (immobility) and space (private room/social isolation), while both perceptual and behavioral changes were associated with consciousness.

Comparative data among institutionalized and noninstitutionalized individuals was obtained by Fitzpatrick and Donovan (1978) for their investigation of temporal experience and motor behavior among older adults. The subjects were between 70 and 89 years of age and included 60 individuals. The institutionalized persons were all residents of a nursing home. In addition, the subjects were further divided into 70-79 year old and 80-89 year old groups.

Subjects participated in an interview which included: (a) answering the questions on the Time Reference Inventory (TRI), (b) providing general background information, (c) estimating three 40-second intervals after producing three 40-second intervals, and (d) being observed for 10 minutes for body movements. The Motor Activity Rating Scale provided the basis for the movement scores.

Study results indicated that the institutionalized factor appeared to be a more important factor than age in assessing the individual's temporal orientation. This particular group was more past-oriented.

Although the institutionalized group displayed more body movement, the authors believed this factor was related to the study design. For the study, the institutionalized individuals were interviewed in their own rooms, while the noninstitutionalized individuals were interviewed in a room at a senior citizen center. Although the individuals were instructed to move about as they normally would, it became obvious that those at home moved about more freely in familiar surroundings.

The age factor was related to only one of the dependent variables: past temporal extension. The researchers defined this as the tendency to focus on the more distant past. It was found that the 80-89 year olds

projected further into the past than did the 70-79 year olds. Moreover, the authors stressed that it could not be determined whether the differences in temporal orientations were related to the institutionalization or whether these differences were factors that led these individuals or their families to seek this particular type of residential care (Fitzpatrick & Donovan, 1978).

Time, Movement, and Health

A study of the perception of time among Japanese inpatients with either acute or chronic illnesses was conducted by Nojima et al. (1987). A total of 38 inpatients, 18 males and 20 females, from a university hospital was selected. For the purpose of comparison, 23 volunteer employees from the same university were recruited.

Subjects completed a self-evaluation scale relative to activities of daily living and a subjective health scale. In addition, subjects completed a walking test by walking at their natural speed. When the subjects felt that 40 seconds had passed, they were to stop walking.

Testing was repeated three times and the second testing results used for calculation. A calculation of the consciousness index was thus obtained using the duration of

perceived time (40-second interval) as measured by the production method.

Of importance was the finding that the inpatient group obtained a higher consciousness index (CI) score than the volunteer group. Nojima et al. (1987) found the findings contradictory since they had hypothesized that higher consciousness was related to greater functional ability. However, the findings appear to be consistent with the Newman framework of health because Newman (1983, 1986) emphasized expanded consciousness even in cases of restricted mobility. Marchione (1986) explored patterns of family health and family process using Newman's (1983) theory of family health and Kantor and Lehr's (1975) theory of family process. Three families with disabling events--a divorce, terminal illness, and the acquisition of a new member into the family--participated in the investigation. As a result of the disabling event, all participants reported a change in the activity patterns among family members. The families all used frequent references to time, space, and movement in describing their particular disabling event.

Case descriptions of the three families were reconstructed from a series of audiotaped interviews. The three families represented one nuclear, one extended, and

one-single parent unit for a total of 11 participants. Three 1-hour interview sessions were conducted.

Consensus among the family members was obtained by having each member describe the disabling event and its affect on altered mobility. As well, family members shared the meaning the change in mobility held for the family. During the third interview, the investigator reviewed with the family members the reconstructed descriptions of the interviews to verify the meanings of the reported experiences of altered mobility and health patterns (Marchione, 1986).

An open coding system was used for analysis of the data by Marchione (1986). The oral self-reports in response to the interview questions were transcribed verbatim and a line-by-line examination was conducted to identify the recurrent maintenance, stress, and repair patterns referenced in time and space. Congruent patterns of family movement were reconstructed and described as paradigm cases. The researcher concluded that time, space, and movement patterns were reliable indicators of family health. Additionally, all the families were able to synthesize the disabling event with the ease of enablement and to evolve to new levels of awareness. Health, as defined by Newman (1983), was viewed as the enabling

process (movement) from the synthesis of the disabling event.

A descriptive study by Melanson and Downe-Wamboldt (1987) explored older adults' perceptions of their health, feelings toward their future, and factors affecting these feelings. The authors utilized responses to selected questions from a data bank that included survey information related to the health needs of 889 adults ranging in age from 50 to over 85 years. The sample included 708 women and 181 men. These adults lived in eight urban public housing complexes.

Analysis of the data revealed that 50% of the respondents reported their health excellent. Feelings about the future ranged from very negative (3%) to positive (47%) and very positive (11%). The majority of the adults were able to carry out their activities of daily living independently. Some of the activities included: eating, ambulating, shopping, and preparing meals. Perceived health status was found to be the principal contributor to variance in scores on feelings about the future. Additionally, the older the individual the more negatively the future was perceived.

An in-depth examination of the relationship between self-assessed health and functional health was conducted by

Engle and Graney (1985-86). Participants were a simple random sample of 114 white females over 60 years of age. The subjects completed a self-assessment of health scale and the Sickness Impact Profile (SIP).

The self-assessed health instrument uses a 10-step ladder scale representing the subject's health. The Sickness Impact Profile focuses on functional health by assessing the impact of sickness on the performance of daily activities. Moreover, subjects completed a similarly constructed self-concept and attitude ladder scale. Areas addressed were: age, degree of activity, speed of effort and everyday activities, loneliness, and financial adequacy. Demographic variables included age, education, and occupation.

Using multiple linear regression techniques, Engle and Graney (1985) found that five variables explained approximately 40% of the variance ($R = 0.63$) in the self-assessment of health data. The five variables were self-assessment of speed, emotional behavior, age, self-concept, body care and movement, and occupation. The authors concluded that health self-assessment embodied not only functional ability, demographics, or physician-assessment, but also attitudes and perceptions formed by the older adults' relationship to the environment. Moreover, speed

and personal tempo emphasized time as a major element in the evaluation of performance of activities and self-assessment of health.

Engle's (1984) research examined propositions from the Newman model and the measurement of older adults' health. The specific focus was movement, time, and health, with a hypothesis that a faster tempo is associated with a shorter time perception and that both, in turn, are associated with better self-assessment of health. The 114 participants in the study ranged in age from 60 to 91 years and all lived in subsidized apartment complexes for the aged.

Relationships between personal tempo (cadence) and time perception and the relationship between self-assessment of health and tempo and time perception were explored. The finding that time was a function of movement is important because aging is viewed as a positive, incremental process of continuous growth and development by both Rogers and Newman (Engle, 1984).

No age effect within each individual for time perception was found. Engle (1984) suggested that this failure may be related to the relationship of movement and time to health. However, a linear trend for age became evident when the mean time perception across the studies

was compared. Engle recommended using, as a criterion, a functional health scale for the self-assessment of health in the older population. The researcher also contended that the construct of spatial time should be investigated rather than the linear component. Engle (1986) further proposed that measures of other time constructs, such as the past, present, and future orientation, or the subjective speed of time, might be more useful and representative of the Newman framework.

Summary

Research from a variety of studies has identified relationships between time perception, movement, and health. Primarily, time has been measured in terms of the perception of linear time by using either the production method or an estimation method. With the production method, the subject may press a button or count off a particular interval of time. In the estimation method, the subject states the duration of an interval of time (Engle, 1984). Findings from the literature and research studies have suggested that this operationalism or conceptualization of time may not be consistent with Newman's conceptual framework. In addition, the focus on clock time or objective time fails to capture the

subjective or lived experience of time (Engle, 1984; Newman, 1986; Smith, 1979, 1984).

An implication considered for the research was the utilization of a measure of time that focuses on the spatial component. The literature indicated that exploration of the relationship between spatial temporal experiences and health would add to the body of knowledge currently being developed on the interrelationships between the correlates of health as proposed by Newman.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A descriptive design was used for the research. Shelley (1984) stated that descriptive research often plays a significant role in theory development and eventual theory testing. The investigation described various relationships between spatial temporal experiences and self-assessed health. Moreover, the study investigated whether differences existed when subjects were grouped according to selected variables such as age, gender, and time zone dominance categories.

Setting

Several retirement centers were used to collect the data. All six retirement centers were located in the southwestern area of the United States. Each retirement center afforded the older adults the opportunity to continue independent living arrangements, with on-site access to various health services and recreational and social activities. The selection of a center was based on the accessibility of the resident population, time, and cost factors. The participants completed the

questionnaires and drawings in a group setting at the center.

Population and Sample

The research population consisted of older adults who resided in a retirement center. Participants had to be at least 65 years of age and able to complete the questionnaires and drawing. All participants were volunteers. A sample size of 40 was established to meet the identified criteria. Roscoe (1975) stated for most types of behavior research, samples of 30 will be adequate to insure close approximation of the normal curve by the sampling distribution of the mean. A nonprobability convenience sample was utilized. Nonprobability sampling offered the advantages of economy and convenience.

Protection of Subjects' Rights

The research, in accordance with the rules and regulations of the Human Subjects Review Committee of Texas Woman's University, was classified as a Category I (no risk) (Appendix A). Subjects received a cover letter (Appendix B) which detailed information about the purpose of the study, details of participation, and assurance of anonymity.

Anonymity of each subject was protected, as the participants were assigned case numbers. The names of the subjects were not required or solicited. In addition, the name of the center in which they resided will not be revealed in any reports of the study. Participation in the study was voluntary. Subjects could withdraw or elect not to complete the questionnaires and drawing. Consent to participate was indicated by the completion of the questionnaires and drawing. Moreover, permission from the various retirement centers (Appendix C) and from the Texas Woman's University Graduate School was obtained prior to meeting with the subjects (Appendix D).

Instruments

A demographic inventory (Appendix E), a Self-Assessment of Health Scale (Appendix F), and Cottle's Circles Test (1967) comprised the instruments used. The demographic inventory and the Self-Assessment of Health Scale were developed by the investigator. The Circles Test, for measuring subjective time or a spatial conceptualization of time, was developed by Cottle (1967).

Demographic Inventory

Demographic information to describe the subject variables of age, gender, race, marital status, education,

and the use of assistive devices to perform daily activities was obtained. Additionally, the independent contributions of the demographic variables toward explaining self-assessed health was examined.

Self-Assessment of Health Scale

The second tool, developed by the investigator, utilizes a modified 10-rung Cantril Ladder scale format representing the individual's "health today." The numbers 1-10 appear on consecutive rungs or steps of a ladder. The Self-Assessment of Health Scale asks the subjects to circle the number that best describes their health. The top of the ladder (10) represents excellent health while the bottom (1) represents poor health. An additional calibration, average health, is placed at the midscale to assist with the assessment. Cantril (1965) proposed that the ladder technique is "self-anchoring" and, therefore, offers a theoretically equal-interval measure. Therefore, the data are considered to be interval level.

Engle (1984) stated that a health self-assessment that is based on the individual's own evaluation of health is an accepted global measure of older adults' health. Engle noted that a positive, significant correlation has been found between self-assessment and physician assessment of health. However, Engle and Graney (1985-86) pointed out

that there are substantial discrepancies between self-assessment and physician assessment of health. Older adults define health in terms of daily activity and independence. The older adults tended to compare their own health and activity status to those of other older people. Evidence also supported the use of a scale with various divisions because older people are able to make fine discriminations in terms of describing their own health. Moreover, self-assessment of health is conceptually consistent with both the Newman (1983) and Rogers (1970) theoretical frameworks.

Palmore and Luikart (1972), in an investigation of health and social factors related to life satisfaction, utilized a "ladder" self-rated measure. An objective performance status rating was also obtained. The rating was based on a physician examination, the medical history and the results of various tests such as routine blood analysis, EKGs, EEGs, and chest x-rays. Data were obtained from an interdisciplinary longitudinal study of 502 subjects. Data were obtained every 2 years. In 1968, at the beginning of the study, the ages of the participants ranged from 45-69.

Findings suggested that self-rated health was the strongest variable related to life satisfaction both in the

total group and for separate age and sex groups. Self-rated health accounted for two-thirds of the explained variance in all groups analyzed. In addition, the individual's own conception of health was more important than the physician's rating of health. In fact, the performance status rating had a lower correlation with life satisfaction than several of the other variables studied. The authors contended that a person with poor objective health may have high life satisfaction if the person believes that his or her health is relatively good and vice versa. The researchers also found that about three-fourths of the subjects' ratings of their health were in close agreement with the ratings given by the physicians.

The Self-Assessment of Health Scale is certainly appropriate for the population studied. Short and easy to complete, the tool provided a literature-supported approach for the measurement of self-rated health among older adults.

Circles Test

The Circles Test was developed by Cottle (1967). Permission to use the test was obtained by the investigator (Appendix G). The test offers a method of assessing the extent to which an individual feels the relatedness of past, present, and future. The major dimensions of the

test are temporal relatedness (perceived relatedness between time zones) and temporal dominance (perceived significance of a particular time zone).

Cottle (1967) examined the theoretical differences between two conceptualizations of time: spatial and linear. The linear perspective (objective) illustrates the way time flows chronologically as moments (past, present, and future) are visualized as occurring in a line (linear). In the spatial conceptualization of time flow, individuals feel the relatedness of past, present, and future in a different way. The Circles Test encourages individuals to think of time spatially, to provide them a way of reporting their perceptions of inter-zone relatedness, and to learn whether one zone is perceived to be more important than the others.

Circles were selected by Cottle (1967) as an instrument to elicit relationships between the three time zones. Key words are evident in the instructions given for the test. The first key word is "shape" which was intended to connote something other than chronological or linear identity. The instructions that "different size circles" may be used employs both space and time as considerations in eliciting a measure of dominance. Cottle proposed that relative circle size may be used as a measure of dominance.

Temporal dominance is scored by comparing the size of the circles in relation to each other. A circle noticeably larger than another circle receives two points. This procedure permits a two-way examination of dominance. An "interval" scale can be constructed so that the higher the number, the greater is the perceived (relative) zone dominance. Additionally, configuration can be classified in terms of the presence of characteristic dominance. Zero, 2, and 4 points indicate category headings, with 4, irrespective of its rank importance, as designation of the dominant category. A score of 2 then designates so-called secondary dominance or the "zone of intermediateness" (Cottle, 1967).

The second key term is "relationship" which invites the subject to locate the three time zones so as to represent relatedness of one kind or another. Scoring for temporal relatedness is based on the degree to which the drawing shows circles touching one another, or overlapping partially or completely. Scores range from 0-18. At one extreme is the configuration designated temporal atomicity, scored 0, in which time zones are totally unrelated and at the other extreme are configurations in which the time zones overlap partially or completely (scored 8-18). In between is the configuration designated temporal continuity

in which zones touch but do not overlap. Scoring was done according to the criteria and examples presented by Cottle (1967).

The Circles Test was one of several instruments included in a larger study of the perception of time. Naval personnel at a midwest Naval Training Station took part in the study. Subjects included 428 men and 102 women, with a modal age of 19. All subjects were involved in a 14-week hospital corpsman training program. Testing occurred in the 1st, 2nd, and 14th weeks of training. Time perception tests were given in the 1st and 2nd weeks. To check reliability, the time measures were repeated in the 14th week. Testing was done in groups, normally containing 40-50 persons.

The question of validity was addressed by having the respondents write a few sentences describing their intentions while drawing the circles. Proximity of circles was intended to demonstrate relatedness as evident by the fact that this was the most frequent response. Size primarily represented importance and this finding was evaluated against another instrument that explicitly instructed respondents to mark off chronological quantities.

The results of the testing disclosed several interesting findings. Sixty percent of the participants drew the atomistic configuration and the future emerged as the most significant or dominant time zone with the past being the least significant. The question was raised regarding possible correlations between relatedness and dominance. Correlations were computed and the results showed that for men, temporal relatedness and dominance were not significantly associated. However, for women the more dominant the future, the more atomistic the three time zones. Generally, the correlations suggested that men consider all three time zones as a unit in deciding which zone is dominant, while women seem to evaluate one zone at a time independently of the other two zones (Cottle, 1967).

Cottle (1976) admitted that the scoring procedures do not allow for the richness and imagination of the respondents' perceptions. As well, the procedures do not account for variations or spatial references (e.g., among circles ordered up or down, left to right). Because scoring is dependent upon characteristics in each drawing, Rakowski (1984-85) cited some methodological concerns associated with working with older adults. The concerns were related to the need for fine motor control and visual or verbal complexity due to format or detailed

instructions. When using the Circles Test with an older population, Rakowski noted that many of the respondents commented on the circles they had drawn in terms of the final product. The respondents stated that they would have drawn more exact circles were it not for such problems as arthritis or tremors. The entire time perception study was later replicated on a different population--300 high school seniors in Chicago and Boston. Results were almost identical. Again, the future was the dominant time zone for both men and women (Cottle & Klineberg, 1974).

In sum, Cottle (1967, 1976) asserted that the Circles Test differentiates individuals according to the time zone they perceive as most significant and according to the relationships they perceive between time zones. For some individuals, the time zones are disconnected (atomistic perception/drawing) and united only by sequence. Other individuals visualize time linearly (continuous perception/drawing) in that moments follow moments, and once experienced, disappear into the past. For others, zones appear to overlap (integrated) or occupy two zones at the same time (projected). These two perceptions best typify the meaning of spatial conceptualization of time flow. Also, the atomistic configuration is a spatial

conceptualization while the continuous configuration best represents the linear conceptualization of time flow.

Data Collection

The collection of the data was done by the investigator. The appropriate supervisor or director of the selected center was contacted in order to obtain permission for the study. The purpose of the study was explained and information shared about the format, the time needed, and the instruments. The agency permission form was signed and a date arranged for the testing. All testing was conducted in a group setting at the center. A method to let possible participants know about the testing and the scheduled date was agreed upon. Retirement center personnel volunteered to distribute the letter inviting residents to participate (Appendix H).

On the day of the testing, participants received a packet and a pencil. The packet included the cover letter about the study, the demographic inventory, the Self-Assessment of Health Scale, and a blank sheet of paper. The cover letter was briefly reviewed to see if there were questions or areas needing clarification. Instructions for the drawing (Appendix I) were given after the questionnaires had been completed. Only 10-15 minutes were needed for the completion of all the tools. When the

participants were finished, they were thanked for their time and cooperation. Also, appropriate agency personnel were sent a thank-you note.

Pilot Study

A pilot study was conducted to field test the overall procedure and instruments. Of special concern was the appropriateness of the Circles Test for a population 65 years and older. The activities director at a retirement center was contacted to obtain permission for the study. The purpose of the study was explained and information about the format, time needed, and instruments was shared. A date and time were agreed upon and the director volunteered to distribute a letter inviting the residents to participate.

On the day of the scheduled testing, the appropriate agency consent form was signed. Participants who had volunteered received a packet and a pencil. The packet included the cover letter about the study, the demographic inventory, the Self-Assessment of Health Scale, and a blank sheet of paper. The cover letter was briefly reviewed to see if there were questions or areas that needed clarification. When the participants had completed the demographic inventory and the Self-Assessment of Health Scale, the instructions for the drawing were given.

Approximately 10-15 minutes were needed to complete all of the tools. The participants and appropriate agency personnel were thanked for their time and cooperation.

The collected data were sufficient to meet the overall objectives of the pilot concerning appropriateness of tools for a population 65 years and older and for clarification of the scoring procedures for the Circles Test. The nonprobability convenience sample consisted of seven individuals, aged 72 to 93 years, who lived at the retirement center. The small sample size did not permit an in-depth statistical analysis. However, the collected data did allow for broad characteristics of the sample to be described and for a frequency distribution of temporal relatedness and temporal dominance scores. In addition, basic observations can be made about the self-assessed health scores of these older adults.

All seven individuals who participated in the pilot study were women and were white. The majority (86%) were widowed and all lived in apartments or units by themselves. Three of the seven participants used some type of assistive device in performing daily activities. These devices included a cane, a walker, and a "motorized scooter". A frequency distribution of the temporal relatedness scores and temporal dominance scores is presented in Table 1.

Table 1

Frequency Distribution of Temporal Relatedness Scores

Temporal relatedness	Females	
	No.	%
Atomistic	7	100
Continuous	0	0
Integrated-projected	<u>0</u>	<u>0</u>
Total	7	100

Frequency Distribution of Dominance Scores

Dominance	Past		Present		Future	
	No.	%	No.	%	No.	%
Absence	2	29	3	43	2	28.5
Secondary	1	14	3	43	3	43.0
Dominance	<u>4</u>	<u>57</u>	<u>1</u>	<u>14</u>	<u>2</u>	<u>28.5</u>
Total	7	100	7	100	7	100.0

Although the sample was small, all of the participants drew the atomistic configuration. Overall, 57% of the participants viewed the past as the dominant time zone. In addition, written remarks concerning both the "past" and the "future" were noted on some of the drawing pages. One respondent wrote "the best" next to the "past" circle while another wrote "excellent." In addition, two of the

participants wrote "hope" next to their "future" circle. One of the ladies, aged 93, drew the future as the largest circle. Even focusing on "time" appeared to stimulate the participants to talk about the past and the future.

Newman and Gaudiano (1984) contended that if nursing could assist older persons to expand their experience of time, nurses might improve these individuals' quality of life. Reminiscence, in itself an expanded consciousness state, may be important in the life of the older adult. Strumpf (1987) pointed out that reminiscence, which often gets translated as "living in the past," might be more realistically described as providing a feeling of continuity or preserving a sense of integrity and significance.

In terms of health self-assessment, scores ranged from 4 to 10, with an average of 7. Participants did not appear to have any problems making a decision and two or three of the ladies commented that their health was quite good, when compared with others their age. The oldest participant, who used a cane, described her health as a "9." These findings, though not generalizable, reflect Newman's (1983) health model in which health is viewed as a basic pattern unique to each individual. Participants were able to make

fine discriminations, as noted by the spread of the responses.

In sum, all instruments were viewed as appropriate for the population being studied. Participants were able to complete the tools in 10-15 minutes and voiced an understanding of the instructions. The planned methodology allowed future data collection without any major revisions.

Treatment of Data

The collected data were processed by computer and analyzed both descriptively and inferentially. Characteristics of the sample were described as they pertain to the demographic inventory information. A frequency distribution was used to describe temporal relatedness in terms of type of drawing and temporal dominance. Findings for both males and females were calculated.

The dependent variable studied was self-assessed health. This variable was measured by a score on the Self-Assessment of Health Scale. The higher the value, the better is the perceived health. The self-rated health scale yielded interval level data.

Temporal relatedness and temporal dominance were the primary independent variables. These variables were measured by scores on the Circles Test (Cottle, 1967). The

demographic variables from the inventory were also used as independent variables and analyzed.

The Pearson Product-Moment Correlation (r) was the statistic used in the analysis of the data related to the first research question. This question addressed the relationship between temporal relatedness and self-assessed health. Question number two examined differences in the self-assessed health scores when subjects were grouped by temporal dominance.

The third research question focused on the differences in the self-assessed health scores of the older adults when they were grouped according to time zone dominance categories. The appropriate statistic for both questions two and three was a one-way analysis of variance (ANOVA). If a significant F was achieved, a post-hoc group comparison test was done.

Research questions four and five addressed differences in self-assessed health based on temporal dominance. However, in question four, the variable of gender was added and in question five, the variable of age was introduced. A two-way analysis of variance was the statistical test utilized. The level of significance for all inferential tests was set at .05.

CHAPTER IV

ANALYSIS OF DATA

This chapter presents an analysis of the data obtained from the examination of the relationships between spatial, or non-linear, temporal experiences and self-assessed health in the older adult. The descriptive characteristics of the sample are included as well as the study findings. Finally, a summary of the study findings is presented.

Description of the Sample

The sample consisted of 46 male and female older adults who resided in six retirement centers. The sample ranged in age from 66 to 94 years with a mean age of 80.5 ($SD = 6.5$). Ninety-one percent were female, and all participants were Caucasian. The majority of the subjects were widowed (87%). In addition, 6% had never married, and 4% were married. Only one subject was divorced.

Educational attainment of the sample ranged from completion of grade school (2%) to completion of college (30%). Three percent reported some high school education. The majority of the sample (37%) had completed high school, and 23% listed some college education.

Of the 46 subjects, only 16 (35%) reported using some type of assistive device to help with daily activities.

Listed devices included canes, walkers, and "motorized scooters." One subject noted the use of oxygen, while another individual listed a hearing aid. The cane was the most frequently used assistive device, with nine responses. Table 2 summarizes the demographic data for the study subjects.

Findings

The first research question of the study addressed the relationship between the variables of temporal relatedness and self-assessed health. In terms of self-assessed health, scores ranged from 1 to 10, with a mean of 6.89 and a standard deviation of 2.3. A score of 1 represented poor health while a score of 10 represented excellent health. The midpoint, or a score of 5, represented average health. The majority of the participants (89%) assessed their health in the average to excellent range.

The temporal relatedness variable generates a scoring range of 0 to 18 depending on the degree to which the drawn circles touch or overlap. Forty (87%) of the participants drew the atomistic configuration, for a score of 0. There is no touching or overlapping in this type of drawing. Six (13%) subjects drew integrated-projected drawings with a scoring range of 4 to 18. None of the subjects drew the

Table 2

Demographic Characteristics of Sample

Variables	Frequency	Percent
Age:		
60s	2	4.3
70s	19	41.3
80s	21	45.7
90s	4	8.7
Race:		
Caucasian	46	100.0
Gender:		
Male	4	8.7
Female	42	91.3
Marital Status:		
Never married	3	6.5
Spouse deceased	40	87.0
Married	2	4.3
Divorced	1	2.2
Education:		
Completed grade school	1	2.2
Some high school	3	6.5
Completed high school	11	23.9
Completed college	14	30.4
Assistive Device:		
No	30	65.2
Yes	16	34.8

continuous configuration representing a linear relationship. Table 3 summarizes the data pertaining to temporal relatedness, relative to the type of drawing produced by the subjects.

Table 3

Temporal Relatedness

Drawing	Females		Males	
	No.	%	No.	%
Atomistic	37	88	3	75
Continuous	0	0	0	0
Integrated-Projected	<u>5</u>	<u>12</u>	<u>1</u>	<u>25</u>
Total	42	100	4	100

A Pearson product moment correlation statistic was used to examine the relationship between self-assessed health scores and temporal relatedness. The result was a non-significant correlation coefficient of 0.016 ($p = .46$).

To explore differences in self-assessed health scores when subjects were grouped according to time zone dominance (past, present, or future), a one-way analysis of variance (ANOVA) was performed. The past was viewed as the dominant time zone by 33 (72%) of the participants. The self-assessed health scores of these study subjects ranged from 1-10 with a mean of 6.5 ($SD = 2.44$). Six (13%) subjects viewed the present as the dominant zone, with self-assessed health scores ranging from 5-10. For this group, the mean self-assessed health score was 6.67 ($SD = 1.86$). For 7

(15%) participants, the future emerged as the zone of dominance. Self-assessed health scores ranged from 7-10. The mean self-assessed health score for this group was 8.7 ($SD = 1.25$). The examination of the responses yielded no significant differences in the self-assessed health scores of the subjects ($F = 2.72$, $p = .08$). The results of the analysis are presented in Table 4.

Table 4

One-Way Analysis of Variance of Self Assessed
Health and Temporal Dominance

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	Significance of <u>F</u>
Between groups	2	27.513	13.756	2.727	0.08
Within groups	<u>43</u>	<u>216.944</u>	5.045		
Total	45	244.457			

In addition to drawing the circles, a number of subjects expressed views or ideas about the different time zones. Some of the comments about the past included: "excellent," "past has been good," "past is wonderful," "fine," "best--all my family," and "the best." Comments about the present included: "present is o.k.," "o.k.," "lonesome," "limited," and "not too bad." One married

subject wrote inside his "present" circle the following comment about his wife: "disturbed Helen's Parkinson's is advancing." Comments about the future time zone included: "not much future left," "who knows what the future holds for any of us--I'm an optimist," "hope for the best," "hope," "high hope," "very poor," and "very unstable."

One subject noted that her "happy past . . . prepared me for the present--present prepared me for the future. The future is bright, because I am a Christian and have been for many years." One 94-year-old wrote that "life has been good--taking bitter with the sweet. Grateful for the good that has come my way. Of course, the future ahead looks a bit bleak." Another subject wrote the following comments next to her drawn circles: (a) the past--"excellent--health, family relations, education;" (b) the present--"fortunate--have the support of family, many friends, faith;" and (c) the future--"unknown--hopeful."

Research question three was examined by one-way analysis of variance (ANOVA) of self-assessed health scores in relation to temporal dominance categories. Temporal dominance categories represented the six possible arrangements of the three time zones (past, present, future) in order of dominant to least dominant zone. Scoring was done by comparing the size of the circles in

relation to each other. All six possible combinations were represented in the drawings.

For 27 (59%) subjects, the drawings were the past > present > future arrangement. The mean self-assessed health score was 6.44 (SD = 2.38). Additionally, another 6 (13%) subjects viewed the past as dominant, but for these individuals the least dominant zone was the present (mean = 7.0, SD = 2.9). For 7 (15%) subjects, the future merged as the dominant time zone. However, for 5 of these subjects, the past was the least dominant zone. The mean self-assessed health score for this group was 8.4 (SD = 1.34). The other 2 subjects drew the present as the least dominant zone.

Overall, 6 (13%) subjects drew the present as the dominant zone. For the 3 subjects who drew the past as the least dominant zone in the present > future > past arrangement, the mean self-assessed health score was 7.67 (SD = 2.1). The remaining 3 subjects viewed the future as the least dominant zone and for this group the mean self-assessed health score was 5.67 (SD = 1.16). Temporal dominance category findings are presented in Table 5.

An examination of the responses yielded no significant differences in the self-assessed health scores according to time zone dominance categories (F = 1.42, p = .23). The

Table 5

Temporal Dominance Categories: Dominant to Least
Dominant Zone, Means and Standard Deviations of
Self Assessed Health Scores

Categories	No.	%	<u>X</u>	<u>SD</u>
Future, past, present	2	4	9.5	.7
Future, present, past	5	11	8.4	1.3
Present, future, past	3	6.5	7.7	2.1
Past, future, present	6	13	7.0	2.9
Past, present, future	27	59	6.4	2.4
Present, past, future	3	6.5	5.7	1.2

results of the analysis of variance (ANOVA) are presented in Table 6.

Table 6

One-Way Analysis of Variance of Self-Assessed Health
and Temporal Dominance Categories

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	Significance of <u>F</u>
Between groups	5	36.757	7.351	1.416	0.239
Within groups	<u>40</u>	<u>207.700</u>	5.191		
Total	45	244.457			

To address questions four and five, the dependent variable of self-assessed health was examined first in terms of temporal dominance and gender and then in terms of temporal dominance and age. The ages of the subjects were grouped into two categories--those less than 80 years and those 80 years and over. A two-way analysis of variance was conducted for both sets of data. Due to the small sample size of the male subjects ($n = 4$), two-way interactions (dominant zone and gender) could not be computed. Two-way interactions were computed for dominant time zone and age. However, no significant interactions were found between temporal dominance and age (see Tables 7 and 8).

Table 7

Two-Way Analysis of Variance of Self-Assessed Health
by Temporal Dominance and Gender

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	Significance of <u>F</u>
Between groups	3	27.910	9.303	1.804	0.161
Gender	1	0.397	0.397	0.077	0.783
Dominant Zone	2	26.108	13.054	2.532	0.092
Within groups	<u>42</u>	<u>216.546</u>			
Total	45	244.457			

Table 8

Two-Way Analysis of Variance of Self-Assessed Health
by Temporal Dominance and Age

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	Significance of <u>F</u>
Between groups	3	29.816	9.939	1.907	0.144
Dominant Zone	2	24.598	12.299	2.360	0.107
Age	1	2.303	2.303	0.442	0.510
2-Way Interaction	2	6.176	3.088	0.592	0.558
Within groups	<u>40</u>	<u>208.465</u>			
Total	45	244.457			

Additional Findings

Additionally, the researcher examined the demographic variables of age, gender, education, and the use of assistive devices in regard to self-assessed health scores. The variables of race and marital status were not included in the examination because all of the subjects were Caucasian and nearly all of the subjects (87%) were widowed.

The 21 subjects in the 65-79 year old age group had a mean self-assessed health score of 6.52 (SD = 2.04) while the self-assessed health score mean for the 80 years and older group was 7.2 (SD = 2.5). A t-test (t = -.98,

$df = 44$) showed that the difference in means was not significant ($p = .66$).

The variable of gender was also examined in regard to self-assessed health. Means and standard deviations for the males and females in this study were, respectively, 6.25 ($SD = 2.87$) and 6.95 ($SD = 2.3$). A t -test ($t = -.57$, $df = 44$) failed to yield significant differences ($p = .58$) in the mean health scores.

The use of an assistive device to help with daily activities was examined in regard to self-assessed health scores. Sixteen subjects reported using some type of device. The self-assessed health score mean for this group was 5.75 ($SD = 1.8$) while the "no device" group mean was 7.5 ($SD = 2.37$). A t -test ($t = -2.57$, $df = 44$) showed the difference in means to be significant ($p = .01$). In sum, separate analysis of the three selected demographic variables--age, gender, and device use--yielded differences in self-assessed health scores according to assistive device use (Table 9).

Education in regard to self-assessed health was examined using a one-way analysis of variance (ANOVA). Analysis yielded no significant differences in self-assessed health scores when subjects were grouped by educational levels ($F = .196$, $p = 1.0$). Groups included

Table 9

t-tests for Differences between Mean Scores of Self-Assessed Health for
Variables of Age, Gender, and Assistive Device

Variables	Self-assessed health group mean scores		<u>t</u> values	<u>p</u> values
Age	65-79 yrs. 6.5 (<u>SD</u> = 2.04)	80 yrs. and older 7.2 (<u>SD</u> = 2.5)	-.98	.666
Gender	Male 6.25 (<u>SD</u> = 2.87)	Female 6.95 (<u>SD</u> = 2.3)	-.572	.578
Device	Device use 5.75 (<u>SD</u> = 1.8)	No device use 7.5 (<u>SD</u> = 2.37)	-2.572	.013

df = 44.

(a) those individuals who had completed college,
(b) individuals who had some college education, and (c)
those individuals whose educational level was completion of
high school or less.

Summary of Findings

This study was conducted to examine the relationships between spatial, or non-linear, temporal experiences and self-assessed health in the older adult. The sample included 42 females and 4 males with a mean age of 80.5 years. The majority (87%) of the subjects were widowed. All participants were Caucasians. All but 4 subjects had completed high school; 24% had some college education, and 30% had completed college. Only 16 of the subjects reported using some type of assistive device.

The study findings are summarized as follows:

1. Self-assessed health scores ranged from 1 to 10 with a sample mean of 6.89 (SD = 2.3). Most of the participants (89%) assessed their health in the average to excellent range.

2. The mean self-assessed health score for subjects who drew the past as the dominant time zone was 6.54 (SD = 2.44). Present dominant subjects had a mean self-assessed health score of 6.67 (SD = 1.86). In contrast, those

subjects who drew the future as the dominant time zone had a mean self-assessed health score of 8.7 (SD = 1.25).

3. Forty (87%) of the participants drew the atomistic configuration (circles totally unrelated) of time zones. The remaining subjects drew integrated-projected drawings. None of the subjects drew the continuous configuration, representing a linear relationship.

4. The correlation between self-assessed health and temporal relatedness was 0.016, which was not significant.

5. The past was viewed as the dominant time zone by 33 (72%) of the participants, 6 (13%) participants viewed the present as the dominant zone, and 7 (15%) participants viewed the future as the dominant time zone. One-way analysis of variance yielded no significant differences in self-assessed health scores when subjects were grouped by time zone dominance.

6. Examination of the responses yielded no significant differences in the self-assessed health scores according to time zone dominance categories. Of the total drawings, 59% were the past > present > future configuration, and 13% were the past > future > present configuration. For 11% of the participants, the future > present > past arrangement was drawn.

7. A two-way analysis of variance to identify interactions between temporal dominance and gender and temporal dominance and age in regard to self-assessed health scores failed to yield a significant F. The small male sample size was not sufficient to allow for two-way interactions to be computed.

8. The selected demographic variables of age, gender, education, and device use were examined in regard to self-assessed health. A t-test (t = -2.57, df = 44) demonstrated that the difference between the groups in terms of device use was statistically significant (p = .01). Subjects who reported "no device use" had significantly higher self-assessed health scores. The analysis of the other demographic variables failed to reach statistically significant levels.

CHAPTER V

SUMMARY OF THE STUDY

This chapter presents a general summary of the research study conducted to examine the relationships between spatial, or non-linear, temporal experiences and self-assessed health in the older adult. A discussion of the findings as they relate to other research will be presented and conclusions and implications of the findings are stated. The chapter concludes with selected recommendations for further study.

Summary

This descriptive study was specifically concerned with examining the relationships between spatial temporal experiences and self-assessed health in the older adult. Participants were older adults, 65 years and older, who resided in retirement centers. All participants were volunteers. Data collection was done by the investigator. A letter inviting the residents to participate was distributed by the center personnel.

The participants, on the day of testing, received a packet and a pencil. The packet included the cover letter describing the study, the demographic inventory, the Self-Assessment of Health Scale, and a blank sheet of paper for

a drawing. The cover letter was reviewed. Instructions for the drawing (Circles Test) were given after the other forms had been completed. Approximately 10-15 minutes were requested for the testing. Participants completed the questionnaires and drawings in a group setting at the center.

Research tools included: (a) a demographic inventory to describe selected subject variables, (b) a Self-Assessment of Health Scale that utilized a ladder scale format representing the individual's "health today," and (c) the Circles Test. The Circles Test provided a method for assessing the extent to which an individual feels the relatedness of the past, the present, and the future. The major dimensions of the test are temporal dominance and temporal relatedness (Cottle, 1967).

Discussion of Findings

The phenomenological complexity of both the temporal perspective and health is corroborated by the findings in this study. A review of the literature illustrates the ongoing historical efforts to explain and probe the temporal experience, both in the universe and in humans. From the early beliefs about time as reflected in the stories of creation (Fraser, 1975) to the evolution of time

in terms of modern science (Trivers, 1985), theorists have sought explanations for the time phenomenon.

The temporal horizon in terms of the individual's experience of time includes: (a) a conception of a past, present, and future; (b) time calculation and estimation; and (c) time awareness (Strumpf, 1987). The focus on time, as a correlate of health, is a major component of the Newman (1979, 1983, 1986) model. Time, within this framework, includes a sense of time perception.

Both Newman (1982) and Engle (1984) have identified problems with reliance on a measure of time that is bound to the clock. Engle pointed out that spatial time may be more consistent with the Newman conceptualization because spatial time reflects time as experienced by the individual. The past, present, and future are viewed within a timeless perspective; there are no linear boundaries.

Cottle (1967, 1976) explored the spatial conception of time using an instrument called the Circles Test. The objectives of the test are: (a) to encourage respondents to think of time spatially, (b) to provide a means to report the perception of inter-zone relatedness, and (c) to discover if an individual perceives one time zone to be more important than other time zones. Cottle (1976)

asserted that in the spatial conceptualization of time flow, the past is never lost, as memory brings it back. Additionally, the future is not totally unknown because the future acquires substance through expectations and intentions.

As in the Cottle (1967) study, the majority of the subjects (87%) drew the atomistic configuration of time zones. However, in the Cottle study, the subjects were 17-21 years old, in contrast to the 80.9 average age of subjects in the present study. Unlike the Cottle findings, where 27% of the males and 26% of the females drew the continuous or linear configuration, none of the older adults in the present study drew this type of representation for the the time zones.

Approximately 22% of the drawings in the Cottle (1967) study were the integrated-projected type. Six (13%) subjects in the present study drew this type of drawing. The use of the Circles Test permitted differentiation of the subjects according to the time zone deemed most significant. Cottle contended that the drawing configurations called integrated-projected most represented the meaning of the spatial conceptualization of time flow. The linear conceptualization, that time is made up of

consecutive moments, is noticeably absent in the drawings made by the older adults in this study.

Cottle (1967) stated that the linear concept implies present dominance. The fact that none of the subjects in this study drew the continuous or linear conceptualization suggests that the present may be viewed as fleeting or a zone that connects the past and the future. More studies of older adults, using the Circles Test, are needed for further comparison of findings. Although Fitzpatrick (1980) and Rakowski (1984-85) mentioned using the Circles Test, the results were not available.

Additionally, the Navy personnel in the Cottle (1967) study indicated that time is primarily future dominant and, therefore, future developing. The past, however, was viewed as the dominant time by 72% of the study participants in the present study. This dominance of the past time zone continued when subjects were grouped in dominance categories. With all possible categories represented, 59% were of the past > present > future configuration.

The emergence of the past as the dominant time zone in terms of age has been supported in several research studies. Fitzpatrick and Donovan (1978), using comparative data from institutionalized and noninstitutionalized

individuals between 79 and 89 years of age, investigated temporal experience and motor behavior. The institutionalized group was more past temporally oriented. The age factor was significantly related to only one variable--past temporal extension. This temporal perspective indicates the tendency to focus on the more distant past.

Lomranz et al. (1985) investigated the meaning of time-related concepts across the life span and found that "past" ratings showed a significant tendency to increase with progressive age. Future ratings tended to decrease with progressive age. Whitbourne and Dannefer (1985-86) also found that age related to past temporal dominance. Although 12 month test-retest analyses of data showed that the time perspective measures used were reliable, life changes in the period did appear to influence movement from past to present temporal dominance.

The meaning of time, especially in terms of its relationship with age, represents an area of increasing interest because our society is now an aging society. Lomranz et al. (1985) stated that older people may appreciate the value of time and its impact more clearly than younger individuals. The past becomes central because reconciliations with one's achievements and failures are

major issues. Older people may learn to base themselves more on the past as the future grows shorter. The past is, therefore, utilized for life review and readjustment. This theme is also evident in the writings of Neugarten (1979).

Strumpf (1986) investigated differences in time experiences among nursing home residents, utilizing three measures of time experience. Fifty residents, 75 years of age or older, who resided in skilled, intermediate, and residential units comprised the sample. No significant differences emerged among the three groups. Strumpf noted that with respect to the time reference inventory, the subjects had the highest mean score for "past" items in all sections of the scale.

Anecdotal material provided Strumpf (1986) with more revealing descriptions about time and did reveal differences in patterns of temporal expression. Independent living residents in the Strumpf study reported being happy with the past, enjoying the present, and dreading the future. Others commented on the pleasant memories of the past. The belief that the future is unknown and is in the Lord's hands also emerged in the study. Parallel anecdotal findings in this research study underscore participants' overall satisfaction with the past, an "o.k." feeling about the present, and the "hope"

voiced in terms of what the future might bring. The complexity of tapping the temporal experience or perspective of the older adult has again been highlighted by this study.

In sum, literature detailing studies related to both the temporal perspective and age support the finding of the past as the zone of dominance. Interrelationships between gender, the meaning of time for the older adult, and the influence of environmental factors such as community, nursing home, or retirement center living remain unknown.

Relationships between time and health in the older adult were also explored. Although this research study failed to yield statistically significant correlations between spatial temporal experiences and self-assessed health, health scores or general feelings about health were somewhat similar to other study findings. However, the sample mean of 6.89 found in this study is considerably higher than the sample mean of 5.4 reported by Engle and Graney (1985-86).

The descriptive terms used in the scale included excellent (score of 10), average (score of 5), and poor (score of 1). The majority (89%) of the subjects assessed their health in the average-excellent range. The fact that older adults perceive their health status to be good has

been reported by Engle (1984), Engle and Graney (1985-86), Palmore and Luikart (1972), and Strumpf (1986).

Melanson and Downe-Wamboldt (1987) found that perceived health status was the principal contributor to variance in scores on feelings about the future. For these study individuals, health was perceived as good or excellent and 58% reported positive feelings about their future. Engle (1984) failed to find significant relationships between self-assessment of health and personal tempo and time perception. However, Engle did point out that self-assessment of health may represent only one validity criterion for older adults' health. The need to explore the role of function (daily activities and independence) in terms of health was stressed.

Engle and Graney (1985-86) investigated the role of functional health, age, self-concept and attitudes, and demographic variables toward explaining health self-assessments in older women. Study results indicated that self-assessment speed, emotional behavior, age self-concept, body care and movement, and occupation explained almost 40% of the variance in the self-assessment of health data. These findings highlight the multidimensional aspects of self-assessed health. The self-assessment of speed reflects the role of time as a critical element in

the evaluation of the performance of activities. No significant relationships between age and self-assessment of health and education and self-assessment of health were found.

A significant difference was found in the self-assessed health scores between subjects who reported using a device (movement) and those who did not use any type of assistive device in terms of daily activities (functional ability). This particular finding supports Newman's (1979, 1983, 1986) conceptualization that movement is a dimension associated with health. The role of time as an element in performing daily activities is certainly an area for further study.

Engle and Graney (1985-86) pointed out that health self-assessment includes functional ability as well as attitudes and perceptions shaped by the older adults' relationship with the environment. Older adults tended to compare their own health and activity to other older adults. Reliance on an assistive device in a community where independent living is the focus suggests support for the finding that assistive device use was a factor in terms of health self-assessment for the subjects in this study.

A number of methodological concerns need to be addressed in relation to the research study. The

difficulties in data collection and analysis reflect the complex nature of the temporal perspective as well as the primary difficulties described by Rakowski (1984-85). A valid concern, especially in terms of the future temporal perspective, is whether such a subtle, complex, and labile construct can be reliably quantified for standard statistical analyses. The Circles Test (Cottle, 1967) does not allow for any type of scoring procedures to reflect the spatial references or variations. Almost all of the drawings reflect the spatial references or variations. Almost all of the drawings reflected some type of variation. Some of the circles were drawn across the page while others were spaced diagonally or occupied only one corner of the page. Whether such dimensions can ever be adequately quantified remains to be seen. Rakowski (1984-85) cautions that another source of difficulty concerns the use of older adults as subjects. Even the use of random selection, when done from certain samples of convenience (e.g., church groups, day centers, geriatric clinics, nursing homes) carries the risk of including individuals with visual, auditory, and motor problems. Memory may also be a potential problem source. Visual or verbal complexity may be present due to detailed instructions. Additionally,

as in the case of the Circles Test, there is a need for fine motor control.

Drawings done by the participants in the study certainly reflected the influence of fine motor control. While many of the drawings contained well-drawn, clear circles, some of the circles showed irregularities, especially along the edges. Others were more elongated than round. These motor skills problems were listed in the limitations associated with the study. To allow for any auditory or verbal complexity problems, instructions for the test were always read slowly, distinctly, and repeated at least once. None of the participants elected not to participate when it was time for the drawing to be completed.

Newman (1982) has also expressed concern regarding the selection of a sample of older adults by means of volunteers from various senior citizen groups. This type of selection fails to represent older adults who may be content in their solitude or who are still active and/or employed in their life's work. Newman (1987) asserted that this method of sampling may not adequately tap the consciousness component at this end of the life span.

This research study was limited to those adults who volunteered and only included residents in established

retirement centers. An important issue is whether living in a retirement center with all older adults stimulates or contributes to a focus on the past.

As noted, six different retirement centers were utilized for the collection of the data. All of the residents in each of the centers were invited to participate. None of the centers was associated with nursing homes. The small numbers who ultimately participated in the study pinpoint some of the limitations noted by Newman (1982, 1987). Those residents who did not participate may indeed represent adults with other interests or commitments for outside activities. Also, some of the residents may be undergoing a changing relationship with time. Movement into a retirement center definitely represents a major life change that may be reflected or was reflected in terms of temporal dominance.

Although differences in self-assessed health scores were not statistically significant ($p = .08$) in terms of temporal dominance, the difference found may be important because of the small sample size. An examination of the means of the self-assessed health scores in terms of temporal dominance did reveal that for those subjects who drew the future as the dominant time zone, self-assessed health scores tended to be higher ($\bar{X} = 8.7$, $SD = 1.25$).

Conclusions and Implications

The lack of a significant relationship between the selected temporal experiences of dominance and relatedness and self-assessed health in the older adult underscores the difficulties associated with the conceptualization of the time variable. Though each individual and culture may have specific interpretations of the time perspective, both deal with past, present, and future time. What remains a mystery is the preferential ordering or emphasis placed on these time zones.

Because time and space have a complementary relationship within the Newman (1979, 1983, 1986) model of health, the impact of the environment on the temporal horizon needs further study. A permanent move into a retirement center usually involves living in less space as well as adjusting to shared space and shared time. This type of life change in the older adult and its subsequent relationship to the individual's temporal perspective and health may necessitate studies over longer periods of time.

The finding that none of the older adults in this study drew the linear conceptualization of time as described by Cottle (1967) supports both Newman (1976) and Engle's (1984) assertion that time within the Newman model of health is more spatially oriented. A continued focus on

clock time measures may limit temporal perspectives and thus fail to capture the sense of timelessness inherent in the Newman model.

Directions for further research in the area of temporal experiences are not without methodological difficulties. There is no one reliable and valid measure for capturing the time experience. Newer mathematical structural models may have potential for analysis in terms of the identification of patterns over periods of time. In the Newman (1986) framework, pattern recognition is paramount to nursing practice. The need for operational definitions and continued refinement of the major concepts is necessary if nursing is to explore the interrelationships between time, space, movement, and consciousness.

The finding that older adults who did not use any type of assistive device had a significantly higher mean self-assessed health score provides additional support for the Newman (1979, 1983, 1986) conceptualization that movement is a reflection of consciousness (health). The ability to function in terms of daily activities is definitely of major importance in all areas of nursing practice. Measures of health should include a focus on function rather than dysfunction. The implication is that the time

needed to perform activities is related to overall health in the older adult (Engle, 1986).

Recommendations for Further Study

The following recommendations for further research reflect the study findings. These recommendations are:

1. To further evaluate the findings associated with the Circles Test by including different age groups.
2. To investigate the relationship between spatial temporal experiences and the self-assessed health of older adults who still reside in the community.
3. To include more older males in future studies.
4. To use the data generated from the qualitative findings associated with temporal experience to add to nursing's body of knowledge.

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APPENDIX A

Human Subjects Classification

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

PROSPECTUS FOR DISSERTATION

This prospectus proposed by: Frances Jean Kellev, M.A., M.S.N., R.N.

_____ and entitled:

Spatial Temporal Experiences and Self-Assessed Health in the
Older Adult

Has been read and approved by the members of (his/hers) Research
Committee.

This research is (check one):

 X Is exempt from Human Subjects Review Committee review
because this research study is a Category I study.

_____ Requires Human Subjects Review Committee review
because _____

Research Committee:

Chairperson

Member

Member

Member

Member

Frank M. T. [Signature]
Helen A. Buck
[Signature]
Virginia G. Smith
[Signature]

APPENDIX B
Cover Letter

Dear Participant:

I am a doctoral nursing student at Texas Woman's University, Denton, Texas. If you are 65 or older, I would like you to participate in this study. The purpose of this study is to examine the relationships between older adults' feelings about the past, present, and future and their perception of health.

Participation in this study is voluntary. You are free to refuse to complete the two attached questionnaires and one drawing. There are no identified risks or discomforts associated with your participation. The information about the study will help nurses determine if one's feelings about the past, present, and future are helpful in assessing an individual's health. Your consent to participate is indicated by your completion of the questionnaires and drawing.

The two questionnaires can be answered and the drawing completed in approximately 15 minutes. Any information in connection with this study will be anonymous. In the analysis of the data, you will not be personally identified nor will the name of the center be revealed in any reports based on this study.

If you have any questions, please feel free to contact me at (214) 964-1968.

Thank you for your cooperation.

Jean Kelley

APPENDIX C

Agency Permission Forms

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE _____
GRANTS TO Frances Jean Kelley, M.A., M.S.N., R.N.

a student enrolled in a program of nursing leading to a Doctoral Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem.

the relationship between older adults' feelings about the past, present, and future and their perception of health

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. Other _____

Date: 1-18-89

Frances J. Kelley
Signature of student

Signature of Agency Personnel

Rose M. Deswisdom, Ph.D.
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows:
Original - Student: First Copy - Agency; Second Copy - TWU College of Nursing.

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY*

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4. Other _____

Date: 6-29-89

Frances J. Kelley
Signature of student

Signature of Agency Personnel
Rose M. Desirables, Ph.D.
Signature of Faculty Advisor

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3. The agency (~~wants~~) (does not want) a conference with the student when the report is completed.
4. Other _____

Date: 6-29-89

Signature of Agency Personnel

Frances J. Kelley
Signature of student

Rose M. Presnall, Ph.D.
Signature of Faculty Advisor

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TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

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4. Other _____

Date: 20 July 1988

Frances Jean Kelley
Signature of student

Signature of Agency Personnel

Doc M. Neeris, PhD
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows:
Original - Student; First Copy - Agency; Second Copy - TWU College of Nursing.

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4. Other _____

Date: 8-4-89

Signature of Agency Personnel

Frances Jean Kelley
Signature of Student

Rose M. Preswicke, Ph.D.
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows:

Original - Student: First Copy - Agency; Second Copy - TWU College of Nursing.

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

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4. Other _____

Date: 8-4-89

Frances Jean Kelley
Signature of student

Signature of Agency Personnel

Rose M. Lesciviano, Ph.D.
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows:
Original - Student; First Copy - Agency; Second Copy - TWU College of Nursing.

APPENDIX D

Graduate School Permission to Conduct Study

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON
THE GRADUATE SCHOOL
P.O. Box 22479, Denton, Texas 76204 817/898-3400, 800-338-5255



February 13, 1989

Ms. Frances Jean Kelley
2109 Woodburn Corners
Plano, TX 75075

Dear Ms. Kelley:

I have received and approved the Prospectus for your research project. Best wishes to you in the research and writing of your project.

Sincerely yours,

Leslie M Thompson
Leslie M. Thompson
Dean for Graduate Studies
and Research

dl

cc Dr. Rose Nieswiadomy
Dr. Anne Gudmundsen

APPENDIX E

Demographic Information Form

COMPLETION AND RETURN OF THIS QUESTIONNAIRE WILL BE
CONSTRUED AS YOUR INFORMED CONSENT TO BE A SUBJECT IN
THIS STUDY

Demographic Information

This questionnaire is for obtaining more information about you. After stating your age, please check the appropriate category for the remaining items.

AGE (at last birthday): _____

GENDER: _____ Male _____ Female

RACE: _____ Black, non-Hispanic _____ Hispanic
_____ White, non-Hispanic
_____ Other, please specify: _____

MARITAL STATUS:

_____ Married, living with spouse
_____ Married, not living with spouse
_____ Never been married
_____ Spouse deceased

EDUCATION: (Highest level obtained):

_____ Some grade school
_____ Completed grade school
_____ Some high school
_____ Completed high school
_____ Some college
_____ Completed college

DAILY ACTIVITIES:

Do you use any type of assistive device to help you with your daily activities?

_____ No _____ Yes

If yes, what type:

_____ Cane _____ Crutches
_____ Walker _____ Wheelchair
_____ Other, please specify: _____

APPENDIX F

Self-Assessment of Health Scale

SELF ASSESSMENT OF HEALTH SCALE

Below is a picture of a ladder. It represents your health today. The top of the ladder (10) represents excellent health while the bottom (1) represents poor health.

Circle the number that best describes your health today.

10	EXCELLENT HEALTH
9	
8	
7	
6	
5	AVERAGE HEALTH
4	
3	
2	
1	POOR HEALTH

APPENDIX G

Permission to Use Circles Test

16 October 1987

Thomas Cottle, Ph.D.
12 Beaconsfield Rd.
Brookline, Mass. 02146

Dear Dr. Cottle:

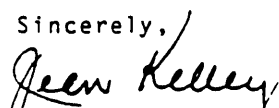
I am a doctoral nursing student at Texas Woman's University, Denton, Texas and am preparing to conduct a small pilot study of my proposed research. I am interested in the relationships between spatial temporal experiences and functional health in the older adult.

I have read your 1967 article on the Circles Test (Journal of Projective Technique and Personality Assessment) as well as your book Perceiving time: a psychological investigation with men and women. I am especially interested in the Circles Test since your research indicates its usefulness for measuring the way an individual feels about time.

I am requesting permission to use your tool. As well, I would appreciate any special scoring instructions and any additional psychometric information, especially in terms of any recent studies, reliability and validity, that you would choose to share.

Please inform me of your response as soon as possible and thank you for your consideration in this matter.

Sincerely,



Jean Kelley, M.S.N., R.N.
Instructor
Associate Degree Program

Home Address: 2109 Woodburn Corners
Plano, Texas 75075

APPENDIX H

Letter of Invitation

LETTER OF INVITATION

Dear Resident:

As a nurse and doctoral student at Texas Woman's University, Denton, Texas, I am interested in the health of older adults. Your center has given me permission to invite you to participate in a research study. The purpose of the study is to examine the relationships between older adults' feelings about the past, present, and future and their perception of health.

If you are 65 or older and agree to participate in this study, you will be asked to answer some questions about your feelings concerning time and health. This will require approximately 15 minutes. Your center has provided a room and time for this project:

Participation in this study is voluntary. There are no identified risks or discomforts associated with your participation. The information about the study will help nurses determine if one's feelings about the past, present, and future are helpful in assessing an individual's health. You may stop your participation at any time if you so desire. Any information in connection with this study will be anonymous. Neither you nor the center will be identified in any reports based on this study.

If you have questions, feel free to contact me at 964-1968. I look forward to seeing you. Thank you for your cooperation.

Sincerely,

Jean Kelley, R.N.

APPENDIX I

Instructions for Circles Test

Think of the past, present, and future as being in the shape of circles. Now arrange these circles in any way you want that best shows how you feel about the relationship of the past, present, and the future. You may use circles of different sizes. When you have finished, label each circle to show which one is the past, which one the present, and which one the future. (Cottle, 1976, p. 87)