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/ NEIGHBORHOOD SIZE AND THE WELL-BEING OF THE RURAL ELDERLY /

by

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INTRODUCTION

Over the last several years, the study of gerontology has grown in terms of financial resources expended and the diversity of specific interest areas. Tibbitts (1960) suggested the increased attention to gerontological research has been the result of three conditions: 1) a culture in which individual well-being is stressed; 2) an increased awareness of environmental, social, and financial problems faced by many older persons; and 3) the development of research methodologies which address personal conditions (e.g., physical and mental health) not found in the general population.

Numerous topics in gerontology have been researched. With the exception of Philblad & Rosencranz (1969) and Windley & Scheidt (1980, 1982), however, there has been little systematic research on environmental factors and their impact on the lives of older residents in small towns. This lack of knowledge is distressing considering the demographic profile of the United States. The United States Bureau of the Census reports that persons over 65 years of age in 1900 accounted for 3.1 million, or 4% of all persons living in the United States. By 1978, the number had increased to 24 million, or nearly 11% of the 218 million

persons of all ages living in the United States (U.S. Department of Commerce, 1979). Demographic projections indicate that although the proportion of persons over 65 will remain about 11%-12%, the number of elderly will climb to approximately 30.6 million by the year 2000 (Brotman, 1976). Lawton (1977) has found that nearly one-sixth of the persons in the United States over 65 years of age live in small towns, while Cutler & Harootyan (1975) reported that the highest concentration of elderly resides in small rural communities.

Organization of the report

This study examined the relationships between personal well-being and cognitive images of the neighborhood of 989 elderly persons (over 65 years of age) living in 18 small rural communities (under 2500 population). Presented below is a review of the literature in well-being and environmental cognition research, followed by an overview of a major study of the relationships between individual mental health of small town elderly and the ecological/architectural and psychological dimensions of small towns. This major study provided the context in which the present analyses were performed. Next, the rationale for this study is presented resulting in a number of hypotheses of anticipated relations between neighborhood cognition and personal well-being.

Well-being as a multidimensional construct

Well-being is a multidimensional construct developed from concerns for individual mental and physical health. Defined a few years ago in purely economic terms (individual income above the poverty level), well-being has been transformed into a more complex psychological construct, often referred to as the "quality-of-life". The first major study of well-being in non-economic terms was that of Gurin, Veroff, and Feld (1960). Gurin, et. al., viewed well-being as the fears and anxieties of people, their strengths and resources, the problems they faced, and the coping methods used to overcome the problems. A mental health orientation in assessing well-being was used by Gurin and colleagues with questions relating to the need for counseling, a checklist of "psychiatric symptoms", and how happy the respondent felt.

The second major approach to the study of well-being was that of Bradburn & Caplovitz (1965). In this definition, well-being was expressed as the level of individual happiness. Bradburn followed the lead of Gurin, et. al., while focusing attention on the question: "Taking all things together, how would you say things are these days - would you say you are very happy, pretty happy, or not so happy these days?" From this and later work, Bradburn suggested that happiness is an emotional balance relative to the number of positive and negative affects with which an individual identifies, (Bradburn, 1969).

A more cognitive approach to the conceptualization of well-being was developed by Cantril (1965). Cantril asked each subject to think about "the worst life" and "the best life", then place himself somewhere on the scale between the two extremes. Cantril's method provided a measure of well-being based on aspirations, levels of achievement, and satisfaction with one's life experiences.

A recent study by Campbell, Converse, & Rodgers (1976) has provided the most comprehensive investigation of well-being to date. Campbell and colleagues developed a multidimensional study of well-being in which they proposed to "monitor the quality of American life". The scope of Campbell's study surpassed those of previous works; Campbell, et. al., defined well-being in terms other than a purely mental health construct. As a result, data collected by Campbell about many areas of life experience (e.g., jobs, marriage, health, housing, friendship), provided more detailed information about the quality of life than data from previous, more singular well-being definitions had offered.

In this study, well-being was defined as a concept including housing satisfaction, functional health, friendship, family contact, security, mobility, activity participation, morale, happiness, and psychiatric impairment.

Cognition research and neighborhood legibility

This section reviews the literature in environmental cognition research and provides an overview of research in cognitive processes of the elderly.

The earliest studies of the human cognitive process were executed by Trowbridge (1913) in which methods of orientation in geographic space were investigated. For the next five decades, however, most cognition studies were directed toward animal research, and not until the early 1960's did studies involving human subjects become more abundant (Evans, 1980). An important component in this area of research is the 'cognitive map', a term which has evolved as a descriptor of the cognitive processes related to acquiring, representing, and processing information about physical settings (Downs & Stea, 1973). Evans (1980) suggested that the cognitive map provides two types of information not available through other cognitive representations of information. First, the map represents spatial relationships between loci in which an individuals' association with the physical environment is important. Second, the cognitive map contains some cartographic qualities facilitating one's movement through the actual physical setting.

Lynch (1960) offered a detailed review of an exploratory study that employed cognitive mapping procedures to investigate the "mental image", or "legibility", of three

urban areas in the United States. In Lynch's terms, legibility is the clarity of the environment or the ease with which one can recognize parts of the city (e.g., districts, landmarks, pathways) and organize them into a coherent pattern.

Lynch suggested that a legible environment is important for two reasons. First, a sense of safety is afforded by the image of an environment which allows one to move from place to place without getting lost. It is unlikely, however, that most people would become completely lost in an environment, according to Lynch, because of the support of other individuals, cartographic maps which detail street and landmark locations, and previous experiences of the individual in navigating the environment. Second, Lynch suggests a clear image of the environment may also help organize activities and provide a means of passing societal beliefs and knowledge through time.

Formation of the mental image, according to the Lynch, is a bi-directional process involving: 1) the person, his beliefs, and memories, and 2) the environment, which suggests features and their relationships. The individual selects information provided by the environment through the sensory modalities, then organizes and enhances his perceptions based upon personal experience. Over time, the mental image is changed due to changes in the physical environment, the cognitive skills of the individual, and

continued re-interpretation by the individual. The ability to maintain a clear image of the environment may be difficult for many elderly, however, considering the degradation of sensory and motor skills as one ages (Koncelik, 1976).

Only a few studies investigating cognitive processes of the elderly, to the knowledge of this author, exist in the literature. Walsh, Krauss, & Regnier (1980) asked elderly and young adults to draw their neighborhoods. Analysis of the neighborhood maps by independent judges found maps of the elderly were more disorganized, simple and less accurate than those of the young adults. The elderly's maps were also smaller in size and moderately correlated with facility use and self-rated mobility; those elderly who were more mobile and made use of a larger number of facilities drew larger maps.

Windley & Vandeventer (in press) have reported town size differences for five environmental cognition dimensions (perceived neighborhood size, neighborhood ratio, awareness of town amenities, number of amenity types, and tour ratio) for a sample of 989 elderly residents of small rural towns. Elderly residents of the smallest towns (under 500 population) had smaller neighborhoods than did residents of medium and larger communities, however, the proportion of the community included in the small town neighborhood was twice that found in the largest towns. When asked to take a

stranger on a hypothetical tour of the town, residents of larger communities mentioned significantly more amenities, amenity types and had larger tour ratios than did residents of medium and small communities.

Regnier (1974) provided scaled maps of the community to a sample of urban elderly and asked them to draw a line enclosing the area they considered to be their neighborhood. Through computer synthesis techniques, Regnier found that areas of the community which appear in many of the individual neighborhoods of the urban elderly were strongly related to land use patterns and access to services. Land use patterns were the strongest determinant of neighborhood use and cognition. Those areas in the community which provided life-supportive goods and services (grocery store, drug store, bank, doctors office) formed the core of the neighborhood, while industrial areas were not part of the cognitive maps.

Regnier (1978) has also used cognitive mapping techniques to investigate relationships between actual and perceived locations of crime in an urban area. Regnier found that certain dangerous commercial strips were identified by a consensus of older respondents, however, other areas (such as MacArthur Park) were mistakenly classified as dangerous by the older respondents. The misrepresentation of the park as a dangerous area was, according to Regnier, due to characteristics of people in the park environment rather

than an indepth knowledge of hazardous environmental conditions or actual criminal activity.

The present study obtained information about the perceived neighborhoods of elderly residents of rural communities using Regnier's method of measuring neighborhood legibility (neighborhood size).

OVERVIEW OF THE MAJOR RESEARCH

A study by Windley & Scheidt (Windley, 1981; Scheidt, 1981) directed at assessing the well-being of elderly persons in small-towns provided the context in which this study was developed. Prior to the work of Windley and Scheidt, little was known about the well-being of elderly persons living in rural communities. As a result, various policy decision makers were forced to make recommendations based only upon data from urban elderly.

Windley and Scheidt followed the lead of previous well-being researchers and adopted a multidimensional approach to define personal well-being of elderly residents of small towns (Windley & Scheidt, 1980). Their study also assessed dimensions of the physical and psychosocial environments of small towns to determine to what extent individual differences in well-being were attributable to environmental features.

Figure 1 describes graphically the conceptual framework of Windley and Scheidt, and provides anticipated relationships between the predictor domains (Ecological/Architectural, Psychosocial, Demographic) and the dependent, Well-being domain. Major variables are listed within each of the four domains, some of which were

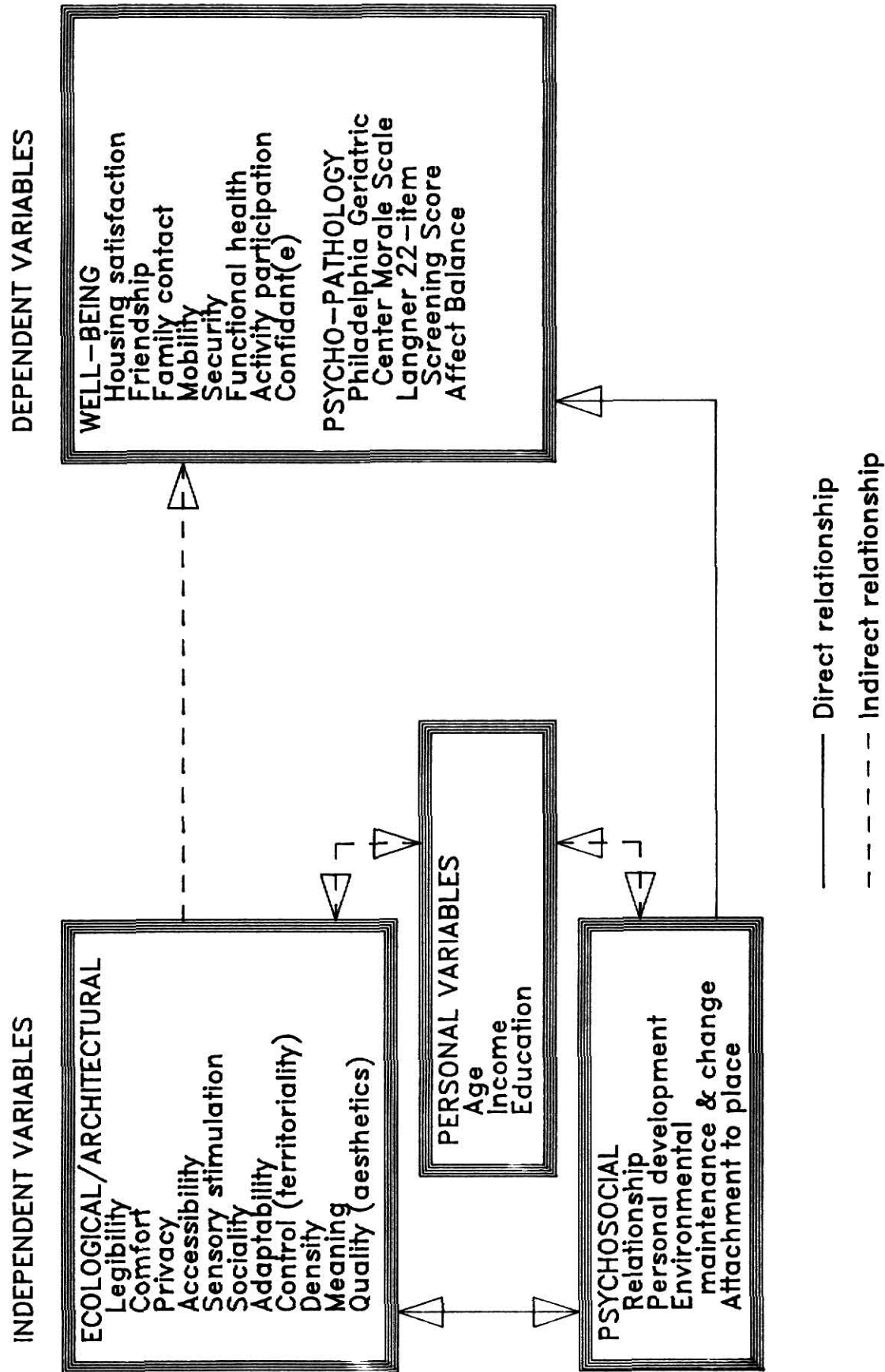


Figure 1: Conceptual framework of the Windley & Scheidt study

measured by single items while others represent several questions. The arrows in Figure 1 denote directional, global relationships made at the outset of the Windley and Scheidt study, in which solid arrows indicate stronger anticipated relationships and broken arrows indicate weaker anticipated relationships.

A major component of the Windley and Scheidt research was to assess the impact of county rurality on the well-being of small town elderly residents. In Lawton's (1977) review of aging/environment research, the rural elderly were found to be more deprived than their urban counterparts in terms of income, medical care and other basic resources. The rural elderly were, however, more likely to own their home and have more frequent contact with friends. Lawton, Nahemow & Teaff (1975) found that small community size was associated with more friendships and greater activity participation and housing satisfaction. Many studies to date dealing with rurality have faced the problem of operationally defining the term "rural" (Van Es & Brown, 1974; Willits & Bealer, 1967). Rurality has been identified in terms of 1) sparsely populated areas, 2) occupational endeavors, and 3) sociocultural influences using attitudes and behaviors in rural and urban cultures. Defining "rurality" in population terms has typically been used in federally sponsored programs. However, the definition has seldom been consistent from one program to another. For example, the

Bureau of the Census has defined rural places as those under 2,500 population, while the Rural Redevelopment Act of 1972 has distinguished rural areas as those of 10,000 population and less.

Windley & Scheidt utilized a quantitative approach developed by Smith & Parvin (1974) which defined county rurality in objective terms: 1) the number of persons not employed in agriculture, forestry, or fisheries in each county, 2) the reference county population density in persons per square mile, and 3) the population proximity ratio of each county. The proximity ratio (reference county population divided by the average distance from county seat to county seats of neighboring counties) allows regional population to influence the rural index value of each county. The county index of rurality has been used to assess regional influences on neighborhood ratio in this study. For a more detailed account of this rural index see Windley & Scheidt (1980).

Review and Hypotheses

To date, few studies have investigated the relationships between environmental cognition and personal well-being of the elderly, especially those living in rural areas. Research in human cognition has identified relationships between environmental cognition and areas of perceived crime, service accessibility, and individual mobility.

Well-being research has identified relations between personal well-being and measures of health, mobility, and feelings of security. Differences in Neighborhood ratio scores of small town elderly were investigated across three town-size and county index of rurality categories. This study proposes the following hypotheses: 1) Elderly persons that report larger neighborhood ratios will feel less secure in the neighborhood, 2) Elderly persons reporting larger neighborhood ratios are more mobile, and 3) Elderly persons reporting larger neighborhood ratios have higher levels of functional health.

METHODOLOGY

Community sampling

Communities selected for the study were chosen with two criteria. First, the county index of rurality was calculated (with a mean set equal to 100) for each of the 39 counties in the eastern one-third of the state of Kansas. This region was chosen because it contained counties with a large range of rural to urban development and an abundance of towns (approximately 235) under 2,500 population (Figure 2). Table 1 lists the index of rurality values for the 39 counties. A low index score was associated with more rural characteristics. The range of county rurality scores was then divided into three categories: more rural counties, medium, and more urban counties. Next, each town of 2500 population or less in the 39 counties was identified and categorized by population size (large=1501-2500, medium=501-1500, small=100-500). This categorization provided a 3 x 3 county rurality by town size matrix. Two towns were then selected from each cell of the matrix, yielding 18 towns, (Table 2). The second criterion for town selection was proximity to Kansas State University. Thus, the sample of towns was not geographically representative of the study area, but rather, a purposive sample, representing

the range of rural to urban index scores and population categories. Figure 3 locates the eighteen communities in their respective counties.

Respondent sampling

A town panel in each community comprised of two to four local leaders and/or elderly residents assisted with many aspects of the project and proved to be an invaluable resource. The town panels helped develop rapport between the community and the research staff and offered advice on the research instrument, payment of interviewing fees to subjects, and helped develop interviewing techniques sensitive to the elderly living in small towns.

The town panels also provided lists containing the names of elderly persons living in their town. The population lists ranged in size from 18 persons in the smallest town to nearly 500 persons in the largest, representing approximately 20% to 25% of each communities' total population. Following development of the initial population lists, each list was screened by the respective town panel to identify individuals they felt would be unable to complete a one and one-half hour, structured interview. The criteria for elimination from the sample (established by the principal investigators) were: 1) presence of severe health or auditory difficulties which would make interview completion impossible, or 2) the existence of easily

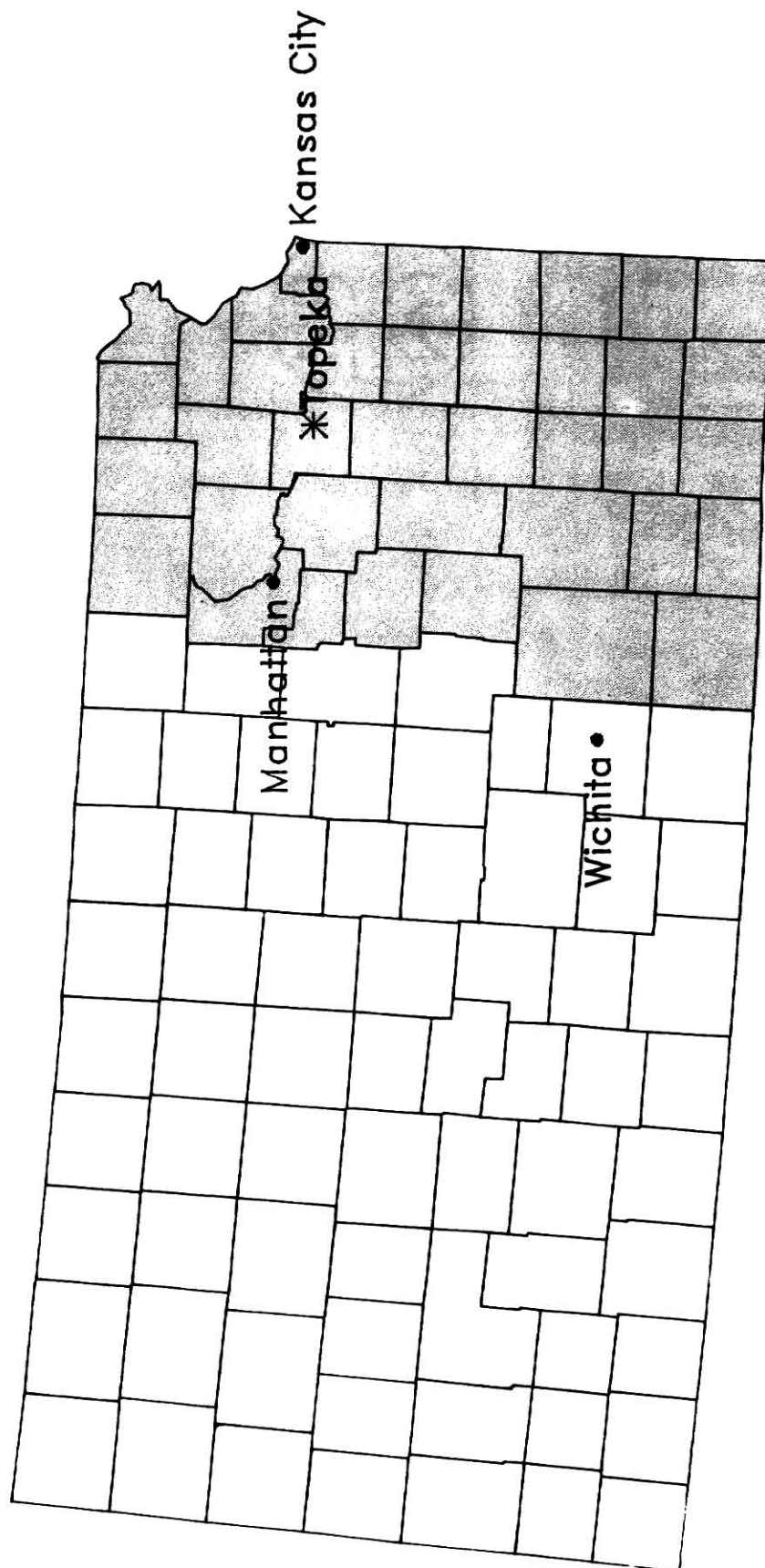


Figure 2: Study region

TABLE 1
County Rurality Index Values

County Name	Index Value	County Name	Index Value	County Name	Index Value
Chase	98.8	Linn	99.5	Cherokee	100.1
Elk	99.0	Doniphan	99.5	Lyon	100.1
Chautauqua	99.1	Pottawatomie	99.5	Cowley	100.2
Morris	99.1	Wilson	99.7	Butler	100.2
Nemaha	99.2	Osage	99.7	Crawford	100.3
Coffey	99.2	Bourbon	99.8	Montgomery	100.4
Waubaussee	99.2	Allen	99.8	Geary	100.5
Woodson	99.3	Jefferson	99.8	Riley	100.6
Marshall	99.3	Miami	100.0	Leavenworth	100.8
Brown	99.3	Franklin	100.0	Douglas	101.0
Anderson	99.4	Neosho	100.0	Shawnee	102.1
Jackson	99.4	Atchinson	100.1	Wyandotte	102.9
Greenwood	99.5	Labette	100.1	Johnson	103.7

excitable personalities. The elimination process removed approximately 5 to 10 names from the original list in each town. The final population lists ranged from 18 to 445 persons, from which respondents were randomly selected. Vandeventer (1979) presents a more detailed discussion of the town panel and its responsibilities. Table 3 presents sample sizes in each community, which totals 38.9% of all available elderly in the 18 towns.

TABLE 2

Community Distribution by Population Size and County Index
of Rurality*

Community Population Size			
County Ruralty Values	Small (100-500) n=6	Medium (501-1500) n=6	Large (1501-2500) n=6
More Urban Counties (102-104)	SHAWNEE Auburn Willard	SHAWNEE Rossville JOHNSON Edgerton	JOHNSON De Soto Gardner
Medium (100.5-101)	RILEY Leonardville Randolph	RILEY Riley DOUGLAS Lecompton	LEAVENWORTH Tonganoxie DOUGLAS Baldwin City
More Rural Counties (98-100.4)	MORRIS White City WAUBAUNSEE Alta Vista	MARSHALL Waterville Frankfort	NEMAHA Seneca POTTAWATOMIE St. Mary's

*County names are capitalized.

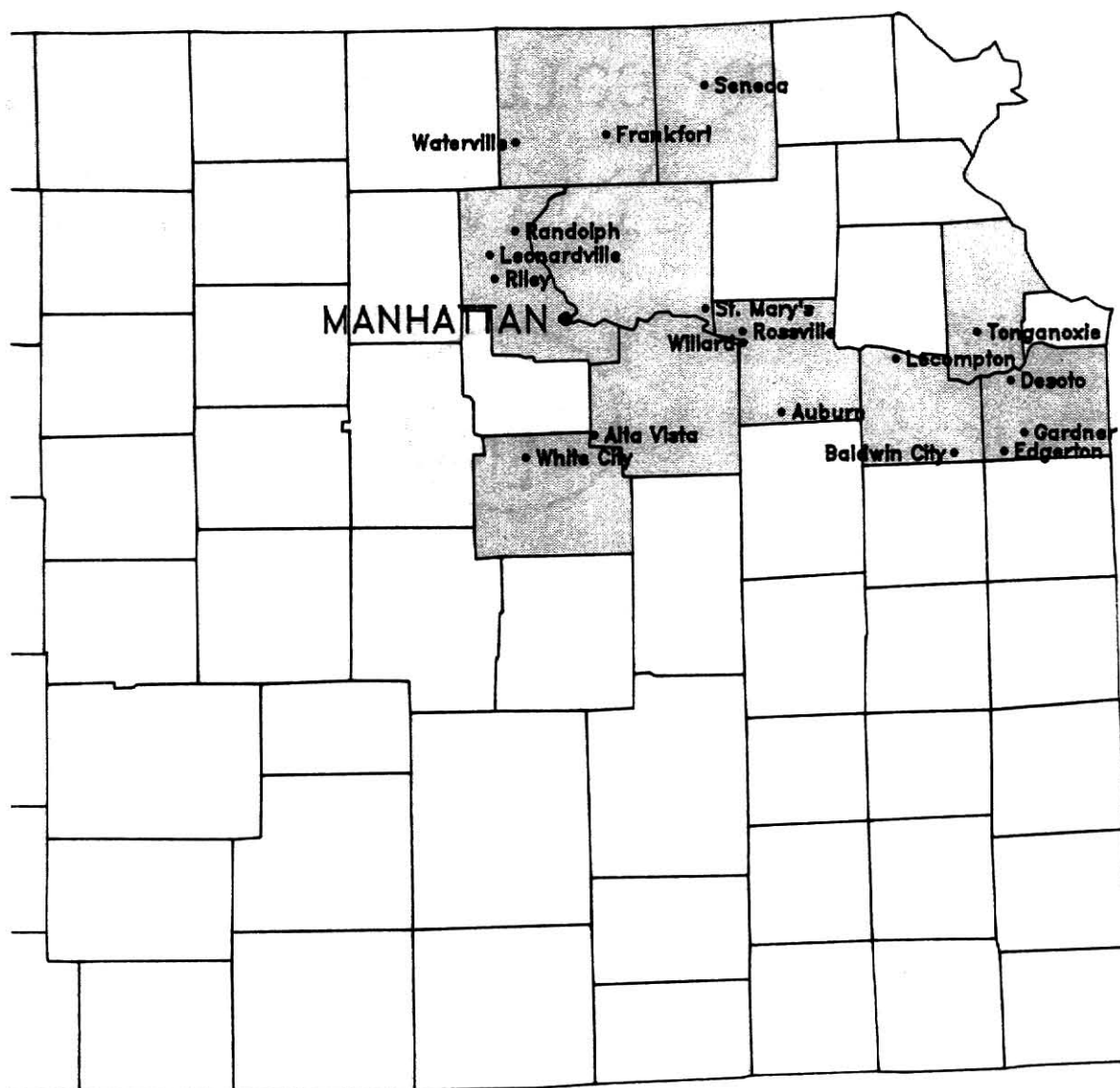


Figure 3: Study communities

TABLE 3

Elderly Population, Sample Size and Percent of Available
Elderly Interviewed by Community

Community	Number of Elderly	N	Percent Interviewed
Alta Vista	83	58	69.9
Auburn	24	20	83.3
Baldwin City	245	65	26.5
De Soto	129	64	49.6
Edgerton	61	25	41.0
Frankfort	244	71	29.1
Gardner	76	40	52.6
Lecompton	45	32	71.0
Leonardville	80	68	85.0
Randolph	30	28	93.0
Riley	150	75	50.0
Rossville	127	78	61.4
Seneca	480	106	22.1
St. Mary's	153	45	29.4
Tonganoxie	275	65	23.6
Waterville	189	55	29.1
White City	138	83	60.1
Willard	18	12	66.7
Total sample	2547	990	38.9

Data collection

The data were collected with a standard, structured interview schedule by a trained interviewing staff comprised of graduate students enrolled in the Departments of Architecture and Family and Child Development at Kansas State University. Between October, 1978, and June, 1979, the eleven staff members completed 990 interviews. Each interview was conducted in the respondents' home, and

required approximately 1-1/2 hours to complete. A ten dollar fee was paid to each respondent.

Research instruments

Neighborhood legibility

Neighborhood legibility was measured through the use of cognitive mapping techniques developed by Regnier (1973, 1974). Each respondent was given a scale map of the community on which the interviewer located the respondent's house or apartment. The respondent was then asked: "Would you draw a line around the area you would consider your personal neighborhood?" Neighborhood area was then measured (in acres) by computer analysis of the scale map (Regnier, Eribes, & Hansen, 1973). Next, Neighborhood Ratio values were calculated by dividing neighborhood area by the total town acreage of each respective town. The Neighborhood Ratio value (multiplied by 100) provided a measure of the proportion of the town included in the older residents neighborhood. This variable allowed examination of neighborhood size across communities of various sizes. Figure 4 is representative of the maps drawn by the respondents.

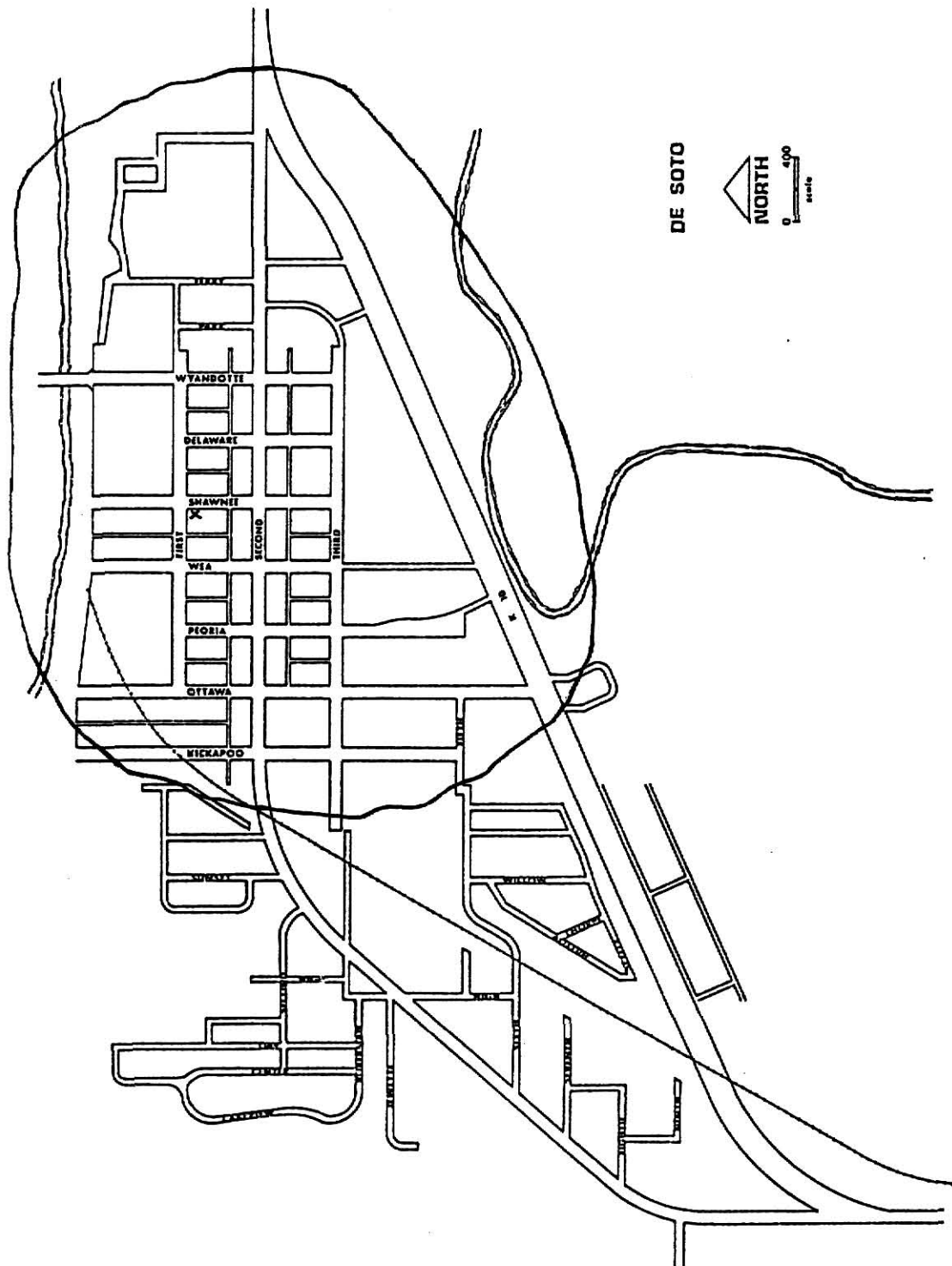


Figure 4: Representative neighborhood map

Personal well-being

Well-being variables utilized in this research were adapted from Lawton, Nahemow and Teaff (1975) and assessed satisfaction with housing and neighborhood, contact with friends and relatives, mobility, functional health, presence of a confidante, and feelings of security in the house and neighborhood. Three additional indicators of psychological well-being and psychopathology included the Philadelphia Geriatric Center Morale Scale (Lawton, 1975); Bradburn's Affect Balance Scale (Bradburn, 1969); and Langner's 22-item Screening Score for psychiatric impairment (Langner, 1962). Specific well-being variables and sample items assessing them are presented below.

Housing satisfaction. Adapted from Lawton, et. al., this component measured perceived satisfaction with current housing and neighborhood characteristics. The items were factor analyzed and rotated to the equamax criterion producing two factors: 1) housing and neighborhood satisfaction, and 2) neighborhood satisfaction. Specific questions comprising these measures were:

- (1) If you could live anywhere you wanted, where would you like to live?
- (2) What do you like least about living in this house/apartment? (Number of features mentioned by respondent.)

- (3) What do you like about this neighborhood? (Number of features mentioned by respondent.)
- (4) What do you dislike about this neighborhood? (Number of features mentioned by respondent.)

Contact with friends/relatives. Factor analysis of four items provided measures of social interaction with three friends and three relatives. The factors were rotated to the equamax criterion and assessed frequency of contact with friends/relatives and distance to friends/relatives. The items were:

- (1) How far do each of these friends/relatives live from you?
- (2) How often do you visit each of these friends/relatives in their homes?
- (3) How often do you visit with each of these friends/relatives in your home?
- (4) How often do you talk with each friend/relative on the phone?

Mobility. Two items from Lawton, et. al., assessing mobility around the house and neighborhood were used. These items were rotated for one factor.

- (1) About how often do you get out of this house in good weather?
- (2) About how often do you leave this neighborhood?

Functional health. This component assessed the frequency of and strength with which the individual managed everyday tasks. Items were adapted from Lawton (1972), and Rosow and Breslau (1966), and were rotated for one factor. The specific items were:

- (1) Do you feel that your health is better, about the same, or not as good as it was three years ago?
- (2) Are you still well enough to walk half a mile (about 8 ordinary blocks)?
- (3) Are you still healthy enough to do heavy work around the house without help?

Confidant(e). This dimension assessed whether or not the older person had someone with whom problems could be shared.

Feelings of security. This dimension, developed by Lebowitz (1975), measured how safe the older person felt in the home and neighborhood during the day and night. Also assessed was the number of places one would not venture at night.

Affect balance. Bradburn's Affect Balance Score (Bradburn, 1969) was used to measure psychological well-being from individuals' responses to negative affect and positive affect items. An individual possessing more negative affect than positive affect is low in well-being, while an individual who is high in well-being has positive affect greater than negative affect. It should be pointed

out that Bradburn's items address short-term levels of well-being. Positive affect items included: During the past few weeks did you ever feel:

- (1) Pleased about having accomplished something?
- (2) That things were going your way?
- (3) Proud because someone complimented you on something you had done?
- (4) Particularly excited or interested in something?
- (5) On top of the world?

Negative affect items included: During the past few weeks did you ever feel:

- (1) So restless that you couldn't sit long in a chair?
- (2) Bored?
- (3) Depressed or very unhappy?
- (4) Very lonely or remote from other people?
- (5) Upset because someone criticized you?

Morale. The Philadelphia Geriatric Center Morale Scale, PGCMS, (Lawton, 1975) was represented by nine items. Lawton has factored the nine items into three groups: attitude toward own aging, agitated depression, and lonely dissatisfaction. In this research, attitude toward own aging was computed as the mean of responses to three PGCMS items:

- (1) Do things keep getting worse as you get older?
- (2) Do you have as much pep as you did last year?

- (3) Do you feel that as you get older you are less useful?

Agitated depression was computed as the mean of PGCMS items:

- (4) Do little things bother you more this year?
(5) Do you take things hard?
(6) Do you get upset easily?

Lonely dissatisfaction was the mean of these three PGCMS items:

- (7) How much do you feel lonely?
(8) Do you see enough of your friends and relatives?
(9) Do you have a lot to be sad about?

Langner 22-Item Screening Score. The Langner Score provided an "indication of where people lie on a continuum of impairment in life functioning due to very common types of psychiatric symptoms", (Langner, 1962). The items were factor analyzed to the equamax criterion, yielding two factors. Representative items included:

- (1) Are you ever bothered by headaches or pain in the head?
(2) Are you ever bothered by nervousness?
(3) Are you the worrying type?
(4) Do you sometimes wonder if anything is worthwhile anymore?

Activity participation. This dimension measured the frequency of participation in sixteen specific activities in

the home and community. Among the activities were items assessing frequency of gardening, working on hobbies, attending church and church related functions, sporting events, movies, and volunteer work. In this research, activity participation is the number of activities participated in during the past year.

FINDINGS

Town size differences

Table 4 shows statistically significant differences in Neighborhood ratio scores across each of three town size categories. Older residents of small towns included nearly 36% of the community in their personal neighborhoods, while those in medium and large towns included approximately 24% and 18%, respectively. Small town residents included twice the proportion of their community in the neighborhood compared to large town residents.

TABLE 4

Mean Scores and F Value for Neighborhood Ratio by Town Size*

	Town Size								
	Small (100-500) N=269		Medium (501-1500) N=336		Large (1501-2500) N=384				
	Mean	SD	Mean	SD	Mean	SD	F**	df	
Neighborhood Ratio	35.8a	39.3	24.3b	34.1	17.6c	31.8	19.9	988	

* Means with same subscript are not significantly different.

** p<.001.

Table 5 presents correlation coefficients between Neighborhood ratio and the seventeen well-being measures within each community size category and for the total sample. Several of the correlations were found to be significant, although only Feelings of security was statistically significant in all categories of the data. When one observes relationships for the total sample, it can be seen that persons who included larger proportions of the town in their personal neighborhood tended to be more active, more able to perform everyday tasks, and happier; but, they were also less secure and less satisfied with features of the neighborhood. These persons also tended to be less bothered by daily events (Agitated depression). The relationships were similar for those who lived in small towns except happiness and Agitated depression were no longer statistically significant. The correlation structure changed for medium sized communities where stronger relationships were found between Neighborhood ratio and Neighborhood satisfaction. Relationships were also stronger with Attitude toward own aging and Agitated depression. While the relationship between Neighborhood ratio and Activity participation was still positive, the relationship was weaker for those in medium sized towns. For those persons in large communities, the relationship with Neighborhood satisfaction was no longer statistically significant. The relationship with Distance to friends was

significant, however, indicating a greater distance to friends for those with larger Neighborhood ratios.

TABLE 5

Pearson Correlation coefficients between Neighborhood Ratio and Well-being by Town Size Category and for Total Sample

Well-being Index	Neighborhood Ratio			
	Town Size			
	Small (100-500) N=269	Medium (501-1500) N=336	Large (1501-2500) N=384	Total Sample N=989
Housing satisfaction	-0.046	-0.015	0.091	0.006
Neighborhood satisfaction	-0.141*	-0.200*	0.045	-0.116*
Attitude toward own aging	0.046	0.160*	0.075	0.080*
Lonely dissatisfaction	0.069	0.053	0.031	0.050
Agitated depression	0.058	0.162*	0.107*	0.108*
Friend contact	0.010	0.006	-0.013	0.012
Distance to friends	0.012	-0.060	0.179*	0.051
Relative contact	-0.002	0.078	-0.084	0.020
Distance to relatives	0.003	-0.073	0.095	-0.007
Activity participation	0.263*	0.133*	0.078	0.140*
Security	-0.123*	-0.123*	-0.103*	-0.129*
Confidant(e)	0.079	0.013	0.003	0.036
Functional health	-0.138*	-0.127*	-0.051	-0.092*
Affect balance(happiness)	0.044	0.258*	0.110*	0.130*
Mobility	0.077	0.076	-0.061	0.017
Langner I	0.014	-0.086	-0.108*	-0.051
Langner II	0.008	-0.118*	-0.001	-0.031

* $p < .05$.

County rurality differences

Older residents in more rural counties included nearly 29% of the community in their personal neighborhood (Table 6), as compared to approximately 23% and 21% for those in medium and more urban counties, respectively. However, analysis of variance indicated these differences were not significantly different.

TABLE 6

Mean Scores and F Value for Neighborhood Ratio by County Index of Rurality

	County Rurality							
	More Rural N=417		Medium N=335		More Urban N=237			
	Mean	SD	Mean	SD	Mean	SD	F*	df
Neighborhood Ratio	28.5	37.8	22.6	33.4	21.3	33.5	2.4	988

*Not significant at $p < .05$.

Table 7 displays Pearson correlation coefficients between Neighborhood ratio and the measures of well-being within three levels of county rurality and the total sample. The correlation structure for older persons in more rural counties was similar to that for the total sample, except the relationships were stronger for most variables. Older

residents who reported larger neighborhood ratios in more rural counties also tended to be less satisfied with features of the neighborhood and less secure when traveling through the neighborhood. Also similar to the total sample, older people in more rural counties who had larger neighborhoods participated in more activities, had a positive attitude toward their own aging, and were more able to perform everyday tasks. They also tended to be less bothered by daily events. Fewer well-being variables were found significantly related to Neighborhood ratio for older persons in medium rurality counties. Satisfaction with neighborhood characteristics was again found inversely related to neighborhood ratio, however the relationship was weaker than for the total sample. Feelings of security remained inversely related to Neighborhood ratio. The relationships for Attitude toward own aging and Affect balance were similar to those previously reported, indicating more positive attitude toward one's own aging and greater happiness for older persons with larger Neighborhood ratio scores. No statistically significant relationships between Neighborhood ratio and seventeen measures of well-being were found in the more urban counties.

TABLE 7

Pearson Correlation Coefficients between Neighborhood Ratio
and Well-being by County Rurality and for Total Sample

Well-being Index	Neighborhood Ratio			
	County Rurality			Total Sample N=989
	More Rural N=417	Medium N=335	More Urban N=237	
Housing satisfaction	-0.073	0.042	0.043	0.006
Neighborhood satisfaction	-0.174*	-0.062*	-0.053	-0.116*
Attitude toward own aging	0.120*	0.120*	-0.018	0.080*
Lonely dissatisfaction	0.063	0.008	0.064	0.050
Agitated depression	0.170*	0.013	0.080	0.108*
Friend contact	-0.011	0.083	-0.038	0.012
Distance to friends	0.030	0.090	0.016	0.051
Relative contact	0.066	0.018	-0.043	0.020
Distance to relatives	-0.059	0.007	0.070	-0.007
Activity participation	0.276*	0.057	0.020	0.140*
Security	-0.128*	-0.123*	-0.111	-0.129*
Confidant(e)	0.040	-0.044	0.109	0.036
Functional health	-0.133*	-0.087	-0.027	-0.092*
Affect balance(happiness)	0.144	0.156*	0.079	0.130*
Mobility	0.072	-0.029	-0.030	0.017
Langner I	-0.102*	0.021	-0.049	-0.051
Langner II	-0.036	-0.059	0.003	-0.031

* $p < .05$.

DISCUSSION AND CONCLUSIONS

This study has shown that town-size differences in neighborhood legibility (as defined by Neighborhood ratio) were found for older residents of towns under 2500 population, and that Neighborhood ratio is significantly related to selected measures of personal well-being. No statistically significant differences in neighborhood ratio due to county rurality were found.

A larger Neighborhood ratio, indicating a larger portion of the community in the personal neighborhood, was found significantly related to several measures of personal well-being for the total sample as well as within town size and county rurality categories. Each of the relationships was very low, however, indicating the relative unimportance of size of neighborhood ratio in explaining variation in the well-being measures; the maximum variance explained in well-being was about 7% for Activity participation. As hypothesized, feelings of security and functional health were significantly related to neighborhood cognition, but again, the magnitude of the relationships was very small. However, the Well-being variables found significantly negatively related to Neighborhood ratio indicate that older residents were dissatisfied with physical features of their

neighborhood and held concerns for feeling secure in the neighborhood. The positive relationships indicated that healthier, more active people have larger neighborhoods.

The discovery that Neighborhood ratio differences were not statistically significant for county rurality effects was not surprising. The literature does not, to this author's knowledge, suggest expected variations in community legibility for rural differences. Moreover, because the neighborhood is small relative to the area encompassed by county boundaries, it is not surprising that county based measures were likely to have minimal effect. This author suggests, therefore, that future analyses of neighborhoods of the elderly emphasize a community based frame of reference, i.e., measures of community size, service availability and usage, and possible topographic influences as discussed by Lynch (1960) and Regnier (1974).

In reviewing this research, a methodological issue must be addressed. Particularly the reliability and validity of variables reported in this study. This author, by observation, detected what appeared to be several definitions of the term "personal neighborhood". For some of the elderly sample, neighborhood maps appeared to be concisely drawn; each line followed a street or other boundary such as a railroad track, city limits, or creek. These maps, it appeared, were drawn by the older respondent with an "area usage" frame of reference for personal

neighborhood. This definition would be similar to that of Regnier, 1974: "When you think of the neighborhood area that surrounds your apartment what area do you use?" In contrast to these maps, other respondents recorded maps which appeared to indicate less physical definitions of neighborhood. In these cases, the neighborhood maps were generally circular or elliptical in configuration. Some of these maps also bounded areas which were not within the town limits; but rather, the neighborhoods were drawn to include areas of undeveloped agricultural land. Two possible reasons to explain this type of map can be identified: 1) a social definition was held by the older respondent ("the whole town is my neighborhood") which produced a map reflecting the locations of friends or relatives, and 2) an apparent inability for some respondents to properly orient themselves to the map. Although the relation is low, the positive association between neighborhood ratio and distance to friends for elderly residents of large towns supports the social definition of neighborhood. The second reason, lack of map reading skill, is supported by Regnier's finding that cognitive maps of the urban elderly were more disorganized and less accurate than those of younger adults. In an effort to overcome these potential methodological difficulties, future studies may attempt to broaden the definition of personal neighborhood to include a "contextual" component, i.e., what does personal

neighborhood mean to the individual respondent. This might be accomplished by asking the respondent to verbally describe their definition of "personal neighborhood" (for content analysis), and then relate to the interviewer the boundaries of the neighborhood. This approach may also help control map disorientation problems experienced by some elderly individuals.

The lack of any substantial relations between neighborhood ratio and personal well-being may also be due to the specific well-being variables reported in this study. Particular well-being variables reported here that might be revised include Distance to friends/relatives and Activity participation. Revisions to the Distance to friends/relatives variables which exclude distance beyond a currently undefined maximum may provide more meaningful results. This change is similar to the suggestion for county rurality effect in which the scale of large distances to friends/relatives (as high as 1500 miles) overpowers the smaller scale of neighborhood size. The definition of Activity participation should be expanded in scope to address not only the number of activity types, but also how often the respondent participates in each activity.

Windley & Scheidt (1982) have developed five measures of well-being (mental health, activity, security, contact with friends, and contact with relatives) in work subsequent to this report. The measures are composites of individual

items comprising the 17 well-being measures here. Future study of neighborhood cognition relative to the five composites of personal well-being may provide more meaningful results. Future analyses of these data should also investigate differences in neighborhood cognition for subgroups of the elderly sample. Windley & Vandeventer (in press) have identified differences in community cognition for varying levels of mental health status (the "well" versus the "vulnerable" elderly) and selected demographic variables.

The findings of this study corroborate two of the three hypotheses earlier stated. First, the hypothesized negative relation of neighborhood ratio and feelings of security was supported. Elderly persons who resided in towns under 2500 population who had larger neighborhood ratios did have greater concern for safety while traversing the neighborhood. The second hypothesis, elderly persons reporting larger neighborhood ratios are more mobile, was not supported by this study. The third hypothesis, elderly persons reporting larger neighborhood ratios have higher levels of functional health, was found true in small and medium sized towns and more rural counties. The relation was not statistically significant in large towns nor medium and urban rurality counties. The methodological adjustments discussed above may provide a more reliable test of this hypothesis in future research.

The findings of this study offer suggestions to architects, planners and others providing services (e.g., housing project, health clinic, library) to an elderly clientele. The discovery that older residents of smaller towns have larger neighborhood ratios than residents of larger towns suggests that small town elderly are more socially cohesive than older residents of larger communities. Small town elderly may identify with, and feel ownership in a larger part of the community. Therefore, site selection criteria for new services should address interference with, or intrusion upon, the personal neighborhood. Because the elderly in larger towns appear to hold more physical, or service usage, definitions of neighborhood, while more social definitions exist in small towns, service providers must not solely depend on neighborhood boundaries for assistance in locating new services. Service providers must continue to make multidimensional measures of the potential impact of new services upon the elderly individual.

Finally, significant differences in neighborhood ratios were found for older residents of towns of differing sizes, however, the relationships between neighborhood ratio and personal well-being were found to be relatively unimportant. No statistically significant differences due to county rurality were found for neighborhood ratio. The lack of stronger relations between neighborhood ratio and personal

well-being may be due to methodological artifact, and it is therefore difficult to make meaningful policy recommendations. Future neighborhood cognition research with the elderly should emphasize measures of a community scale rather than a county or other regional scale, and should address potential methodological issues related to definitions of personal neighborhood and well-being.

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NEIGHBORHOOD SIZE AND THE WELL-BEING OF THE RURAL ELDERLY

by

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ABSTRACT

The growth of gerontological research during the past several years can be attributed to a rapidly increasing number of older persons and a long-term concern in our society for their general well-being. Research in several aspects of man-environment relations and environmental cognition has identified architectural and ecological features of the environment that are of importance to the elderly.

The purpose of this study was to explore the relationship between the proportion of community included in the neighborhood (neighborhood ratio) of persons over 65 years of age living in 18 Kansas communities under 2,500 population and 17 measures of individual well-being. Towns were selected for study based on their population and County Index of Ruralness values. Analyses indicated that neighborhood ratio was related to measures of neighborhood satisfaction, feelings of security, happiness, functional health, and activity participation. Suggestions are provided for methodological improvements to measures of personal neighborhood and well-being. Suggestions for future research are made.