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CHRONICALLY ILL CHILDREN'S MOTHERS' PERCEPTIONS OF ENVIRONMENTAL VARIABLES

by

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A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Science in Nursing in the School of Nursing in the Graduate School, The University of Alabama at Birmingham

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ABSTRACT OF DISSERTATION

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Environments play a critical role in supporting families, ameliorating isolation, promoting group values, and providing resources (Garbarino, 1976). For families with a chronically ill child the role of the environment is of great importance in that child's successful development and socialization into a productive member of society. Previous research has documented the role of the environment in predicting child abuse and neglect; though little is known about the role of the environment for families with a chronically ill child. The purpose of this study was to examine the interaction of environmental variables on mothers' perceptions of the environment as supportive, resourceful, safe, and accessible.

A secondary analysis of two existing data bases (Holàday & Turner-Henson, 1991; U.S. Bureau of the Census, 1980) was utilized in this descriptive survey study. The sample consisted of 158 chronically ill children between the ages of 9.5 to 13.5 years. A noncategorical approach, focusing on commonalities across disease categories rather than on disease-specific differences (Stein & Jessop, 1982) was

utilized providing a wide range of disease entities resulting in a comprehensive representation of the experiences of chronically ill children and their families. Data from the Holaday & Turner-Henson (1991) data set utilized in this study consisted of mothers' reported perceptions about the environment. U.S. Census data identifying environmental factors (e.g., median family income, families in poverty, female employment, female educational levels, and population density) was identified based on the subject's census block.

As hypothesized, the interaction of environmental variables were found to be predictive of mothers' per-ceptions of the environment as resourceful, safe, and accessible. The interaction of environmental variables was not predictive of mothers' perceptions of the environment as supportive.

The findings of this study showed that the interaction of environmental factors does influence mothers' perceptions of the environment. Nursing implications utilizing Johnson's Behavioral System's model provided a framework for identifying functional requirements of mothers' caretaking behaviors upon which nursing interventions may be based. Further research is needed to explore the influence of the environment on chronically ill children and their families.

Abstract Approved by: Committee Chairman Ann J. Clark

Program Director Elizabeth Shelley Gruppen

Date _____ Dean of Graduate School W. A. Sibley

DEDICATION

My Parents, Bill and Jean Turner

And to

My best friend, my husband, Bob Henson

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CHAPTER I

Introduction

Environments play a critical role in supporting families, ameliorating isolation, promoting group values, and providing resources (Garbarino, 1976). Conditions within environments are strained today as noted by an increase in family mobility (U.S. Bureau of the Census, 1989a), smaller family size (U.S. Bureau of Census, 1989b), increased number of single parent families (U.S. Bureau of the Census, 1989b), and increasing number of both parents in the workforce (U.S. Department of Labor, 1984). Consequently, many families today lack the support of extended family members, fewer siblings for in-home help, more mothers raising children alone, and both parents with out-of-home work demands and responsibilities.

For families with a chronically ill child, environments may play an even more critical role. Approximately ten to fifteen percent of all children under 18 years suffer from a chronic condition (Hobbs, Perrin, & Ireys, 1985) and the goal of care for these children is to help them achieve their full potential for functioning in society. The opportunities, challenges, and obstacles experienced during childhood for chronically ill children shape their future.

Therefore, the consequences of growing up with a chronic condition for the physical, psychological, and social functioning of the child are of important concern for health care providers (Haggerty, 1984; Horner, Rawlins, & Giles, 1987; Wesolowski, 1988). The assessment of physical and psychological abilities, and meaningful interventions at regular intervals are now of critical importance in the comprehensive management of chronically ill children and families.

For parents of chronically ill children, the experiences of childrearing are challenged by the increased demands and restrictions exerted by the illness. Families with a chronically ill child may experience an increased time allotment and burdens in caretaking, increased number of contacts with health care services, altered plans for family outings and vacations, parental fatigue, depression, and financial difficulties (Anderson, 1981; Dunlop & Hollingsworth, 1977; Hobbs, et.al., 1985; Holaday, 1978; Holaday & Turner-Henson, 1991; Lawson, 1977; Lucca & Settles, 1981; Horner, et. al., 1987; Jessop, Riesmann, & Stein, 1988; Walker, Epstein, Taylor, Crocker, & Tuttle, 1989). The unpredictable nature of the chronic illness, the accessibility of health care, and the demanding treatment regimens also have been identified as constraints impinging upon the family (Yoos, 1987).

Factors within the environment enhance or impair the family's childrearing abilities; therefore, nonsupportive

environments may produce more stress, thereby decreasing the family's adaptive and functional capabilities. The richnessof the environment (e.g., economic, educational, employment, populations density, etc.) and the parent's social surroundings may also significantly influence the adequacy of childrearing practices (Garbarino & Sherman, 1980). Socially rich environments give rise to parents who are free from strain and therefore, increase the parents' abilities to provide adequate childrearing (Collins & Pancoast, 1976).

Environments for families also may be influenced by the density of the population. The influences of population density on children's development and socialization has been discussed in literature. Research has documented the indirect influences of high density environments (e.g., city environments) appearing to be negative for children's social and emotional development, particularly for younger children; while beneficial for intellectual development of older children (Bronfenbrenner, 1986; Klineberg, 1935, 1938; Vatter, 1981; Wheeler, 1942). Low density or scattered habituations have also been found to bring about social isolation, while resources within high density or urbanized environments increased the likelihood of greater resources for social interactions (Rutenfranz, Anderson, Seliger, & Masironi, 1982) and possibly excessive physical and mental stimulation (Booth, 1985). Rural, suburban, and urban contexts have also been found to influence the types of

parental controls over children's play activities (Coates & Bussard, 1974; Hart, 1977; Payne & Jones, 1977).

Poverty is the most potent stressor on families and children. Low income has been associated in children and families with increased risk for mental health problems (Brown, Bhrolchain, & Harris, 1975; Liem & Liem, 1978), poor physical health (Children's Defense Fund, 1990), and family violence (Garbarino, 1976; Garbarino & Sherman, 1980; Strauss, 1980). Restrictions imposed by poverty on children and families severely limit the extent to which they may exercise options. Poverty also imposes stress on families by restricting the many potential sources of social support and resources available (Belle, 1982b).

The traditional family structure (i.e., father as primary breadwinner, mother at home) is declining as more women return to the workforce. Additionally, the decline in dual parent households as seen in the increase in single parent families has necessitated the return of mothers to the workforce. The positive benefits of maternal employment have been documented in terms of family life (Baruch, Biener, & Barnett, 1987) and children (Bronfenbrenner, Alvarez & Henderson, 1984); while the detrimental effects on family time and role conflict (Pleck & Strain, 1982), increased parental stress (Kessler & McCrae, 1982), and negative impact on family (Reppetti, 1987) also have been cited. The influence of the work environment also has been found to impact on parental functioning, thus indirectly influencing child

child development (Daniels & Moos, 1988). Though for many families, maternal employment is an economic necessity, the support of the environment is often found to be lacking (Bronfenbrenner, 1986).

The educational level of parents, particularly mothers, provides an index of social background. Educational attainment "appears to be an important source for parents' conceptions of the nature and capacities both of the child and of the parent at successive stages of the child's life" (Bronfenbrenner, 1986).

Much of the literature focuses on the pathological consequences of chronic illnesses in children. Delays in cognitive and psychological skill development (Schlomann, 1988), increased incidence in behavioral problems, and psychological adjustment (Austin, 1990; Stein, 1986), and an increased dependency on parents (Wesolowski, 1988) have been documented to constitute threats to the child's development and socialization. Some studies suggest that chronically ill children are treated as though they were "sick" with all the social role connotations that are associated with illness (Perrin & Gerrity, 1984; Schlomann, 1988). However, while American society has geared itself to an almost unlimited support of medical technology, there has been a significant lag in understanding the functional consequences of chronic illness in children. Additionally, little attention has been paid to the environmental conditions and social systems of chronically ill children and families. The need

for research to address these issues and therefore enable health care personnel to provide care which ameliorates the psychosocial effects of chronic illness has been addressed by the American Academy of Pediatrics (1982), the Surgeon General (Koop, 1983), and the Vanderbilt Study of Chronically Ill Children and Their Families (Hobbs & Perrin, 1985). Therefore, it is important to study the environmental influence on families and to identify particular features which impair or enhance family functioning (Bronfenbrenner, 1986).

Purpose of the Study

Environments play a critical role in the development and socialization of children and families. For families with a chronically ill child the role of the environment is of great importance in that child's successful development and socialization into a productive member of society. Previous research has documented the role of the environment in predicting child abuse and neglect; though little is known about the role of the environment for families with a chronically ill child.

The purpose of this study was to examine the environment in families with a chronically ill child. This study examined the interaction of environmental variables on mothers' perceptions of the environment as supportive, resourceful, safe, and accessible. An analysis of data from an existing data base, Growing Up Chronically Ill: A Survey of Chronically Ill Children's Use of Time Out-of-School

(Holaday & Turner-Henson, 1991; Turner-Henson, 1990) was utilized in the study. This data base consisted of 156 chronically ill schoolage children (ages 10-12 years) and their mothers residing in Alabama (five counties representing both urban and rural areas).

Conceptual Model

The conceptual model for this proposed study is derived from Johnson's (1980) Behavioral System model for nursing. This model was used to examine how the functional requirements of the mother's achievement subsystem are influenced by selected environmental variables.

Johnson's Behavioral System model for nursing is derived from the general systems model, incorporating the essential elements as they relate to man. Man is viewed in this model as a behavioral system striving to maintain balance by adjustments and adaptations to forces impinging upon him. According to Johnson (1980), man behaves in an integrated, systematic, patterned, ordered, and predictable way. Man's behavior is goal-oriented, and goals are viewed as the organizing framework for all behavior. Behavior is viewed in this model as the sum total of biological, social, cultural, and psychological behaviors. Man strives for equilibrium through behavioral strategies.

Johnson (1980) conceptualizes the behavioral patterns into eight subsystems: attachment or affliative, dependency, ingestive, eliminative, sexual, aggressive, and achievement. The subsystems are linked and open, and a

disturbance in one subsystem is likely to have an effect on the others. Although each subsystem has a specialized task or function, the behavioral system as a whole functions on an integrated performance of all subsystems.

The attachment or affliative subsystem functions for the attainment of security which is needed for survival as well as for social isolation, intimacy, and the formation and maintenance of social bonds (Johnson, 1980). The dependency subsystem functions as a succoring behavior that requires a response of nurturance, approval, attention, and physical assistance. The ingestive subsystem is governed by the social and psychological requirements of appetite satisfaction as well as the biological needs for food and fluids. The eliminative subsystem is concerned with man's need for the elimination of wastes. The sexual subsystem is concerned with man's need for procreation and gratification. Protection and preservation of self and society are defined by Johnson as the function of the aggressive subsystem.

The subsystem, achievement, is defined as the mastery or control of some aspect of self or environment, with regard to intellectual, physical, mechanical, social, or care-taking skills. Mastering control over the environment for mothers often focusses on care-taking skills. For example, mothers of young children (e.g., infants) must exert total control over the infant's environment in order to care for the infant. For mothers of a chronically ill child, the care-taking skills often require extensive environmental

control and focus on providing daily and necessary health care treatments.

The subsystems have also been described and analyzed in terms of structural requirements. Johnson identified four structural requirements of each subsystem: drive or goal being sought, set, choice, action. The drive or goal of the subsystem refers to the individual's motivation for the behavior (Johnson, 1980). Drives cannot be directly observed, but must be inferred from the individual's actual behavior and from the consequences of behavior. The set refers to the individual's predisposition to act in certain ways, to fulfill the function of the subsystem. Through maturation, experience and learning, individuals use sets to develop and use preferred behaviors under particular circumstances and with selected individuals.

Choice refers to the individual's total repertoire of behavior (Johnson, 1980). Individuals rarely utilize all alternatives of behavior, but generally choose certain preferred behaviors. Action refers to observed behavior and is the only structural element which can be observed directly. Behavior is instigated, inhibited, shaped, continued, or terminated by the complex biological, psychological, sociological, and physical factors that constitute the other structural elements.

The subsystems have been described to appear cross-culturally and controlled by biological, psychological, and sociological factors (Loveland-Cherry & Wilkerson, 1989).

Functional requirements are the necessary prerequisites of maintaining equilibrium within the system and thus nursing's role is viewed by Johnson as assisting the patient to main tain an adequate supply of the functional requirements in order to adapt to stress. These requirements for each subsystem have been identified as: protection, nurturance, and stimulation. The functional requirement of protection is described as "safeguarding the patient from noxious stimuli, defending from unnecessary threats, and coping with threats on the patient's behalf" (Grubbs, 1980). Nurturance is described by Grubbs as the provision of nourishment and conditions necessary for the subsystem, encouragement of effective behaviors, and discouragement of ineffective behaviors. Stimulation is described as providing for stimuli to bring forth effective behaviors. Additionally, the functional requirements, providing direction for nursing interventions, have received little attention in the literature.

Johnson (1989) views nursing as an external regulatory force which acts to preserve the organization and integration of man's behavior at an optimal level. Nursing interventions are directed toward the imposition of external regulatory controls in order to change structural units in desirable directions or through the fulfillment of the functional requirements of the subsystems.

The environment as viewed by Johnson (1980) is defined as those objects, events, and situations external to the individual behavioral system. Environmental forces are seen

as creating disequilibrium for patients. Stress, as an example of an environmental force, is viewed as most often originating within the environment, thus creating disequi librium within the individual's subsystems. It is the role of nursing to use interventions to restore equilibrium and thus reduce the stress.

Traditionally, the environment has been viewed in terms of its direct influence on the child and family. In this study it was hypothesized that it is not just the environment alone, but the environment in interaction with other variables (e.g., mother's perception of the environment) that impacts family's everyday lives.

Based on Johnson's (1980) model the following theoretical equation was suggested:

E.V. + M.P. ----> Functional Requirements of Mother's Achievement Subsystem

E.V. = Environmental variables (population density, median family income, percentage of families in poverty, percentage of females with college degrees, percentage of females employed)

M.P. = Mother's perception of the environment (neighborhood safety, resources, accessibility, and support)

Through an examination of the mother's achievement subsystem functional requirements, one may identify influences of environmental factors on caretaking skills of mothers of chronically ill children. The achievement subsystem functional requirements will be examined in terms of the different levels of the linkages within the environment,

therefore, determining the impact of functional requirements on mothers' caretaking skills.

Problem Statement

The experience of childhood today is filled with many challenges, opportunities, and obstacles for children and families. For the chronically ill child and family, the addition of an illness places a new meaning on the experience of childhood and for parents, a new meaning on child-rearing. Additionally, the influence of the environment (i.e., neighborhood) as safe, resourceful, accessible, and supportive either promotes or restrains chronically ill children and families in their everyday lives.

Much of nursing research has focused on the psychological impact of chronicity on children and families, though little is known about the influence of the chronic condition on families' everyday lives. Additionally, the issues of environmental influences on children's and families' everyday lives have received little attention. The purpose of this study is to examine the influence of the environment as safe, resourceful, accessible, and supportive in these families' everyday lives.

Hypotheses

Based on the model equation described previously, the following hypotheses were formulated for this study. Hypotheses were derived from the literature and are stated in the alternative form. For the purposes of this study,

environmental variables were defined as 1980 Census tract data describing population density, median family income, percentage of females employed, percentage of females with college degrees, and percentage of families in poverty.

Hypothesis 1. The interaction of environmental variables will be predictive of mothers' perceptions of the neighborhood as a supportive environment.

Rationale. Environmental forces are seen as creating disequilibrium for behavioral systems (Johnson, 1980). Support, as an environmental variable can influence equilibrium within the mother's achievement subsystem, thus influencing the mother's ability to care for the chronically ill child.

Hypothesis 2. The interaction of environmental variables will be predictive of mothers' reported satisfaction with neighborhood resources.

Rationale. Resources within environments may be viewed as promoting or disrupting equilibrium within behavioral systems. Johnson views nursing's role as an external regulatory factor. Environmental variables such as resources influencing the mother's ability to care for the chronically ill child may be examined in this study.

Hypothesis 3. The interaction of environmental variables will be predictive of mothers' reported satisfaction with neighborhood safety.

Rationale. Protection, as a functional requirement of the behavioral subsystems, is viewed by Johnson (1980) as safeguarding or defending the individual form noxious stimuli. Variables influencing environmental safety may be examined to determine the influence on the mother's ability to care for the chronically ill child.

Hypothesis 4. The interaction of environmental variables will be predictive of mothers' reported satisfaction with neighborhood accessibility.

Rationale. Stimulation, protection, and nurturance, as functional requirements influence the functioning of the behavioral subsystems. Environmental variables such as accessibility impact on mother's care-taking skills. Thus, an examination of environmental accessibility may be examined to determine the influence of environmental variables on mother's ability to care for the chronically ill child.

Definition of Terms

The following terms were operationally defined for the purpose of this study:

Mothers- Theoretically defined as the child's primary care provider. Operationally defined as the individual who is primarily responsible for monitoring the chronically ill child's after school activities (Holaday & Turner-Henson, 1991).

Chronically Ill Children- Theoretically defined as a child experiencing impairments or deviations from normal

which have one or more of the following characteristics: are permanent, leave residual disability, are caused by non-reversible pathological alterations, require special training of the patient/family for rehabilitation, or, may be expected to require a long period of supervision or care (Mayo, 1965). Operationally defined as a child, attending school, between the ages of 10-12 years with an illness, such as asthma, diabetes, congential heart disease, renal disease, sickle cell anemia, spinal bifida, seizure disorder, etc.

Environment Variables- Theoretically defined as the totality of elements that surround a particular system. Operationally defined as census tract data variables (i.e., population density [number of residents per square mile], family median income, percentage of families in poverty, percentage of employed females, percentage of females with college degree) of each subject's census block. Census data was obtained from 1980 U.S. Census tables.

Perceptions of the Environment- Operationally defined as mother's reports of sources of support, satisfaction with neighborhood resources, satisfaction with neighborhood safety, and satisfaction with neighborhood accessibility.

Assumptions

For the purposes of this study the following assumptions underlying this study include:

1. Mothers are capable of having perceptions about their environment and they will honestly and accurately report their perceptions.
2. Mothers' perceptions about the environment can be accurately measured through a paper and pencil questionnaire.
3. U.S. Census tract data is an accurate reflection of demographic variables.

Significance

The consequences of growing up with a chronic illness for the physical, psychological and social functioning of the child and family is of important concern for nurses. Research on environmental influences on chronically ill children and families, as well as the nursing and health care literature, has been limited and found to primarily focus on general psychosocial concerns and on specific diagnostic groupings (e.g., mentally retarded children, spinal bifida, etc.). The issues of environmental influences on families with a chronically ill child has received little attention in research.

The proposed research is significant for the following reasons: a) increasing numbers of chronically ill children are surviving, but the nature of their environments is poorly understood, b) nurses, health professionals, policymakers, and parents know very little about environmental influences on childhood and childrearing environments for chronically ill children and families. Data from

this study can provide an understanding of the problems and opportunities of environmental resources and support systems for these families and children useful for nursing interventions and future policy, c) health care services for chronically ill children and families are delivered primarily in major urban centers. It is important that nurses have an increased knowledge about the constraints and limitations of the environment in which the chronically ill children and families reside, and d) as community resources are strained, it is important to understand family's perceptions of the environment in order to provide direction for nursing interventions.

Little work has been done to define the functional requirements of Johnson's behavioral systems model. Through an examination of environmental factors and mothers' perceptions of the environment, direction for defining the functional requirements will be determined, thus, providing further direction and guidance for the development of nursing interventions based both on theory and research.

Summary

The purpose of this study is to examine the influences of selected environmental and sociodemographic variables on mothers of chronically ill children's perceptions of the environment. Johnson's behavioral systems model is the conceptual framework identified for this study. Identifying the influences of environmental variables on mother's perceptions of the environment will provide nurses knowledge

to assess the needs of chronically ill children and families, develop nursing strategies, and promote linkages between environmental levels. A review of relevant research literature is presented in the next chapter.

CHAPTER II

Review of Research

A review of the literature concerned with environmental influences on chronically ill children and mother's perceptions of the environment is discussed in this chapter. Specifically, research will be examined as it is related to environmental influences on children and families, environmental sources of support for children and families, and environmental influences on chronically ill children and families. Research relating to the variables of age, type of chronic illness, socioeconomic status, and family structure are discussed within the context of each section.

Environmental Influences on Children and Families

Factors within environments either enhance or impair the development and socialization of children and families. The richness of the environment (e.g., economic, cultural, educational, employment opportunities, resources, etc.) coupled with parents' childrearing abilities also significantly affect the development and socialization of children.

Environmental influences outside the family, such as parental work environments and parent's social networks, on

family and child functioning were examined by Daniels and Moos (1988). The sample for this study consisted of 133families randomly drawn from a sampling frame of 424 families residing in the San Francisco Bay Area. Five aspects of family life, work environment (Work Environment Scale, Work Relationship Index, and Work Stressors Index), parental social network (Health and Daily Living Form, Activities with Friends, and Close Relationships), family environment (Family Relationship Index, Family Social Connectedness Scale, and Family Arguments Index), parent functioning (Physical Symptoms Index, Global Depression Scale, and Self-Esteem Scale), and child functioning (Child Physical Health Problems Scale, Child Adjustment Problems Scale, and Child Multiproblem Index) were examined.

Mothers' social networks (e.g., close social ties, more activities with friends) were found to be significantly associated with higher maternal self-esteem, positive family relationships, and better child functioning. Fathers' positive work relationships were found to be associated with positive family relationships and fewer child adjustment problems. This study concluded that parental stressors and resources outside the family affected child functioning indirectly through their influence on both the family environment and parental functioning.

Environmental quality and social well-being of children was examined by Homel and Burns (1989). The sample consisted of 321 families (which included a 9-11 year old

child) drawn from 18 neighborhoods in Sydney, Australia. Environmental quality was measured in terms of neighborhood quality by the Vinson-Homel social problems index. Three aspects of children's well-being and adjustment (life satisfaction, emotional adjustment, and social adjustment) were measured using the child interview schedule developed by the U.S. Foundation for Child Development. Results indicated that children residing in commercial neighborhoods experienced more loneliness, feelings of rejection, unhappiness, and dissatisfaction with their lives. Children living in neighborhoods with higher social problems reported more unhappiness and greater peer interaction problems; conversely children in low risk neighborhoods reported good access to out-of-school activities, greater numbers of friends, and above average social adjustment.

Family perceptions of the neighborhood as a supportive environment for child and family development was examined by Garbarino and Sherman (1980). In this study, one high risk and one low risk neighborhood, matched for socioeconomic level were selected. Interviews were conducted with selected 'expert informants' (e.g., elementary school principals, mailmen, etc.) to develop neighborhood profiles. Samples of families drawn from each neighborhood were interviewed to identify social networks, an evaluation of the neighborhood, and the use of formal family supports. A poorer perception of the neighborhood for child and family development was reported by families in the high risk

neighborhood as compared to families in the low risk neighborhood. Mothers in the high risk neighborhoods reported fewer resources for child care (e.g., greater percentage of latchkey children reported), greater family stressors, fewer helping resources, and generally viewed the neighborhood as a poor place to rear children.

Environmental Sources of Support for Children and Families

Children and families are embedded in networks within the environment or community in which they reside. These networks, which may consist of relatives, neighbors, and friends provide important sources of support for children and families. For example, networks may indirectly or directly influence the rearing of children (Cochran & Brassard, 1979); therefore, the richness of the family's social network increases the family's ability to provide an adequate environment for rearing children (Collins & Pancoast, 1976).

A survey of 306 rural and urban families examined the concept of loneliness among neglectful and other low-income mothers (Polansky, 1985). Loneliness was found to be more common among neglectful mothers than mothers in other similar life circumstances. The more negative the mothers' appraisals of friendliness ($r2 = -0.25$, $p < .0001$) and helpfulness ($r2 = -0.39$, $p < .0001$) of the neighborhood the more lonely the mother was. A supportive ecology was found to significantly helps to prevent loneliness. The size and

frequency of contacts with social networks was found to be unrelated to loneliness.

Correlates of child abuse and maltreatment were explored by Garbarino (1976) utilizing an ecological model. This ecological model focused on the degree to which mothers were supported in the parenting role. The data set consisted of the 1973 New York State Child Abuse Central Registry and the 1971 U.S. Census. The researcher hypothesized that the socioeconomic support system for the family in each county was directly associated with the rate of child abuse/maltreatment for that county. Using the rate of child abuse/maltreatment as the dependent variable, the best predictive equation based on the 12 independent variables of the U.S. Census data (socioeconomic and demographic variables) was generated. The researcher concluded that the degree to which mothers in a particular county are subjected to socioeconomic stress without adequate support systems accounted for a substantial proportion (36%) of the variance in the rates of child abuse/maltreatment across the New York counties. Economic stress (e.g., lower incomes) and inadequate educational resources were found to greatly impact the functioning of parents, though overall economic distress compounded by single parent families appeared to be a major stressor in the rates of child abuse/maltreatment.

The psychological ecology of families was examined by Polansky, Gaudin, Ammons, & Davis (1985) to determine if neglectful families resided in less supportive environments

than non-neglectful families. The sample consisted of 152 neglectful mothers matched with 154 non-neglectful mothers on race, economic status, urban/rural, and other life circumstances. Interviews were conducted with the child, mother, and a close neighbor asking questions about the neighborhood and resources. Neglectful mothers viewed their neighborhoods as less supportive and friendly as compared to non-neglectful mothers. However, independent interviews with neglectful mothers' neighbors did not support the conclusion that the neighborhoods were socially impoverished. It appeared that neglectful mothers had fewer informal social networks (e.g., no close friends or relatives nearby), less accepted by neighbors, and reported increased social isolation.

Environmental Influences on Chronically Ill Children and Families

The experiences of childhood today are filled with many challenges, opportunities, and obstacles for children and families. For chronically ill children and families, the addition of an illness places a new meaning on the experience of childhood; therefore, environmental influences may play a critical role in the development and socialization of chronically ill children and their families.

Psychosocial risk and resistance factors were examined in chronically ill children and healthy siblings by Daniels, Moos, Billings, and Miller (1987). The sample consisted of 93 chronically ill school age children, their 72 healthy siblings, and a demographically matched sample of 93 healthy

controls. Three domains of variables (family background and socioeconomic, child psychosocial functioning, and risk and resistance factors) were examined using the Health and Daily Living Form and the Family Environment Scale.

The study found that in families where there was maternal depression, a higher rate of family stressors, and siblings problems was significantly more predictive of multiple problems for the chronically ill child. Increased dysfunction of the chronically ill child and parent, family stressors, and less family cohesion and expressiveness were associated with greater problems for healthy siblings. The investigators concluded that parental dysfunction is an important risk factor associated with significantly greater adjustment problems for the chronically ill child, therefore, emphasizing the need for preventative and social interventions involving the entire family where there is a chronically ill child.

Kazak and Marvin (1984) examined social networks in families with handicapped children. The sample consisted of 56 families with a physically handicapped child (spina bifida) and 53 families with a normal child matched for age. Data collected focused on examining the social network list, network density grid, and boundary density of the social network. Mothers of handicapped children spent significantly greater time caring for the child at bedtime ($t=1.98$, $p<.05$), less personal time alone ($t=2.62$, $p<.01$), less time with spouse ($t=1.97$, $p<.05$), and more time with

extended family members in leisure activities ($t=3.14$, $p<.05$) as compared to mothers of normal children.

Social support networks of families with a handicapped child were significantly smaller in size and density for both parents (mothers $t=3.35$, $p<.001$; fathers $t=2.10$, $p<.05$). Closer knit networks and overlapping network memberships were seen more frequently in families with a handicapped child. Mothers' support networks were more dichotomized and denser, and associated with higher levels of stress. The investigators concluded that the small interconnected, extended family dominated network consti-tuting a closed social support network was more congruent in meeting the childrearing needs of families with a handicapped child.

Marcenko and Meyers (1991) examined sources of support within families with a child with a developmental disability. The sample consisted of 89 mothers with a child with a severe developmental disability. Semistructured interviews were conducted to determine the amount of instrumental, emotional, and informational support mothers received. Results of this study indicated that mothers assumed the majority of the responsibility for the developmental disabled child's personal care, regardless of family structure and mother's marital status. Family structure accounted for distinct differences in the type of support that mothers received. In dual parent families, the husband and paternal grandparents were significantly more

helpful, whereas, in single parent families (i.e., mother as head of household), the mother received no help from the child's father nor the paternal grandparents.

Families with a behaviorally retarded child were compared with families with a normal child to determine if intrafamily and extrafamily social interactions were different (McAllister, Butler, & Lei, 1973). The sample consisted of 784 families with normal children and 281 families with a retarded child. Intrafamily interactions (reading books or talking with the child) was significantly less for families with a retarded child as compared to those with a normal child. Significantly fewer families with a retarded child as compared to families with a normal child reported visiting relatives frequently ($x2= 4.64$, $p<.05$) and visiting neighbors ($x2= 9.61$, $p<.001$). The study concluded that intrafamily and extrafamily social interactions led to limited parental interaction with the behaviorally retarded child and social isolation for these parents.

Holaday and Turner-Henson (1991) examined out-of-school time use in chronically ill children and mothers. This sample survey, conducted in two diverse states (Alabama and California) had a random sample of 365 chronically ill schoolage children and mothers. Data was collected utilizing time use instruments (Child Interview and Parent Questionnaire) developed by Medrich and adapted for use with chronically ill children. A Medical Questionnaire,

developed by the investigators was used to examine medical treatment time use and the child's medical history.

Family, relatives, and medical professionals were identified by mothers as the primary sources of support. Few mothers reported actively engaging in social exchanges with neighbors (e.g., exchange things often, visit neighbors). Many parents in this study did not have a strongly cohesive core group of neighbors with whom they had formed a network to derive social and motivational support.

Chronically ill children in this sample participated in a variety of out-of-school activities. Families in the Alabama sample participated in more activities together as compared to those in the California sample. Controlling for illness severity and other factors, Alabama children engaged in one to one and one half more family activities than children in the California sample ($t=2.74$, $p<.01$).

Maternal perception of the neighborhood as a safe environment for children was not significantly related to chronically ill children's interaction with peers, family activities, or amount of television viewing. Maternal perception of neighborhood resources was significantly positively related to the number of organized groups the chronically ill child participated in ($t=2.183$, $p<.05$), though not significantly related to the number of lessons. Perception of neighborhood resources was not significantly related to children's interaction with peers, family activities, or amount of television viewing.

Maternal perception of neighborhood accessibility was not significantly related to the number of family activities or amount of television viewing. A positive perception of neighborhood accessibility by the mother was significantly related to the children's increased interaction with peers ($t=2.63$, $p<.01$).

Summary

A review of the research, produced primarily by psychologists and sociologists, revealed that environmental influences on chronically ill children and families have been investigated primarily from the perspective of social support systems. A considerable body of research was found that documents the environmental influences on healthy children and families from a variety of variables. Variables such as stressors outside the family (e.g., parental work environments), poverty, residential density, and neighborhood resources were strongly found to be correlated with child and family functioning, adjustment, and social development. Child abuse/maltreatment was found to be strongly correlated with poor social networks and high risk neighborhoods. The absence of empirical studies by nurses and the lack of research which addresses the interaction of environmental variables on chronically ill children and families reflect the needs to examine such relationships.

CHAPTER III

Methodology

Introduction

This study utilizes the methodology of secondary analysis of two existing data sets. The first data set is comprised of data examining time use of chronically ill children while the second data are comprised of 1980 U.S. Census data. This chapter includes a discussion of the objectives, methodology, and instruments of the study, Growing Up and Going Out: A Survey of Chronically Ill Children's Use of Time Out-of-School (Holaday & Turner-Henson, 1991). Variables identified in the collection of data from the 1980 Census are also identified and discussed. Also included is a discussion of design, protection of human subjects, and study instruments. Finally, data analysis methods used in this study are discussed.

Secondary Analysis

Secondary analysis of data is a research strategy used for the examination of specific research questions through analysis of existing data bases which were previously collected for other purposes (Polit & Hungler, 1983). Sample surveys often generate large amounts of data, thus survey questions may serve more than one purpose; therefore

survey research questions may be treated as "indicators of complexity" (Hyman, 1972). Utilization of secondary analysis with survey data provides many advantages for the researcher, though disadvantages may also be seen. Sample survey designs are very costly in terms of money, time, and per-sonnel. Inadequate budgets for studies often result in poor quality survey data, thus secondary analysis of good qual-ity, existing survey data can be cost efficient for the researcher. Secondary analysis of data also can be combined with other types of data to investigate a problem more thoroughly (Kiecolt & Nathan, 1985).

Disadvantages of secondary analysis primarily relate to lack of control over data collection procedures, restrictions of data availability, and errors in data entry. It is essential, therefore, that researchers carefully examine data sets and methodological techniques prior to using the existing data set (Kiecolt & Nathan, 1985). Secondary data analysis may also contribute to a mismatch of primary and secondary research objectives, though significant variables which the primary analysis did not examine may be explored in the secondary analysis (Polit & Hungler, 1983).

The existing data base, Growing Up Chronically Ill (GUCI) has been previously analyzed to describe and analyze the everyday life experiences of chronically ill school age children (Holaday & Turner-Henson, 1991). This study examined a different set of relationships with previously collected data from the GUCI study. Additionally, a new set

of variables to determine environmental influences on mothers' perceptions was added to the data set. The new set of data was composed of specific demographic variables obtained through the 1980 Census data set.

Growing Up and Going Out: A Survey of Chronically Ill Children's Use of Time Out-of-School (GUCI)

The study, Growing Up and Going Out: A Survey of Chronically Ill Children's Use of Time Out-of-School (Holaday & Turner-Henson, 1991; Turner-Henson, 1991), was a large collaborative study funded by the Maternal and Child Health Program (Title V, Social Security Act, Health Resources and Services Administration, Department of Health and Human Services) (Grant Number MCJ 060550) and by the National Center for Nursing Research, National Institutes of Health (Grant Number 5R23 NR01374). The primary aim of the study was to describe and analyze the out-of-school life experiences of chronically ill schoolage children and to examine the effects of different ecological contexts on the child's out-of-school life. To accomplish this aim the investigators focussed on chronically ill school age children and use of their out-of-school time. The use of time was viewed as a proxy - an indicator of what mattered to children and their parents. Time use was examined in five areas: children's activities on their own (activities alone or with friends), children's activities with their parents, children's in-home and out-of-home chores, jobs, responsibilities, and spending patterns, children's participation in organized activities, and television viewing. These

activities, viewed as meaningful to children from a wide range of backgrounds, represented the different aspects of daily life for a schoolage child.

Objectives for this study were stated in the form of research questions. The specific questions asked in the study were:

1. What kinds of things do chronically ill children do when they are not in school?
2. What are the effects of family life, family structure and socioeconomic status on children's out-of-school life?
3. What are the range of opportunities and constraints that shape children's time use and their attitudes toward time use outside of school?
4. What roles do neighborhoods have in chronically ill children's out-of-school activities?
5. What is the capacity of urban environments to serve as support systems to parents directly involved in planning and managing chronically ill children's use of time out-of-school?

A cross-sectional survey design was used to collect data at one point in time from a sample of 365 chronically ill schoolage children and their parents residing in two diverse geographical areas (San Francisco and Birmingham metropolitan areas and surrounding counties). The sample was randomly drawn from a sampling frame of 916 children. Due to subject recruitment problems (e.g., difficulty in locating subjects and higher than expected refusal rates),

the Alabama sample was expanded by convenience measures by approximately 10%. The subjects were 10-12 year old children who were: diagnosed with an organic chronic illness for at least 2 years, attending school, and who had not moved or changed schools in the past year. Children who were blind, deaf, or mentally retarded were excluded from the sample. Additionally, children with cancer were excluded from the sample.

A noncategorical approach, focussing on commonalities across disease categories rather than on disease-specific differences (Stein & Jessop, 1982), provided a wide range of diagnostic entities resulting in a comprehensive representation of the experiences of chronically ill children. The illnesses selected by the investigators for inclusion in the sample included: asthma, cerebral palsy, chronic kidney disease, congenital heart disease, cystic fibrosis, diabetes mellitus, neuromuscular diseases, muscular dystrophy, spina bifida, sickle cell disease, and seizure disorders.

Data for the GUCI study was collected using three time use instruments. The child's interview and parent's questionnaire were adapted from Medrich's study for the Childhood and Government Project at the University of California, Berkeley (Medrich, Roizen, Rubin, & Buckley, 1982). The child's question-naire consisted of 59 multiple choice items which evaluated time use in the five time domains. The parent's question-naire consisted of 83 multiple choice items, which evaluated the parent's values, attitudes, and

opinions in six areas (the neighborhood, the child at school and home, children's activities with family and friends, organized after school activities, childrearing and parents' activi-ties). The Medical Questionnaire (designed by the investigators, Holaday and Turner-Henson) was used to elicit information about the child's illness and time use for health care activities.

Children and parents were interviewed in their homes by interviewers. Interviewers at both sites received extensive training by the Survey Research Center in order to insure consistency of data collection. The Survey Research Center coordinated and supervised data collection in California and provided consultation regarding data collection in Alabama. Turner-Henson supervised data collection in Alabama. Data collection and data coding was managed by the Survey Research Center, University of California, Berkeley.

Utilization of the Data Set in the Current Research

The secondary data analysis data set consisted of data from the GUCI study matched with specific demographic variables obtained from the 1980 Census tables. Data collected for the Alabama portion of the GUCI project was utilized in the current study. For this study, the variables from the GUCI data set examining mothers' perceptions of sources of support, neighborhood resources, neighborhood safety, and neighborhood accessibility were utilized, as well as demographic and illness severity variables.

In the GUCI study, Holaday and Turner-Henson constructed a set of scales to describe mothers' perceptions of the environment. The four scales (Sources of Support, Satisfaction with Neighborhood Safety, Satisfaction with Neighborhood Resources, and Satisfaction with Neighborhood Accessibility scales) were constructed using items from the Parent and Medical Questionnaires.

The Sources of Support scale consisted of items from the parent and medical questionnaires which identified sources of support. Sources of support were identified as neighbors (e.g., talks with neighbors often, exchanges things often, visits often), visiting relatives often, and listing relatives and friends as sources of support. Possible scores for the Sources of Support scale could range from 0 to 6, with a low score indicating little or no support and with a high score indicating higher levels of support.

The Satisfaction with Neighborhood Safety scale was constructed of items from the parent questionnaire to determine the mother's perception of the neighborhood as a safe environment. Possible scores for this scale could range from 0 to 4, with a low score indicating decreased satisfaction and a high score indicating increased satisfaction with neighborhood safety.

The Satisfaction with Neighborhood Resources scale was constructed of items from the parent questionnaire to determine the mother's satisfaction with neighborhood

resources from the parent questionnaire. These questions asked about the mother's satisfaction with specific neighborhood services such as the schools, police, recreation programs, parks, libraries, and buses. Possible scores for this scale ranged from 0 to 6. A low score on the Neighborhood Resources scale indicated mothers' viewed the neighborhood as having few resources, while a high score indicated that mothers viewed the neighborhood as having many resources.

The Satisfaction with Neighborhood Accessibility scale was constructed of items from the parent and medical questionnaires to determine the mother's satisfaction with neighborhood accessibility. These questions focussed on accessibility in using the city bus, going to the library, parks and playgrounds, and taking the child to public places. Possible scores for this scale ranged from 0 to 4. A low score indicated that mothers viewed the neighborhood as having low accessibility while a high score indicated that mothers viewed the neighborhood as having high accessibility.

Additionally, demographic variables (e.g., age, sex, and race of the child and mother, family structure, family income, and maternal level of education) and parent's perception of child's illness severity (Medical Questionnaire) were also examined in relation to thebeforementioned variables.

Study Variables

The study variables from the Growing Up Chronically Ill project with specific questionnaire items are included in Table 1.

Table 1

Study Variables from GUCI Questionnaire Source

Study Variable	GUCI Questionnaire Source
Sources of Support Scale	
Talks with neighbors often	Parent Questionnaire Q6
Exchanges things often	Parent Questionnaire Q7
Visits neighbors often	Parent Questionnaire Q8
Visits relatives once/week or more	Parent Questionnaire Q49B
Lists immediate family as source of support	Medical Questionnaire Q19
Lists friends as source of support	Medical Questionnaire Q19
Satisfaction with Neighborhood Safety Scale	
Neighborhood is safe:	
For play	Parent Questionnaire Q4
Traffic safety	Parent Questionnaire Q5
Not worried about child's safety in neighborhood	Parent Questionnaire Q17
Likes neighborhood	Parent Questionnaire Q19

(table continues)

Study Variable	GUCI Questionnaire Source
Satisfaction with Neighborhood Resources Scale	
Mother is satisfied with:	
Schools	Parent Questionnaire Q12A
Police	Parent Questionnaire Q12B
Recreation programs	Parent Questionnaire Q12C
Parks	Parent Questionnaire Q12D
Libraries	Parent Questionnaire Q12E
Buses	Parent Questionnaire Q12F
Satisfaction with Neighborhood Accessibility Scale	
Easy to use bus	Parent Questionnaire Q13
Get to library	Parent Questionnaire Q14
Parks and playgrounds	Parent Questionnaire Q15
Taking child to public places	Medical Questionnaire Q6A
Demographic Variables	
Child's Sex	Child Questionnaire R1
Child's Age	Child Questionnaire E301
Child's Race	Child Questionnaire R2
Mother's Age	Child Questionnaire E
Mother's Race	Parent Questionnaire P83
Mother's Level of Education	Parent Questionnaire P79
Family Income	Parent Questionnaire P78
Mother's Perception of Illness Severity	Medical Questionnaire M12

Additional variables were added to the GUCI data set for the current study. These variables were specific demographic variables obtained through 1980 Census Tables and matched by individual subject census track and block numbers. In the GUCI study, subject numbers were coded along with census tract and block information. Census block or tract data was then obtained for each subject without breach of confidentiality for this current study involving the secondary analysis.

Census block data were obtained for each subject where possible. In 17.72% (n=28) of the subjects, block data were either censored by the Census bureau or not available (e.g., in some counties block data were not calculated), therefore tract or county data were obtained to substitute for block data.

Census data were obtained from 1980 Census tables. Median family income was obtained from Table 74, variable 1. Percentage of families in poverty was calculated number of families in poverty for the block (summing variables 5, 6, 7, and 8 in Table 86) divided by the total number of families (Table 9, variable 1). Based on 1980 Census definitions, females were defined as females over the age of 16 years. Percentage of females with High School diploma as highest educational attainment was calculated as number of females with high school diploma (Table 48, variable 3) divided by total number of females (sum of variables 1, 2, 3, 4, and 5, Table 48). Percentage of females with college

degree as highest educational attainment was calculated as number of females with college degree (variable 5, Table 48) divided by total number of females (sum of variables 1, 2, 3, 4, and 5, Table 48). Percentage of employed females was calculated as number of females employed (sum of variables 5 and 6, Table 55) divided by total number of females (sum of variables 5, 6, 7, and 8, Table 55). Percentage of employed males and females was calculated as the number of employed males and females (sum of variables 1, 2, 5, and 6, Table 55) divided by the number of males and females (sum of variables 1, 2, 3, 4, 5, 6, 7, and 8, Table 55).

Population density and population was available only in terms of census block and for subjects in Bibb county (3.80% of sample) these variables were based on city or county values. For each subject, population density was calculated by census tract population divided by total number of square miles for tract. Population for each tract was also derived from census tables.

Sample Selection

The sample for this study represented 43.28% (n=158) subjects (Alabama sample) from the existing GUCI data base (Holaday & Turner-Henson, 1991). Individual subject data was coded by subject number, and therefore ensured confidentiality, avoiding disclosure of individual subject identity. The following discussion describes development of the Alabama sampling frame, sample selection procedures, and a statistical power analysis.

Sample Framework Development

The investigators, Holaday and Turner-Henson utilized sampling strategies proposed by Kish (1965) in the development of the sampling frame for the primary study. The techniques used included multiple samples and large clusters. The sampling frame for the Alabama portion of the study was derived from the population of chronically ill schoolage children residing in the counties of Jefferson, Shelby, Walker, St. Clair, and Bibb. These counties represented the Birmingham Standard Metropolitan Statistical Area (SMSA) and included large metropolitan areas (e.g., Birmingham), small towns, and rural communities. The investigators sought to construct a sampling frame that would be representative of the general population of chronically ill schoolage children (Turner-Henson, Holaday, & O'Sullivan, in press).

The investigators selected institutions (e.g., medical centers, public and private hospitals, children's hospitals, state and governmental children's services, clinics, etc.) that had specialists where chronically ill children would receive care or would be referred for evaluation. These clusters were centers where one is most likely to find large numbers of children with different types and degrees of chronic illness and from all socioeconomic and ethnic groups. Additionally, the investigators used practicing private pediatricians to include a broader range of children from differing socioeconomic and geographic groups.

The investigators worked closely with office and nursing staffs in obtaining lists of eligible subjects. In many cases chart reviews were necessary in order to obtain a complete list of eligible subjects. Using hospital admission records would have been easier and more convenient, but the possibility was too high that many children (e.g., children with mild conditions who did not require hospitalization) would be missed, and that perhaps only the sickest children would be selected for the study.

Once the frame was developed, the frame was carefully scrutinized to avoid duplications. The child's date of birth was useful in checking for duplication, since many of the children had similar names. In some instances children sought health care from more than one institution and this often resulted in duplication in the frame. Duplications found in the initial work were corrected prior to constructing the sampling frame. Development of the sampling frame took over one year.

Sample Selection Procedures

A stratified sampling technique was utilized to develop a sample representing children in a diverse geographical area. Subjects were randomly selected from the sample frame based on socioeconomic status. Family median income was determined for each subject in the sample framework utilizing 1980 Census block or tract data. Income levels were then categorized into lower income (less than $15,000), middle income ($15,001 to $24,999), and upper income

(greater than $25,000). Subjects were then randomly selected from each income level using a table of random number. The final frame was oversampled by 10% to accommodate for subject loss or refusal to participate. Due to problems in locating subjects (e.g., incorrect addresses, telephone numbers, etc.) or a higher than expected subject refusal, the sample was expanded by convenience measures. The Alabama sample was expanded by recruitment of subjects through media announcements, physician and nurse referrals, recruitment through lay support groups, etc. Convenience sample members represented only a small percentage (10%) of the final sample.

Statistical Power Analysis

In the primary analysis, statistical power calculations were not made. Statistical power calculations made after data were collected in a study provides validity for the study results (Polit & Hungler, 1983). For this study, a power analysis was done on the dependent variables. Statistical power was examined for the sample by calculating the effect size for each dependent variable (f2 = R2/1-R2) (Cohen, 1977). As described in Table 2, statistical power for the dependent variables varied with most dependent variables in the medium range.

Table 2

Effect Size for Dependent Variables

Dependent Variable	Effect Size*
Sources of Support	.0477
Reported Satisfaction with Neighborhood Safety	.2295
Reported Satisfaction with Neighborhood Resources	.1980
Reported Satisfaction with Neighborhood Accessibility	.2100

*Effect size values: small - .02, medium - .15, large - .35 (Cohen, 1977).

Design

A descriptive design was used to describe the predictive relationships between mothers' perceptions of the environment and environmental variables. In addition, the relationship between environmental variables and demographic variables also were examined.

Hypotheses

The following hypotheses were derived from the review of the literature. As stated previously, selected environmental variables was defined as 1980 Census tract data describing population density, median family income, percentage of families in poverty, percentage of females employed, and percentage of females with college degrees. For statistical purposes hypotheses were stated in both null and directional forms.

Hypothesis 1

Alternative: The interaction of environmental variables will be predictive of mother's perceptions of the neighborhood as a supportive environment.

Null: Environmental variables will not be predictive of mothers' perceptions of the neighborhood as a supportive environment.

Hypothesis 2

Alternative: The interaction of environmental variables will be predictive of mothers' reported satisfaction with neighborhood resources.

Null: Environmental variables will not be predictive of mothers' reported satisfaction with neighborhood resources.

Hypothesis 3

Alternative: The interaction of environmental variables will be predictive of mother's reported satisfaction with neighborhood safety.

Null: Environmental variables will not be predictive of mother's reported satisfaction with neighborhood safety.

Hypothesis 4

Alternative: The interaction of environmental variables will be predictive of mother's reported satisfaction with neighborhood accessibility.

Null: Environmental variables will not be predictive of mother's reported satisfaction with neighborhood accessibility.

Protection of Human Subjects

An application for an exempt review was submitted to the chairman of the Institutional Review Board (IRB) of the University of Alabama at Birmingham. Approval was received on September 9, 1991, prior to data analysis (Appendix A). Permission to use the data from the GUCI project has been obtained from the investigators, Bonnie Holaday and Anne Turner-Henson (Appendix B).

This study is a secondary analysis of an existing data base of 158 subjects collected from 1986-1987. No new subjects were recruited for this study. The original data collected in the study were from minor children and their parents. However, in the data set used in this study, no individuals or individual responses were identified. There are no potential risks to any individual in the proposed study, as individual subjects are not identifiable. There are no risks to confidentiality as the data set is comprised of group data.

Data Handling Technique

Data utilized in this analysis were transferred from the GUCI project files by the project statistician (Dr. James H. Swan). The data were received in a system file in SAS (SAS Institute, 1983) format for each of the subjects included in the analysis.

Analysis of the Data

Analyses of data were performed using the SAS Version 6.03 (SAS Institute, 1983). Descriptive statistics

including frequencies, percentages, means, standard deviations, and ranges were used to describe the sample as well as the data.

Multiple regression analyses were used to test the hypotheses. Additional descriptive statistics (e.g., correlation matrices, etc.) were used to test the regression model assumptions. The level of significance for the study was established at an alpha of .05. Statistical significance was reported for probability values of .05 or less on all test statistics.

CHAPTER IV

Findings

This descriptive survey study was designed to examine chronically ill children's mother's perceptions of environmental variables. A secondary analysis of an existing data base used descriptive statistics and multiple regression for the analysis. The results of the data analysis relevant to sample characteristics, independent and dependent variables, and the hypotheses are presented in this chapter. Also included is a description of related analyses and a descriptive summary of the findings.

Sample

Demographic characteristics of the sample are described in Table 3. Children in the sample ranged in age from 9.5 to 13.5 years of age. For statistical analysis purposes, children aged 9.5 - 9.9 years were grouped with the 10 year olds and children aged 13 - 13.5 years were grouped with the 12 year olds. As described previously, the sample was expanded to include children 9.5 - 9.9 and 13 - 13.5 years of age in an attempt to increase sample size. The sample was fairly well distributed with respect to age and sex. Over one half of the sample was white (61.8%), 35.7% black,

and the remaining 2.5% of other races (e.g., oriental, Mexican, etc.)

Age of mothers ranged from 20 to 54 years or greater with the majority of mothers in the 35-44 years old age group. Education levels were fairly evenly distributed for the mothers in the sample. The majority of mothers' educational levels (54.43%) were high school graduates to some college. Approximately over one half of the mothers (57.6%) were employed outside the home. Domestic responsibilities (e.g., housemanager or housewife) were reported for less than one third of the mothers (31.6%).

Household composition, which was defined as single parent, dual parent (mother and father present), and no parent present households was also examined. The majority of the sample (67%) resided in dual parent households. Single parent households comprised 30% of the sample, with the remainder 4% residing in households with no parent present (e.g., grandparent, aunt, etc. as head of household). A small percentage of the households (14%) had extended family members (e.g., grandparent, aunt, cousin, etc.) present. Households with extended family members present were in 24% of single parent households and 4% of dual parent households.

Family size, in terms of number of children present, was relatively small in the sample. One-half of the sample consisted of households with two children. Twenty-one percent of the sample were households with only one child.

Few families had large numbers of children in the family (4 children in household, 3%; 6 children in family, 0.6%).

Transportation via private automobile is an important resource in American families today. The majority of the mothers (91%) reported that they could drive. A large percentage (68%) of the families with siblings of driving age reported that they also could drive. This signifies that transportation was readily available, if they had access to automobiles.

Table 3

Demographic Characteristics of Sample

Variable	Percent	Frequency
Child Data		
Age		
10 years old-a	29.9	47
11 years old	31.8	50
12 years old-b	38.2	60
Missing data		1
(n= 157)		
Sex		
Male	60.5	95
Female	39.5	62
Missing data		1
(n= 157)		
Race		
White	61.8	97
Black	35.7	56
Other	2.5	4
Missing data		1
(n= 157)		
Diagnosis		
Congenital Heart Disease	22.20	35
Neuromuscular Disorders	19.00	30

(table continues)

Variable	Percent	Frequency
Sickle Cell Anemia/Blood Disorders	5.70	9
Asthma	31.60	50
Diabetes	8.90	14
Cystic Fibrosis	2.60	4
Renal Disorders	3.20	5
Seizure Disorders	6.30	10
JRA/SLE	4.40	7
Growth Hormone	0.60	1
Mother Data		
Age		
20 - 24 years of age	0.0	0
25 - 34 years of age	46.0	69
35 - 44 years of age	48.0	72
45 - 54 years of age	5.3	8
55 years or older	0.0	0
(n= 149)		
Education		
Less than high school	18.36	29
High school graduate	27.85	44
Some college	26.58	42
College graduate	13.92	22
Graduate or professional school	13.29	21
(n=158)		
Employment		
Self-employed	5.7	9
Employed (full or part-time)	51.9	82
Housemanager	31.6	50
Unemployed	9.5	15
Retired	0.6	1
No response	0.6	1
Family Data		
Family Structure		
Single Parent	28.21	44
Dual Parent	71.79	112
Family Size (number of siblings)		
Single child	20.5	32
Two children	51.3	80
Three children	18.6	29
Four children	5.8	9
Five children	3.2	5
Six children	0.6	1

(table continues)

Variable	Percent	Frequency
Family Income		
Less than $3000	10.1	16
$3000 to $4,999	4.4	7
$5000 to $7,999	2.5	4
$8000 to $9,999	7.0	11
$10,000 to $14,999	11.4	18
$15,000 to $19,999	7.6	12
$20,000 to $24,999	7.0	11
$25,000 to $29,999	10.1	16
$30,000 to $39,999	9.5	15
$40,000 and over	27.8	44
No response	2.5	4

a- 9.5 - 9.9 year olds were grouped with 10 year olds for statistical analysis purposes.

b- 13 - 13.5 year olds were grouped with 12 year olds for statistical analysis purposes.

Stability in city of residence as well as address of residence was clearly evident in the sample as described in Table 4. The majority (66.5%) of mothers reported residing in the same city for over 10 years. Stability in terms of address was also noted with the majority (58.2%) of mothers reporting living at the same address for 5 or more years.

As described in Table 5, the majority of the sample resided in one family housing units (84.7%) with a small percentage (9.5%) of the sample residing in multi-unit or apartment housing units. Families resided in predominantly residential areas (82.8%) with few families residing in commercial areas as described in Table 6. Racial mixture of the street was similar to the racial makeup of the sample as described in Table 7. Few families resided on racial mixed streets (1.3%); families resided predominantly on either all

white (46.1%) or all black (22.7%) streets.

Table 4

Length of Residence

	In City Percentage (n)	At Present Address Percentage (n)
Less than 6 months	1.9(3)	6.3(10)
6 to 11 months	1.9(3)	7.6(12)
1 to 3 years	7.0(11)	16.5(26)
3 to 5 years	5.7(9)	11.4(18)
5 to 10 years	17.1(27)	24.1(38)
More than 10 years	66.5(105)	34.2(54)

Table 5

Type of Housing Unit

Variable	Percentage (n)
One family house	84.7(133)
Two family house	1.9(3)
Multi-family house or apartment	3.1(5)
Apartment building (5-49 apartments)	6.4(10)
Other (e.g., trailer)	3.8(6)

Table 6

Description of Subject's Residential Block

Variable	Percentage (n)
Residential only	82.8(130)
Residential with one or two stores only	10.2(16)
Three or more commercial properties, mostly retail	1.9(3)
Other	5.1(8)

Table 7

Racial Composition of Street

Variable	Percentage (n)
All white	47.1(74)
Mostly white	5.1(8)
About half white, half black	1.3(2)
Mostly black	11.5(18)
All black	22.3(35)
Other racial mixture	0.6(1)
Could not determine	12.1(19)

The sample was derived from the Birmingham area representing five counties. County of residents for the sample was: 73% from Jefferson, 11.8% from Shelby, 7.9% from Walker, 4.6% from Bibb, and 2.6% from St. Clair. The

sample distribution of subjects by county is similar to the population characteristics of the counties; that is, largest percentage of the sample is from Jefferson county (73%), which is the largest county in population.

Independent Variables

Environmental variables (family median income, percentage of families in poverty, percentage of females with college degree as highest educational attainment, percentage of females employed, population density, and population) used as independent variables in this study were obtained utilizing the U.S. 1980 Census data set. In the primary analysis, subject numbers were coded along with census tract and block numbers. Census block or tract data was then obtained for each subject without breach of confidentiality for this current study.

A descriptive summary of environmental variables are presented in Table 8. The average family median income for the sample was $18880.16 with a large standard deviation (8523.20) indicating great variability of family median income. The mean percentage of families in poverty for the sample was 14.56. A large standard deviation of 14.76 was noted for percentage of families in poverty, therefore, indicating great variability in this variable. The mean percentage of females with a college degree (as the highest educational level) was 13.63% with a large standard deviation (13.95), thus indicating great variability. The mean percentage of females employed (outside the home) was 43.64%

with a standard deviation of 13.86 indicating a large variability in the percentage of employed females.

Population density and population variables were obtained using census tract data. The mean population density for the sample was 2199.37 with a large standard deviation (2471.99), thus indicating great variability in population density among the sample. The mean population for the sample was 5400.82 with a large standard deviation of 2850.07. Population of the sample had great variability.

Table 8

Descriptive Statistics for Environmental Variables

Variable	Mean	S.D.	Range
Median Family Income	18880.16	8523.20	3571.00 - 53639.00
Percentage of Families in Poverty	14.56	14.76	0.00 - 66.50
Percentage of Females with College Degree	13.63	13.95	0.00 - 65.47
Percentage of Employed Females	43.64	13.86	8.69 - 94.74
Population Density	2199.37	2471.99	25.16 - 15129.80
Population	5400.82	2850.07	391.00 - 15870.00

Dependent Variables

The dependent variables for this study consisted of scores on four scales developed by Holaday and Turner-Henson (1991) to describe chronically ill schoolage children's' mothers' perceptions of the environment. A descriptive summary of the scores for the scales is shown in Table 9.

Table 9

Descriptive Summary of Dependent Variables

Variable	Mean	S.D.	Range
Sources of Support scale	2.85443	1.32984	0 - 6
Satisfaction with Neighborhood Safety scale	2.10127	0.97216	0 - 4
Satisfaction with Neighborhood Resources scale	1.41139	1.74169	0 - 6
Satisfaction with Neighborhood Accessibility scale	2.18354	1.16115	0 - 4

Findings Related to the Hypotheses

Multiple regression analysis was utilized to investigate the research hypotheses. Four regression models were statistically analyzed with the dependent variables consisting of mothers' scores on the scales: Sources of Support scale, Satisfaction with Neighborhood Safety scale, Satisfaction with Neighborhood Resources scale, and Satisfaction with Neighborhood Accessibility. Independent variables for each of the models used the census block data

consisting of median family income, percentage of families in poverty, percentage of females with college education as highest educational attainment, percentage of employed females, and population density. Statistical significance was indicated for probability values of .05 or less.

Hypothesis 1

The interaction of environmental variables will be predictive of mother's perceptions of the neighborhood as a supportive environment using a multiple regression model.

H0: The interaction of environmental variables will not be predictive of mother's perceptions of the neighborhood as a supportive environment.

The frequencies of the scores on the variables were examined, and there were few (1-2) outliers for specific independent variables (median family income, percentage of females with college degrees, percentage of employed females, population density) and no outliers indicated for the remaining dependent variables (percentage of families in poverty). There was no indication of a bimodal distribution. To test for indicators of multicollinearity of the dependent and independent variables, a correlational study using Pearson R Coefficient, was performed. Results of the correlational matrix are described in Table 10 for the depen-dent and independent variables.

Table 10

Correlation Matrix: Sources of Support by Environmental Variables

	SUPPT	FAMMED	FAMPOV	FECOL	FEEMP	POPDEN
SUPPT	1.00000	0.00052 (.9949)	-0.00505 (.9498)	0.01614 (.8405)	-0.05305 (.5079)	-0.15422 (.0530)
FAMMED		1.00000	-0.67719 (.0001)*	0.81460 (.0001)*	0.31516 (.0001)*	-0.25789 (.0011)*
FAMPOV			1.00000	-0.50557 (.0001)*	-0.45503 (.0001)*	0.32958 (.0001)*
FECOL				1.00000	0.40365 (.0001)*	-0.13851 (.0826)
FEEMP					1.00000	0.06029 (.4517)
POPDEN						1.00000

* $p < .05$

SUPPT: Score on Sources of Support scale

FAMMED: Median family income

FAMPOV: Percentage of families in poverty

FECOL: Percentage of females with college as highest education

FEEMP: Percentage of females employed

POPDEN: Population density

It was determined that the independent variables were sufficiently independent and a multiple regression analysis would be valid. A multiple regression analysis was performed, and residual analysis was done to test the fit of the data to the linearity of the model. A scatterplot of

standardized residuals on the expected normal value for the residuals indicated that the errors were independent and that the relationships were roughly linear (residual skewness = 0.185654).

The five independent variables were entered into the multiple regression model. It was determined that 3% of the variability (R2 = .0298) of sources of support could be accounted for from these independent variables (Table 11). A nonsignificant relationship was found (F = 0.935, df = 5, 152, p = .4604), and the null hypothesis was accepted. The alternative hypothesis was rejected.

Table 11

Multiple Regression Analysis Summary Table: Sources of Support with Environmental Variables

Multiple Regression Analysis	R2	Adjusted R2	Standard Error
Results	.0298	-0.0021	1.331323

Analysis of Variance

Source	SS	D.F.	Mean Square	F Ratio	F Prob.
Regression	8.28117	5	1.65623	0.935	0.4604
Residual	269.37073	152	1.77218		

A test for significance was conducted on each independent variable after all these variables had been entered into the multiple regression equation (Table 12). Results of this analysis indicated a significant relationship for

only one independent variable, population density (p = .00005). This relationship showed that lower population density was significantly related to lower scores on the Sources of Support scale; thus in less densely populated areas, mothers of chronically ill children perceived the neighborhood as less supportive. Nonsignificant relationships were found for the remaining independent variables (family median income, percentage of families in poverty, percentage of females with college, and percentage of females employed).

Table 12

Summary Table of t Test: Sources of Support by Environmental Variables

Variable	t	p*
Family Median Income	4.831	0.26815
Percentage of Families in Poverty	-0.620	0.46865
Percentage of Females with College**	0.079	0.24510
Percentage of Females Employed	-0.479	0.31635
Population Density	-1.912	0.02890***
Intercept	4.831	0.00005***

* p values for one-tailed t-test
** Highest educational level attained
*** p value significant at less than .05

Hypothesis 2

The interaction of environmental variables will be predictive of mother's reported satisfaction with neighborhood resources using a multiple regression model.

Ho: The interaction of environmental variables will not be predictive of mother's satisfaction with neighborhood resources.

The frequencies of the scores on the variables were examined, and there were few (1-2) outliers for specific independent variables (median family income, percentage of females with college degrees, percentage of employed females, population density) and no outliers indicated for the remaining dependent variables (percentage of families in poverty). There was no indication of a bimodal distribution. To test for indicators of multicollinearity of the dependent and independent variables, a correlational study using Pearson R Coefficient was performed. Results of the correlational matrix are described in Table 13 for the dependent and independent variables.

Table 13

Correlation Matrix: Satisfaction with Neighborhood Resources by Environmental Variables

	RESTO	FAMMED	FAMPOV	MOTCOL	MOTEMP	POPDEN
RESTO	1.00000	0.20061 (.0115)*	-0.05735 (.4741)	0.27606 (.0004)*	0.20344 (.0104)*	0.07756 (.3328)
FAMMED		1.00000	-0.67719 (.0001)*	0.81460 (.0001)*	0.31516 (.0001)*	-0.25789 (.0011)*
FAMPOV			1.00000	-0.50557 (.0001)*	-0.45503 (.0001)*	0.32958 (.0001)*
MOTCOL				1.00000	0.40365 (.0001)*	-0.13851 (.0826)

(table continues)

	RESTO	FAMMED	FAMPOV	MOTCOL	MOTEMP	POPDEN
MOTEMP					1.00000	0.06029 (.4517)
POPDEN						1.00000

* p < .05

RESTO: Score on Mother's Reported Satisfaction with Neighborhood Resources Scale

FAMMED: Median Family Income

FAMPOV: Percentage of families in poverty

FECOL: Percentage of females with college as highest degree

FEEMP: Percentage of females employed

POPDEN: Population density

It was determined that the independent variables were sufficiently independent and a multiple regression analysis would be valid. A multiple regression analysis was performed, and residual analysis was done to test the fit of the data to the linearity of the model. A scatterplot of standardized residuals on the expected normal value for the residuals indicated that the errors were independent and that the relationships were roughly linear (positively skewed, residual skewness = 1.035938).

The five independent variables were entered into the multiple regression model. It was determined that 11% of the variability (R2 = .1103) of reported satisfaction with neighborhood resources be accounted for from these independent variables (Table 14). A significant

relationship was found (F = 3.767, df = 5, 152, p = .0030), and the null hypothesis was rejected. The alternative hypothesis was accepted.

Table 14

Multiple Regression Analysis Summary Table: Satisfaction with Neighborhood Resources with Environmental Variables

Multiple Regression Analysis	R2	Adjusted R2	Standard Error
Results	.1103	0.0810	1.66967

Analysis of Variance

Source	SS	D.F.	Mean Square	F Ratio	F Prob.
Regression	52.51502	5	10.50300	3.767	0.0030
Residual	423.74447	152	2.78779		

A test for significance was conducted on each independent variable after all these variables had been entered into the multiple regression equation. Results of this analysis indicated a nonsignificant relationship for the independent variables (Table 15). Therefore, for this regression model it was the interaction of the independent variables only that predicted an effect on the dependent variable. Thus, the interaction of lower family median income, percentage of families in poverty, percentage of females with college degrees, percentage of females employed, and population density predicted a significantly

lower reported satisfaction with neighborhood resources for mothers of chronically ill schoolage children.

Table 15

Summary Table of t Test: Satisfaction with Neighborhood Resources with Environmental Variables

Variable	t	p*
Family Median Income	0.632	0.26405
Percentage of Families in Poverty	1.477	0.07095
Percentage of Females with College**	1.630	0.05260
Percentage of Females Employed	1.654	0.05010
Population Density	0.817	0.20760
Intercept	-0.704	0.24115

* p values for one-tailed t-test.
** Highest educational level attained.

Hypothesis 3

The interaction of environmental variables will be predictive of mother's reported satisfaction with neighborhood safety using a multiple regression model.

Ho: The interaction of environmental variables will not be predictive of mother's satisfaction with neighborhood safety.

The frequencies of the scores on the variables were examined, and there were few (1-2) outliers for specific independent variables (median family income, percentage of females with college degrees, percentage of employed

females, population density) and no outliers indicated for the remaining dependent variables (percentage of families in poverty). There was no indication of a bimodal distribution. To test for indicators of multicollinearity of the dependent and independent variables, a correlational study using Pearson R Coefficient was performed. Results of the correlational matrix are described in Table 16 for the dependent and independent variables.

Table 16

Correlational Matrix: Satisfaction with Neighborhood Safety by Environmental Variables

	SAFETY	FAMMED	FAMPOV	MOTCOL	MOTEMP	POPDEN
SAFETY	1.0000	0.33235 (.0001)*	-0.28507 (.0003)*	0.28453 (.0003)*	0.12372 (.1214)	-0.21530 (.0066)*
FAMMED		1.00000	-0.67719 (.0001)*	0.81460 (.0001)*	0.31516 (.0001)*	-0.25789 (.0011)*
FAMPOV			1.00000	-0.50557 (.0001)*	-0.45503 (.0001)*	0.32958 (.0001)*
MOTCOL				1.00000	0.40365 (.0001)	-0.13851 (.0826)
MOTEMP					1.00000	0.06029 (.4517)
POPDEN						1.00000

* $p < .05$

SAFETY: Score on Mother's Reported Satisfaction with Neighborhood Safety

FAMMED: Median Family Income

FAMPOV: Percentage of families in poverty

(table continues)

FECOL: Percentage of females with college as highest degree

FEEMP: Percentage of females employed

POPDEN: Population density

It was determined that the independent variables were sufficiently independent and a multiple regression analysis would be valid. A multiple regression analysis was performed, and residual analysis was done to test the fit of the data to the linearity of the model. A scatterplot of standardized residuals on the expected normal value for the residuals indicated that the errors were independent and that the relationships were roughly linear (though slightly negatively skewed, residual skewness = 0.39542).

The five independent variables were entered into the multiple regression model. It was determined that 13% of the variability (R2 = .1335) of reported satisfaction with neighborhood safety be accounted for from these independent variables (Table 17). A significant relationship was found (F = 4.683, df = 5, 152, p = .0005), and the null hypothesis was rejected. The alternative hypothesis was accepted.

Table 17

Multiple Regression Analysis Summary Table: Satisfaction with Neighborhood Safety with Environmental Variables

Multiple Regression Analysis	R2	Adjusted R2	Standard Error
Results	.1335	0.1050	0.91971

(table continues)

Analysis of Variance

Source	SS	D.F.	Mean Square	F Ratio	F Prob.
Regression	19.80696	5	3.96139	4.683	0.0005
Residual	128.57279	152	0.84587		

A test for significance was conducted on each independent variable after all these variables had been entered into the multiple regression equation. Results of this analysis indicated a nonsignificant relationship for the independent variables (Table 18). Therefore, for this regression model it was the interaction of the independent variables only that predicted an effect on the dependent variable. Thus, the interaction of lower family median income, percentage of females with college degrees, percentage of females employed, and higher percentage of families in poverty and population density predicted a significantly lower reported satisfaction with neighborhood safety for mothers of chronically ill schoolage children.

Table 18

Summary Table of t Test: Satisfaction with Neighborhood Safety with Environmental Variables

Variable	t	p*
Family Median Income	1.154	0.1252
Percentage of Families in Poverty	-0.639	0.26205
Percentage of Females with College**	0.544	0.29365

(table continues)

Variable	t	p*
Percentage of Females Employed	0.106	0.45785
Population Density	-1.616	0.05410
Intercept	3.678	0.00015***

* p values for one-tailed t-test.

** Highest educational level attained

***p value significant at less than .05

Hypothesis 4

The interaction of environmental variables will be predictive of mother's reported satisfaction with neighborhood accessibility using a multiple regression model.

Ho: The interaction of environmental variables will not be predictive of mother's satisfaction with neighborhood accessibility.

The frequencies of the scores on the variables were examined, and there were few (1-2) outliers for specific independent variables (median family income, percentage of females with college degrees, percentage of employed females, population density) and no outliers indicated for the remaining dependent variables (percentage of families in poverty). There was no indication of a bimodal distribution. To test for indicators of multicollinearity of the dependent and independent variables, a correlational study using Pearson R Coefficient was performed. Results of

the correlational matrix are described in Table 19 for the dependent and independent variables.

Table 19

Correlational Matrix: Satisfaction with Neighborhood Accessibility by Environmental Variables

	ACCEST	FAMMED	FAMPOV	MOTCOL	MOTEMP	POPDEN
ACCEST	1.0000	-0.25905 (.0010)*	0.28537 (.0003)*	-0.16868 (.0341)*	-0.05674 (.4789)	0.35540 (.0001)*
FAMMED		1.00000	-0.67719 (.0001)*	0.81460 (.0001)*	0.31516 (.0001)*	-0.25789 (.0011)*
FAMPOV			1.00000	-0.50557 (.0001)*	-0.45503 (.0001)*	0.32958 (.0001)*
MOTCOL				1.00000	0.40365 (.0001)*	-0.13851 (.0826)
MOTEMP					1.00000	0.06029 (.4517)
POPDEN						1.00000

* $p < .05$

ACCEST: Score on Mother's Reported Satisfaction with Neighborhood Accessibility Scale

FAMMED: Median Family Income

FAMPOV: Percentage of families in poverty

FECOL: Percentage of females with college as highest degree

FEEMP: Percentage of females employed

POPDEN: Population density

It was determined that the independent variables were sufficiently independent and a multiple regression analysis would be valid. A multiple regression analysis was per-

formed, and residual analysis was done to test the fit of the data to the linearity of the model. A scatterplot of standardized residuals on the expected normal value for the residuals indicated that the errors were independent and that the relationships were roughly linear (residual skewness = .075099).

The five independent variables were entered into the multiple regression model. It was determined that 17% of the variability (R2 = .1646) of reported satisfaction with neighborhood accessibility be accounted for from these independent variables (Table 20). A significant relationship was found (F = 5.991, df = 5, 152, p = .0001), and the null hypothesis was rejected. The alternative hypothesis was accepted.

Table 20

Multiple Regression Analysis Summary Table: Satisfaction with Neighborhood Accessibility with Environmental Variables

Multiple Regression Analysis	R2	Adjusted R2	Standard Error
Results	.1646	0.1371	1.07859

Analysis of Variance

Source	SS	D.F.	Mean Square	F Ratio	F Prob.
Regression	34.84742	5	6.96948	5.991	0.0001
Residual	176.82980	152	1.16335		

A test for significance was conducted on each independent variable after all these variables had been entered into the multiple regression equation. Results of this analysis indicated a significant relationship for the independent variable, population density (Table 21). Thus, greater population density predicted greater reported satisfaction with neighborhood accessibility. Nonsignificant relationships were found for the remaining independent variables (family median income, percentage of families in poverty, percentage of females with college, and percentage of females employed).

Table 21

Summary Table of t Test: Satisfaction with Neighborhood Accessibility with Environmental Variables

Variable	t	p*
Family Median Income	-0.918	0.1801
Percentage of Families in Poverty	1.059	0.14555
Percentage of Females with College**	0.332	0.3702
Percentage of Females Employed	0.091	0.46395
Population Density	3.499	0.00030***
Intercept	3.562	0.00025***

* p values for one-tailed t-test

** Highest educational level attained

***p value significant at less than .05

Related Analysis

Additional analyses were performed to examine the correlational relationships individually between the dependent and independent variables. Statistical analyses consisted of Pearson R correlations. Statistical significance was indicated for probability values of .05 or less.

The relationship between mother's perception of sources of support and environmental variables were found to be nonsignificantly correlated. Nonsignificant negative correlations were found between mother's perceptions of sources of support and population density (r^2 = -0.15422, p = .0530), percentage of employed females (r^2= -0.05305, p = .5079), and percentage of families in poverty (r^2= -0.00505, p= .9498). Therefore, the relationship between the beforementioned variables were weakly and nonsignificantly negatively correlated. Positive, though nonsignificant correlations, were found to exist between mother's perceptions of sources of support and percentage of females with college (r^2= 0.01614, p= .8405) and median family income (r^2= 0.00052, p= 9949). And therefore, the relationship between the beforementioned variables were weakly and nonsignificantly positively correlated.

The relationship between mother's reported satisfaction with neighborhood resources was found to be significantly correlated with several of the independent variables, individually. A significant positive correlation was found between the median family income of the subject's census

block and mother's reported satisfaction with neighborhood resources (r^2 = 0.20061, p = .0115). Thus, as family median income in the subject's census block increased, mother's reported satisfaction with neighborhood resources increased. A significant positive correlation was found between the percentage of employed females of the subject's census block and mother's reported satisfaction with neighborhood resources (r^2 = 0.20344, p = .0104); therefore, as the percentage of employed females in a subject's census block increased, there was a significant increase in mother's reported satisfaction with neighborhood resources. Finally, a significant positive correlation was found between the percentage of females with college in the subject's census block and mother's reported satisfaction with neighborhood resources (r^2 = 0.27606, p = .0004). Thus, as the percentage of females with college in the subject's census block increased, a significant increase in mother's reported satisfaction with neighborhood resources was seen.

Nonsignificant correlations were found to exist between the remaining independent variables. A nonsignificant positive correlation was found between the subject's census tract population density and mother's reported satisfaction with neighborhood resources (r^2 = 0.07756, p = .3328). A nonsignificant negative correlation was found between the percentage of families in poverty in the subject's census block and mother's reported satisfaction with neighborhood resources (r^2 = -0.05735, p = .4741).

Significant correlations were also found to exist between environmental variables and mother's reported satisfaction with neighborhood safety. A significant negative correlation was found between the subject's census tract population density and mother's reported satisfaction with neighborhood safety (r^2 = -0.21530, p = .0066). Thus, as the subject's census tract population density increased, there was a significant increase in the mother's reported satisfaction with neighborhood safety. A significant positive correlation was found between the median family income of the subject's census block and mother's reported satisfaction with neighborhood safety (r^2 = 0.33235, p = .0001) and; therefore, as family median income in the subject's census block increased, mother's reported satisfaction with neighborhood safety significantly increased. Additionally, a significant positive correlation was found between the percentage of females with college in the subject's census block and mother's reported satisfaction with neighborhood safety (r^2 = 0.28453, p = .0003). Thus, as the percentage of females with college in the subject's census block increased, a significant increase in mother's reported satisfaction with neighborhood safety was seen. Finally, a significant negative correlation was found between the percentage of families in poverty in the subject's census block and mother's reported satisfaction with neighborhood safety (r^2 = -0.28507, p = .0003); therefore, as the percentage of families in poverty increased, there was a significant

decrease in mother's reported satisfaction with neighborhood safety.

Nonsignificant correlations were found to exist with the remaining independent variable. A nonsignificant positive correlation was found between the percentage of employed females of the subject's census block and mother's reported satisfaction with neighborhood safety (r^2 = 0.12372, p = .1214).

Mother's reported satisfaction with neighborhood accessibility was found to be significantly correlated to environmental variables. A significant positive correlation was found between the subject's census tract population density and mother's reported satisfaction with neighborhood accessibility (r^2 = 0.35540, p = .0001); thus, as the subject's census tract population density increased, there was a significant increase in mother's reported satisfaction with neighborhood accessibility. A significant negative correlation was found between the median family income of the subject's census block and mother's reported satisfaction with neighborhood accessibility (r^2 = -0.25905, p = .0010). As family median income in the subject's census block increased, mother's reported satisfaction with neighborhood accessibility decreased significantly. A significant negative correlation was found between the percentage of females with college in the subject's census block and mother's reported satisfaction with neighborhood accessibility (r^2 = -0.16868, p = .0341); thus, as the

percentage of females with college in the subject's census block increased, a significant increase in mother's reported satisfaction with neighborhood accessibility was seen. A significant positive correlation was found between the percentage of families in poverty in the subject's census block and mother's reported satisfaction with neighborhood accessibility (r^2 = 0.28537, p = .0003); therefore, as the percentage of families in poverty in the subject's census block increased, there was a significant increase in mother's reported satisfaction with neighborhood accessibility.

Nonsignificant correlations were found between mother's reported satisfaction with neighborhood accessibility and the remaining independent variables. A nonsignificant negative correlation was found between the percentage of employed females of the subject's census block and mother's reported satisfaction with neighborhood accessibility (r^2 = -0.05674, p = .4789).

Summary of Analyses

A descriptive, correlational design was used to describe the relationship between selected environmental variables and chronically ill children's mothers' perceptions of the neighborhood. A secondary data analysis was performed on an existing data base from a sample of 156 chronically ill schoolage children and mothers. The interactions of environmental variables was used in a multiple regression model to predict mother's perceptions of

the neighborhood. Environmental variables were also individually examined to determine relationships between mother's perceptions of the neighborhood. A summary of the hypotheses tested is described in Table 22. The level of significance for this study was set at an alpha of .05.

As hypothesized, the interaction of environmental variables were found to be predictive of mother's reported satisfaction with neighborhood resources, safety, and accessibility. The interaction of environmental variables was not predictive of mother's perceptions of sources of support.

Some environmental variables, individually, however, were correlated with mother's perceptions of neighborhood resources as described in Table 23. A significant positive correlation was found between percentage of females employed and mother's reported satisfaction with neighborhood resources. Additionally, a positive correlation between percentage of females with college and mother's reported satisfaction with neighborhood resources was also found to be significant. Negative correlations between the remaining dependent variables (population density, percentage of families in poverty) were found, though not significant.

Mother's reported satisfaction with neighborhood safety was significantly correlated with several of the dependent variables. A significant negative correlation was found between population density and mother's reported satisfaction with neighborhood safety. A positive correlation

between family median income and mother's reported satisfaction with neighborhood safety was found to be significant. Additionally, a significant positive correlation with percentage of females with college and significant negative relationship with percentage of families in poverty was found with mother's reported satisfaction with neighborhood safety. The remaining dependent variable, percentage of females employed, was not significantly correlated with mother's reported satisfaction with neighborhood safety.

A significant positive correlation with mother's reported satisfaction with neighborhood accessibility was found individually for the dependent variables, population density and percentage of families in poverty. Significant negative correlations were found for the dependent variables, median family income and percentage of females with college. The remaining dependent variable, percentage of females employed was found not be significantly correlated to mother's reported satisfaction with neighborhood accessibility.

Table 22

Summary of Analyses

Null Hypotheses Tested	Sign Level	Hypothesis Rejected or Not Rejected
H1: Selected environmental variables will not be predictive of mother's perceptions of sources of support using a multiple regression model.	N.S.	Not rejected
H2: Selected environmental variables will not be predictive of mother's reported satisfaction with neighborhood resources using a multiple regression model.	.0030	Rejected
H3: Selected environmental variables will not be predictive of mother's reported satisfaction with neighborhood safety using a multiple regression model.	.0005	Rejected
H4: Selected environmental variables will not be predictive of mother's reported satisfaction with neighborhood accessibility using a multiple regression model.	.0001	Rejected

Table 23

Summary of Related Analyses

	p	R2
Correlation between Mother's Perceptions of Sources of Support and		
Population density	.0530	-0.15422
Median family income	.9949	0.00052
Percentage of Females Employed	.5079	-0.05305
Percentage of Females With College	.8405	0.01614
Percentage of Families in Poverty	.9498	-0.00505

(table continues)

	p	R2
Correlation between Mother's Reported Satisfaction with Neighborhood Resources and		
Population density	.3328	-0.07756
Median family income	.0115*	0.20061
Percentage of Females Employed	.0104*	0.20344
Percentage of Females With College	.0004*	0.27606
Percentage of Families in Poverty	.4741	-0.05735
Correlations between Mother's Reported Satisfaction with Neighborhood Safety and		
Population density	.0066*	-0.21530
Median family income	.0001*	0.33235
Percentage of Females Employed	.1214	0.12372
Percentage of Females With College	.0003*	0.28453
Percentage of Families in Poverty	.0003*	-0.28507
Correlations between Mother's Reported Satisfaction with Neighborhood Accessibility and		
Population density	.0001*	0.35540
Median family income	.0010*	-0.25905
Percentage of Females Employed	.4789	-0.05674
Percentage of Females With College	.0341*	-0.16868
Percentage of Families in Poverty	.0003*	0.28537

* $p < .05$

CHAPTER V

Discussion, Conclusions, Implications, and Recommendations

A descriptive correlational design was used to examine if the interaction of selected environmental variables was predictive of chronically ill schoolage children's mother's perceptions of the neighborhood. This study was a secondary analysis of an existing data base using descriptive, correlational, and multiple regression analyses. In this chapter a discussion of findings and conclusions, as well as implications for nursing practice, education, research, and recommendations for further research are presented.

Methodological Issues

Data utilized in this study were previously collected in a sample survey designed to examine chronically ill schoolage children's use of time out-of-school. Additionally, a second existing data set consisting of the United States 1980 Census data was used. Utilization of secondary analysis with survey data provides many advantages for the researcher, though disadvantages and methodological issues also may be seen.

GUCI Data Set

Stringent control over data collection procedures is essential in survey research. In the GUCI data set, careful attention was paid to data collection procedures. The investigators, Holaday and Turner-Henson, in consultation with the Survey Research Center at the University of California, Berkeley, developed an extensive interviewer training and supervision program. Comprehensive training manuals for interviewers, supervisors, and editing procedures were developed by the Survey Research Center with Holaday and Turner-Henson providing content expertise regarding chronic illnesses and the data collection sites (San Francisco Bay area and the greater metropolitan Birmingham area). The interviewer training manuals contained explicit information and instructions on data collection, interview structure and procedures, recording of data, how to handle problems in the field, and editing of instruments (Turner-Henson, 1990).

An interviewer training program was held at both sites and directed by the Survey Research Center. Both investigators (Holaday and Turner-Henson) were present at the training sessions to provide content expertise regarding the study design, chronic illnesses, and site information. Update sessions were held at both sites with consultation provided by the Survey Research Center. Primary responsibility for supervising interviewers and editing of instruments was done by Turner-Henson for the Birmingham study

site. Training as an interviewer supervisor and instrument editor was done by the Survey Research Center prior to the initiation of data collection.

As noted collection of survey research data requires careful consideration not only of design, but also of data collection procedures. Stringent data collection procedures were used in the GUCI study to ensure collection of the data in a uniform and reliable manner.

Another methodological concern in secondary analysis is the reliability of the research instruments. Additionally, there has been reluctance in survey research to utilize children as survey respondents. Reluctance to interview children may indicate that researchers do not consider them as capable of acting as survey research subjects, or do not consider their responses to be reliable (stable). The stability or reliability of schoolage children's survey responses has been overlooked in behavioral research. In the GUCI study the reliability of the Child Interview Schedule and the Parent Questionnaire instruments were addressed (Holaday, Turner-Henson, & Swan, 1991).

The reliability study utilized a randomly selected subset of the San Francisco and Birmingham samples consisting of 76 subjects (children and mothers). At the completion of the in-home interviews the parents were told that they might be contacted for a follow-up study to check the stability of children's and parent's responses. A three wave panel survey design was used to investigate the range

and character of changes in response for chronically ill children. Parents were asked a subset of questions at four months past the interview to determine the stability of their responses. Children in the sample subset were contacted by telephone at two months, four months, and again at six months after the original interview. The same interviewer called all children and parents for the post-interview.

Children, across all three time intervals and in all sample subgroups studied, had good levels of response stability for immutable characteristics (e.g., age, sex, grade in school, etc.) and factual questions (e.g., name of school, do you get a regular allowance, etc.). There were low levels of response stability to opinion questions (e.g., Do you like school?). Parents' level of stability for all types of questions was excellent. Therefore, the reliability (as measured by response stability) of the GUCI instruments was good.

1980 U.S. Census Data Set

The U.S. Census as a public domain data set claims to be a complete count of all persons living in the United States at a particular point in time; however, it is well known that several design and methodological flaws exist in this data set (Jacob, 1984). In this study, the 1980 U.S. Census data set was used to determine environmental conditions present in the communities in which the subjects

resided. This data set was used only as a reflection of what is present in the environments of subjects.

Sampling and selection errors are one source of inaccuracy in the Census data sets (Jacob, 1984). While public sources state that the census is a complete count of all individuals, inaccuracies in overlooking certain communities as well as individuals residing in remote areas can result in an incomplete count. Errors in census data sets can also result from inappropriate data transformations. Reliability errors can arise from clerical errors, inconsistencies in data collection procedures, and manipulation of the data.

Availability of specific data (e.g., block versus track data) within the U.S. Census data set can also affect the validity of the study. Census data at either the block or track levels may be censored (thus unavailable) for various reasons. Additionally, data collected for the 1980 Census was inconsistent as to the level of data. For example, in primarily urban areas (areas classified as standard metropolitan statistical areas) data was readily available in the block format, as well as track level data. Though, in many rural areas data were available in track format (tracks are comprised of multiple block units), and in one county (Bibb), data were available at only the city or county level. Therefore, for approximately 17.72% of the sample census data variables were approximated using alternative forms of data.

Limitations

For the purposes of this study the following limitations to the research findings were identified:

1. The measurements of the study variables relies on self-report which may reflect social desirability.

2. The nature of the GUCI data set is a random sample of chronically ill children and mothers residing in a southeastern state, thus limiting generalizability to this region.

3. The sample is limited to children between the ages of 10 to 12 years and their mothers.

4. Inaccuracies in the 1980 U.S. Census data set may be attributed to sampling and selection errors, inappropriate data transformations, clerical errors, and inconsistencies in data collection; thus the Census data set should be viewed only as a reflection of what exists in the environment.

Conclusions

The purpose of this study was to examine the influence of selected environmental variables on mothers' of chronically ill children's perceptions of the environment as supportive, resourceful, safe, and accessible. Utilizing a secondary analysis of existing research and public domain data bases, this study was a descriptive, correlational design.

Conclusions Related to Sample

The sample utilized in this study represented the Alabama portion of the GUCI data set. Subjects were randomly drawn from a sampling framework of 323, and stratified based on socioeconomic status. Due to subject attrition, the sample was expanded by convenience measures and these additional subjects represented only 10% of the final sample. Statistical power analysis for most of the dependent variables varied from a small to a large effect, though most were in the medium effect range.

The sample was comprised of 156 chronically ill schoolage children and their mothers. The children ranged in age between 9 to 13 years, though for statistical purposes, the 9 year olds were grouped with the 10 year olds and the 13 year old children were grouped with the 12 year olds. The sample was evenly distributed with respect to sex. Over one half of the sample was of the white race, while the remaining of the sample was black and a minority of other races.

The majority of mothers in the sample were between 35 to 44 years of age. Most mothers were at least high school graduates and over two-thirds were employed outside the home. Family structure for the majority of the sample were dual parent families. Transportation (via father, mother, or sibling) was readily available for the greatest majority of the sample.

Stability of city residence as well as address residence was evident for the majority of the sample. Most

families resided in one family homes in racially segregated areas. The distribution of subjects by county of residence was similar to county population estimates.

Selected environmental variables were measured using the U.S. 1980 Census data set. The average median family income for the subjects' environments was $18,880 representing a middle income range, though there was great variability in this measure. Approximately 15% of the families in the subjects' census blocks were in poverty representing economic constraints present in environments.

Higher educational attainment in the subjects' environments was minimal, with few females holding a college degree. Employed females in the environments was over one third, thus again representing the economic and other variables constraining the environments in which subjects resided. The average population density for subjects' environments was small, though there was great variability in this measure.

Mothers' perceptions of the environment as supportive, safe, resourceful, and accessible were measured with four scales. Mothers expressed moderate satisfaction with the neighborhood as supportive, safe, and accessible, though they expressed only a small satisfaction with the neighborhood as resourceful. Thus, these findings coupled with that of the literature for normal children (Daniels & Moos, 1988; Homel & Burns, 1989), high risk families (Garbarino &

Sherman, 1980; Garbarino, 1976; Polansky, 1985), and chronically ill children (Kazak & Marvin, 1984; Marcenko & Meyers, 1991; McAllister, Butler, & Lei, 1973) point to the constraints which exist in environments for children and families.

Conclusions Related to Hypotheses

Environments in which families reside play a critical role in enhancing or impairing family functioning. Factors such as economic, educational, density, resources, employment opportunities, etc. play an important role in shaping the environmental context for families (Garbarino & Sherman, 1980). In this study, mothers' perceptions of the neighborhood as resourceful, safe, and accessible were found to be statistically related to the interaction of selected environmental variables. The interaction of economic (e.g., median family income, percentage of families in poverty), educational (e.g., percentage of females with college degrees), employment (e.g., percentage of females employed), and population density (e.g., total population per square mile) environmental factors displayed the importance of viewing the multiple influences which environments exert on families.

Economic factors such as median family income and percentage of families in poverty were found in this study to be significantly related to mother's perceptions of the environment as resourceful, accessible, and safe. The richness of the environment, in an economical sense,

enhances or impairs parents' abilities to rear their children (Garbarino & Sherman, 1980). For families where environmental quality is lacking due to economic resources (e.g., lower family incomes, greater percentage of families in poverty), the social well being of children, as seen by an increase in loneliness, feelings of rejection, unhappiness, and dissatisfaction with their lives is noted (Homel & Burns, 1989). Accessibility to out-of-school activities (Homel & Burns, 1989) and a safe environment for children's and family activities (Holaday & Turner-Henson, 1991) also can be restricted.

Educational opportunities also are seen as an important factor in promoting successful growth and development for children and families. As seen in this study, educational factors (e.g., percentage of females with college degrees) were significantly related to mother's perceptions of the environment as resourceful, accessible, and safe. Poor educational preparation due to either inadequate resources or other factors, impact on parent's childrearing abilities (Garbarino, 1976), and as seen in this study were significantly found to influence mother's environmental perceptions. Thus, for families of chronically ill children, the constraints imposed by lower educational attainment by mothers also influences the mother's perceptions of the environment, thus restricting opportunities for the chronically ill child and family.

Families have always been embedded in networks of relatives, friends, co-workers, and neighbors (Cochran & Brassard, 1979). The richness of the environment enhances or impairs parents' abilities to rear their children (Garbarino & Sherman, 1980). For families with a chronically ill child, constraints imposed by the illness add to the demands on parenting. In this study, the relationship between mothers' perception of the environment as supportive and environmental factors was found to be nonsignificant. While the literature strongly supports such a relationship exists in high risk families (Garbarino & Sherman, 1980; Polansky, 1985) such a relationship was not supported in this study. Mothers in the study perceived the neighborhood as moderately supportive.

Upon examination of the findings, several methodological factors should be carefully considered. First, the scale measuring mother's perceptions of the environment as supportive was based upon mother's responses from two questionnaires (Parent and Medical Questionnaires). Questions for this scale examined support in several different ways. Support was defined as frequent contact with neighbors (talks with neighbors, exchanges things, visits), visiting relatives often, and listing immediate family and friends as sources of support. Sources of support in this scale were measured in a nominal scale, that is, factor present or not present. The type and level of support (as measured by an interval or ordinal scale) could

possibly provide a clearer measure of support. Refinement of this scale should take into consideration the other types of social support which may increase the validity of the measure (Cochran & Brassard, 1979; Kazak & Marvin, 1984).

Sample size is another factor which should be considered when examining the sources of support results. The effect size for this dependent variable was found to be small. An effect size of small indicates that methodological issues may be related to either sample size or measurement issues. In this study, the sample size was 158. While the sample size could be considered adequate, issues related to measurement of the variable coupled with the sample size could have possibly resulted in the nonsignificant findings.

Conclusions Related to Additional Analyses

The richness of the environment and parent's social surroundings affect childrearing practices (Garbarino & Sherman, 1980). In this study, several environmental factors were found to be statistically correlated to mothers' perceptions of the environment.

Population density was found to be significantly correlated with mothers' perceptions of the environment as safe and accessible. Environmental contexts such as urban versus rural setting influence parental controls over children's' activities (Coates & Bussard, 1974; Hart, 1977; Payne & Jones, 1977). Thus, as seen in this study population density was significantly negatively correlated with mothers' perceptions of the neighborhood as a safe

environment. For chronically ill children in high density environments, mothers' perceptions of the environment as unsafe could possibly place restrictions on children's' play options, therefore limiting opportunities for mobility within the environment and thus ultimately influencing opportunities for development and socialization.

Population density was also found to be significantly positively correlated with mothers' perceptions of neighborhood accessibility. Accessibility to libraries, parks and playgrounds, public places, and public transportation provides important opportunities for development and socialization. In low density environments where resources may be limited for normal children, accessibility for chronically ill children further limits their opportunities for socialization. Thus, in low density environments, accessibility constraints limit peer interaction opportunities, thereby leading to further social isolation (Rutenfranz, Anderson, Seliger, & Masironi, 1982).

Economic environmental factors were found to be significantly correlated to mothers' perceptions of the environment as resourceful, safe, and accessible. Poverty has been identified as the most potent stressor on families; therefore, the influences of economic resources on children and families can create much dysfunction (Belle, 1982b). In this study, higher median family income was significantly correlated with increased satisfaction with neighborhood resources. On the other hand, more families in poverty was

significantly correlated with increased concerns over safety and decreased satisfaction with neighborhood accessibility. Therefore, the consequences associated with high risk neighborhoods as documented by researchers of child abuse/neglect (Garbarino & Sherman, 1980; Strauss, 1980) were found in this study to be associated with maternal dissatisfaction of the environment.

Female employment was found to be significantly correlated only with mothers' perceptions of the neighborhood as resourceful. For many families in our modern society, maternal employment is an economic necessity, though environmental support is often lacking (Bronfenbrenner, 1986). As seen in this study, mothers who resided in environments with high levels of female employment expressed a greater dissatisfaction over resources. Resources such as schools, police, recreation programs, parks, libraries, and buses are essential for families. In families where the mother is employed access to such resources is essential. Such resources provide stimulation for children and encourage interaction with peers. In employed mothers whose roles are strained by multiple demands on their time (Hochschild, 1989; Pleck & Strain, 1982) access to such resources reduces stress.

Implications

Implications of the findings are presented. Implications are discussed in terms of the conceptual framework, nursing practice, nursing research, and nursing education.

Conceptual Framework

The Johnson model has been primarily used with individuals and families in research. This study, applying Johnson's model at the community level focussed on functional requirements within the achievement subsystem. The achievement subsystem is defined as the mastery or control of some aspect of self or environment, with regard to intellectual, physical, mechanical, social, or caretaking skills. The focus of this study was to identify the functional requirements of caretaking skills for chronically ill children through an examination of the interaction of environmental factors with mothers' perceptions of the environment.

The findings from this study show that the interaction of environmental factors does influence mothers' perceptions of the environment. Thus, functional requirements for mothers' of chronically ill children's achievement subsystem may be identified utilizing the study findings. The interaction of economic factors (i.e., median family income, percentage of families in poverty), educational (percentage of females with college degrees), employment (percentage of females employed), and population density does influence mothers' caretaking skills.

Nurses can utilize this information through the development of strategies to promote equilibrium within the behavioral system (i.e., chronically ill child and mother).

For example, decreased satisfaction with community resources (i.e., libraries, schools, recreation programs, etc.) was seen in mothers residing in environments with low median family income, low employment of females, and low levels of education of females. Thus, nursing should seek strategies to assist mothers in constrained environments to seek out new opportunities or this information could be used by nurses to promote changes in public policy.

Behavioral systems may also be viewed in terms of the influence of other systems (those external to the behavioral system). Various theories and models have been proposed to examine systems. Research has documented that families are influenced by many systems external to the family.

One theory, Bronfenbrenner's (1979) model of the ecology of human development; proposes that the environment is composed of different levels influencing child growth and development. This ecological perspective takes as its starting point the view that human behavior is explained not only by the influences associated with the immediate settings containing the developing child (i.e., home, neighborhood, school, etc.), but also those external settings that have an indirect impact on the child through their effects upon the mental health and general well-being of their parents (e.g., parental place of work, health care systems, social welfare systems, etc.). Thus growth is conceived as a series of encounters across as well as within

ecological systems that both include and are external to the child's home environment.

Therefore, if one uses Johnson's model to examine the behavioral system coupled with Bronfenbrenner's model to explain the linkages within the systems external and influencing the behavioral system, implications for theory development evolve from the study findings. This study showed that the interaction of environmental factors external to the chronically ill child and mother significantly influenced mother's perceptions of the environment, and thus in turn influences maternal childrearing practices, therefore, enhancing or impairing chronically ill children's activities.

For example, families in poverty is an environmental variable external to the chronically ill child and family, upon which the child and family may exert no control. Mothers' perceived the environment as unsafe and not accessible in environments where there was increased percentages of families in poverty. Using the linkages found within the environment (Bronfenbrenner, 1979), the nurse can then view the influences of the environment system on the behavioral system (chronically ill child and family). Thus the nurse can seek interventions to strengthen functional requirements of mothers' achievement subsystems.

Implications for Nursing Practice

With significant improvements in perinatal and pediatric health care through improved medical technology,

the number of children surviving to adulthood with a chronic illness is significantly increasing. With the increase in the number of chronically ill children surviving, a critical factor in nursing practice is evolving concerning the development of effective nursing strategies and interventions to promote healthy development and socialization of chronically ill children and families.

The findings of this study indicate the critical importance environment plays in the development and socialization of chronically ill children and families. While current nursing practice addresses the role of the environment, this role is generally viewed as superficial and indepth environmental assessments beyond the family are rarely done. Nursing practice through indepth assessments of the environment and recognizing its critical impact are essential. Additionally, nursing must develop strategies to effectively incorporate knowledge of the environment in planning and intervening, and also in becoming politically active in forming health and social policies to ensure the healthy development and socialization of chronically ill children and families.

Implications for Nursing Research

This study is part of an ongoing research program designed to describe and analyze the everyday life experiences of growing up with a chronic illness. Nursing and health care research has focussed primarily on advances in medical technology and psychological aspects of chronicity,

while there has been a significant lag in understanding the functional consequences of chronicity. Additionally, little research has focussed on the influences of the environment on the everyday lives of chronically ill children and their families. Findings from this research indicated that selected environmental variables, such as family income, female educational level, female employment, and population density do influence mother's perceptions of the environment.

Neglible amounts of nursing research were found that examined environmental influences on chronically ill children and families. The findings of this study coupled with the findings of Holaday and Turner-Henson (1991) found that environment does influence maternal perceptions and in turn maternal perceptions influence chronically ill children's and families' activities. Thus, the need to further explore the linkages between the environment and chronically ill children's and families' everyday lives is needed. Additional research is needed to add to the body of nursing knowledge in order to develop strategies and interventions for promoting healthy development and socialization of chronically ill children and families.

Few nursing studies use secondary analysis as a research strategy, while this strategy has been well recognized in other disciplines for many years as a methodology of expanding the discipline's knowledge base.Secondary analysis represents a cost effective and

efficient strategy for conducting research (Kiecolt & Nathan, 1985).

Additionally, the use of public domain data bases (e.g., U.S. Census) has been rarely used in nursing research. Public domain data bases coupled with clinical nursing research data bases is a potential strategy for greatly enhancing as well as increasing the body of nursing knowledge. Additionally, the use of data bases from other disciplines used with nursing research data bases adds to the body of nursing knowledge as well as strengthening scientific collegiality (McArt & McDougal, 1985). Therefore, additional nursing research needs to be conducted using secondary analysis and public domain data bases as research strategies.

Implications for Nursing Education

Understanding the functional consequences of chronicity is essential for providing quality nursing care for chronically ill children and families. Nursing education, particularly in undergraduate programs, focuses primarily on physiological and psychological care of chronically ill children. Professional nursing education programs need to incorporate knowledge about the functional consequences of chronicity. Additionally, the Johnson Behavioral Model has had limited use in nursing practice, as well as nursing education. This model was found to be useful in directing nursing care to meet the functional requirements of the mothers' achievement subsystem. The model utilizing a

systems approach provides direction not only in planning care, but also in assessment phases. Use of the model may be easily adapted to students planning care through nursing care plans or other alternative learning strategies.

In community health nursing various models of community assessments are utilized. The accessibility of public domain data bases such as U.S. Census data is readily available for both practitioners and nursing students. Using readily accessible public domain data bases as an educational strategy could broaden students' understanding of the influence of demographic variables on communities.

Recommendations

Recommendations derived from the findings, conclusions, and implications of this study are presented. These recommendations are explicit with regard to nursing research, practice, and education.

Research

1. Replicate this study utilizing the GUCI California sample and 1980 Census data.

2. Refine the Mothers' Perceptions of Sources of Support to precisely measure social sources of support within the family and neighborhood.

3. Replicate this study utilizing the entire GUCI data set (both Alabama and California samples) to determine how environmental variables affect chronically ill children's perceptions of the environment.

4. Replicate this study utilizing the entire GUCI data set (both Alabama and California samples) to determine how

environmental variables, and mothers and chronically ill children's perceptions of the environment affect children's use of time out-of-school.

5. Utilize the GUCI data set with matched 1990 U.S. Census data bases to examine and identify environmental trends and explore relationships impacting on chronically ill children and families.

6. Conduct additional nursing studies using existing public domain data bases (e.g., U.S. Census data) matched with clinical nursing data bases.

7. Conduct additional nursing studies using secondary analysis as a research methodology.

Education

1. Disseminate the results of this study with nursing students who are learning about the care of chronically ill children and families.

2. Disseminate to nursing students the strategies of using public domain data bases (e.g., U.S. Census data) in assessing the environment of clients and thus, planning care for individuals and communities.

3. Disseminate the results of this study with nursing students who are acquiring knowledge about nursing research methodologies and nursing conceptual models. Introduce the use of secondary analysis and public domain data bases as a research methodology for nursing.

Practice

1. Utilize the findings of this study to develop nursing interventions to assist chronically ill children and families in their everyday lives.

2. Utilize the findings of this study to develop nursing interventions to assist mothers of chronically ill children to access resources within their own neighborhoods.

3. Utilize the findings of this study to develop a guide for using public domain data bases (e.g., U.S. Census data) in planning programs for chronically ill children and families.

Summary

Presented in this chapter is a discussion of the conclusions, implications, and recommendations generated by this study. The purpose of this study was to examine the interaction between selected environmental variables and mothers of chronically ill children's perceptions of the environment. Johnson's (1980) Behavioral Systems Nursing model was utilized to organize the phenomena of interest in this study. Relationships among the variables were hypothesized and tested, and several significant findings were demonstrated. Further research related to the influence of environmental variables on chronically ill children's and families' everyday lives is needed.

REFERENCES

American Academy of Pediatrics. (1982). Policy statement: The Doman-Delacato treatment of neurologically handicapped children. Pediatrics, 70, 810-902.

Anderson, J. (1981). The social constructions of illness experience: Families with a chronically ill child. Journal of Advanced Nursing, 6, 427-434.

Austin, J. (1990). Assessment of coping mechanisms used by parents and children with chronic illness. Maternal Child Nursing, 15, 98-102.

Baruch, G. K., Biener, L., & Barnett, R. C. (1987). Women and gender in research on work and family stress. American Psychologist, 42, 130-136.

Belle, D. (1982a). Social ties and social support. In D. Belle (Ed.), Lives in stress: Women and depression (pp. 254-273). Beverly Hills, CA: Sage.

Belle, D. E. (1982b). The impact of poverty on social networks and supports. Marriage and Family Review, 5, 89-103.

Booth, A. (1985). Quality of children's family interaction in relation to residential type and household crowding. In M. M. Bristol, (1983). Carolina Parent Support Scale. Unpublished manuscript, University of North Carolina at Chapel Hill, The Frank Porter Graham Child Development Center.

Bronfenbrenner, U. (1979). The ecology of human development. Cambridge, CT: Harvard University Press.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. Developmental Psychology, 22, 723-742.

Bronfenbrenner, U., Alvarez, W.F., & Henderson, C.R. (1984). Working and watching: Maternal employment status and parents' perceptions of their three-year-old children. Child Development, 55, 1362-1378.

Brown, G., Bhrolchain, M., & Harris, T. (1975). Social class and psychiatric disturbance among women in an urban population. Sociology, 9, 225-254.

Children's Defense Fund. (1990). America's children and their families. Washington, DC: Author.

Coates, G., & Bussard, E. (1974). Patterns of children's spatial behavior in a moderate-density housing develop-ment. In R.C. Moore (Ed.), Childhood city, man-environment interactions (Vol. 12, pp. 131-141). Milwaukee: EDRA.

Cochran, M.M., & Brassard, J.A. (1979). Child development and personal social networks. Child Development, 50, 601-616.

Cohen, J. (1977). Statistical power analysis for the behavioral sciences. New York: Academic Press.

Collins, A., & Pancoast, D. (1976). Natural helping networks. Washington, D.C.: National Association of Social Workers.

Daniels, D., & Moos, R.H. (1988). Exosystem influences on family and child functioning. Journal of Social Behavior and Personality, 3, 113-133.

Daniels, D., Moos, R., Billings, A. G., & Miller, J. J. (1987). Psychosoical risk and resistance factors among children with chronic illness, healthy siblings, and healthy controls. Journal of Abnormal Child Psychology, 15, 295-308.

Dunlop, W., & Hollingsworth, J. (1977). How does a handicapped child affect the family? Implications for practitioners. The Family Coordinator, 26, 286-293.

Garbarino, J. (1976). A preliminary study of some ecological correlates of child abuse: The impact of socioeconomic stress on mothers. Child Development, 47, 178-185.

Garbarino, J., & Sherman, D. (1980). High-risk neighbor-hoods and high-risk families: The human ecology of child maltreatment. Child Development, 51, 188-198.

Grubbs, J.(1980). An intrepretation of the Johnson behavioral system model. In J.P. Riehl & C. Roy (Eds.), Conceptual models for nursing practice. New York: Appleton-Century-Crofts.

Haggerty, R. (1984). Chronic disease in children. Pediatric Clinics of North America, 31, 1-36.

Hart, R. (1977). Children's experience of place. New York: Irvington Place.

Hobbs, N., & Perrin, J. (1985). Issues in the care of children with chronic illness. San Francisco: Jossey-Bass.

Hobbs, N., Perrin, J., & Ireys, H. T. (1985). Chronically ill children and their families. San Francisco: Jossey-Bass.

Hochschild, A. (1989). The second shift. New York: Viking Press.

Holaday, B. (1978). Parenting the chronically ill child. In P. Brandt, P. Chinn, and V. Hung (Ed.), Current practice in pediatric nursing (pp. 101-102). St Louis: C.V. Mosby.

Holaday, B., & Turner-Henson, A. (1991). Growing up and going out: A survey of chronically ill children's use of time out-of-school. (Final report of project supported by Grant Number MCJ 060550, Maternal and Child Health Prog-ram [Title V, Social Security Act, Health Resources and Services Administration, Department of Human Services]).

Holaday, B., Turner-Henson, A., & Swan, J.H. (1991). Stability of children's survey responses. Image: The Journal of Nursing Scholarship, 23, 109-114.

Homel, R., & Burns, A. (1989). Environmental quality and the wellbeing of children. Social Indicators Research, 21, 133-158.

Horner, M. M., Rawlins, P., & Giles, K. (1987). How parents of children with chronic conditions perceive their own needs. Maternal Child Nursing, 12, 40-43.

Hyman, H. H. (1972). Secondary analysis of sample surveys: Principles, procedures, and potentialities. New York: John Wiley & Sons.

Jacob, H. (1984). Using published data: Errors and remedies. Beverly Hills, CA: Sage Publications.

Jessop, D. J., Riesmann, C. K., & Stein, R. E. K. (1988). Chronic childhood illness and maternal mental health. Journal of Developmental and Behavioral Pediatrics, 9, 147-156.

Johnson, D. (1980). The behavioral system model for nursing. In J.P. Riehl & S.C. Roy (Eds.), Conceptual models for nursing practice (2nd ed.). New York: Appleton-Century-Crofts.

Johnson, D. (1989). The behavioral system model for nursing. In M. E. Parker (Ed.), Nursing theories in practice. New York: National League for Nursing.

Kazak, A. E., & Marvin, R. S. (1984). Differences, difficulties and adaptation: Stress and social networks in families with a handicapped child. Family Relations, 33, 67-77.

Kessler, R. C., & McCrae, J. A. (1982). The effects of wives' employment on the mental health of men and women. American Sociological Review, 47, 216-227.

Kiecolt, K. J., & Nathan, L. E. (1985). Secondary analysis of survey data. Beverly Hills, CA: Sage Publications.

Kish, L. (1965). Survey sampling. New York: Wiley.

Klineberg, O. (1935). Negro intelligence in selective migration. New York: Columbia University Press.

Klineberg, O. (1938). The intelligence of migrants. American Sociological Review, 3, 218-224.

Koop, C. (1983). The surgeon general's workshop on children with handicaps and their families. Clinical Pediatrics, 22, 567-571.

Lawson, B. (1977). Chronic illness in the school age child: Effects on the total family. Maternal Child Nursing, 2, 49-56.

Liem, R., & Liem, J. (1978). Social class and mental illness reconsidered: The role of economic stress and social support. Journal of Health and Social Behavior, 19, 139-156.

Loveland-Cherry, C.J., & Wilkerson, S.A. (1989). Dorothy Johnson's behavioral system model. In J.J. Fitzpatrick & A.L. Whall (Eds.), Conceptual models of nursing: Analysis and application (2nd ed.). Norwalk, CT: Appleton & Lange.

Lucca, J., & Settles, B. (1981). Effects of children's disabilities on parental time use. Physical Therapy, 61, 196-201.

Marcenko, M.O., & Meyers, J.C. (1991). Mothers of children with developmental disabilities: Who shares the burden? Family Relations, 40, 186-190.

Mayo, L. (1965). Problem and challenge: Guides to action on chronic illnesses. New York: National Health.

McAllister, R. J., Butler, E. W., & Lei, T. J. (1973). Patterns of social interactions among families of behaviorally retarded children. Journal of Marriage and Family, 35, 93-100.

McArt, E. W., & McDougal, L. W. (1985). Secondary data analysis: A new approach to nursing research. Image, 18, 54-57.

Medrich, E. A., Roizen, J. A., Rubin, V., & Buckley, S. (1982). The serious business of growing up: A study of children's lives outside school. Berkeley, CA: University of California Press.

Payne, R. J., & Jones, D. R. W. (1977). Children's urban landscapes in Huntington Hills, Calgary. In P. Suedfeld & J.A. Russel (Eds.), EDRA 7: The behavioral basis of design, Book 2. Stroudsberg, PA: Dowden, Hutchinson, & Ross.

Perrin, E. C., & Gerrity, P. S. (1984). Development of children with a chronic illness. Pediatric Clinics of North America, 31, 19-31.

Pleck, J.H., & Stain, G.L. (1982). Work schedules and work-family conflict in two-earner couples. In J. Aldous (Ed.), Two paychecks: Life in dual-earner families (pp. 138-152). Beverly Hills, CA: Sage.

Polansky, N. (1985). Determinants of loneliness among neglectful and other low-income mothers. Journal of Social Service Research, 8, 1-15.

Polansky, N.A., Gaudin, J.M., Ammons, P.W., & Davis, K.B. (1985). The psychological ecology of the neglectful mother. Child Abuse & Neglect, 9, 265-275.

Polit, D., & Hungler, B. (1983). Nursing research: Principles and methods (2nd ed.). Philadelphia, PA: J.B. Lippincott.

Reppetti, R.L. (1987). Linkages between work and family roles. In S. Oskamp (Ed.), Family processes and problems: Social psychological aspects (pp. 98-127). Newbury Park, NJ: Sage.

Rutenfranz, J., Anderson, K.L., Seliger, V., & Masironi, R. (1982). Health standards in terms of exercise fitness of school children in urban and rural areas in various European countries. Annals of Clinical Research, 34, 33-36.

Schlomann, P. (1988). Developmental gaps of children with a chronic condition and their impact on the family. Journal of Pediatric Nursing, 3, 180-187.

Stein, R.E.K. (1986). Promoting communication between health care providers and educators of chronically ill children. Topics in Early Childhood Special Education, 5, 70-81.

Stein, R.E.K., & Jessop, D.J. (1982). A noncategorical approach to chronic illness. Public Health Reports, 97, 355-362.

Strauss, M. (1980). Social stress and marital violence in a national sample of American families. Annals of the New York Academy of Sciences, 347, 229-250.

Turner-Henson, A. (1990). Growing up chronically ill: A survey of chronically ill children's use of time out-of-school. (Final grant report prepared for Grant Number NR01374, National Center for Nursing Research, National Institutes of Health).

Turner-Henson, A., Holaday, B., O'Sullivan, P. (in press). Sampling rare pediatric populations. Pediatric Nursing.

U. S. Bureau of the Census. (1980). U. S. Census block and tract data. Washington, D.C.: US Government Printing Office.

U.S. Bureau of the Census (1989a). Household and family characteristics: March 1988. Current Population Reports (Series P-20, No. 437). Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census (1989b). Marital status and living arrangements: March 1988. Current Population Reports (Series P-20, No. 433). Washington, DC: U.S. Government Printing Office.

U.S. Department of Labor (1984). Facts on women workers. Washington, DC: U.S. Government Printing Office.

Vatter, M. (1981). Intelligenz und regionale Herkunft. Eine Langaschnittstudie im Kanton Bern. In A.H. Walter (Ed.), Region und Sozialisation (Vol. I, pp. 56-91). Stuttgart: Frommann-Holzboog.

Walker, D.K., Epstein, S.G., Taylor, A.B., Crocker, A.C., & Tuttle, G.A. (1989). Perceived needs of families with children who have chronic health conditions. Children's Health Care, 18, 196-201.

Wesolowski, C. (1988). Self contracts for chronically ill children. MCN, 13, 20-23.

Wheeler, L.R. (1942). A comparative study of the intelligence of East Tennessee mountain children. Journal of Educational Psychology, 33, 321-334.

Yoos, L. (1987). Cognitive development and the chronically ill child. Pediatric Nursing, 14, 375-378.

APPENDIX A

Human Subject's Approval

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
Office of the Institutional Review Board for Human Use

FORM 4: IDENTIFICATION AND CERTIFICATION OF RESEARCH PROJECTS INVOLVING HUMAN SUBJECTS

THE INSTITUTIONAL REVIEW BOARD (IRB) MUST COMPLETE THIS FORM FOR ALL APPLICATIONS FOR RESEARCH AND TRAINING GRANTS, PROGRAM PROJECT AND CENTER GRANTS, DEMONSTRATION GRANTS, FELLOWSHIPS, TRAINEESHIPS, AWARDS, AND OTHER PROPOSALS WHICH MIGHT INVOLVE THE USE OF HUMAN RESEARCH SUBJECTS INDEPENDENT OF SOURCE OF FUNDING.

THIS FORM DOES NOT APPLY TO APPLICATIONS FOR GRANTS LIMITED TO THE SUPPORT OF CONSTRUCTION, ALTERATIONS AND RENOVATIONS, OR RESEARCH RESOURCES.

PRINCIPAL INVESTIGATOR: Anne Turner-Henson

PROJECT TITLE: Chronically Ill School-Age Children's Mother's Perceptions of the Environment as Influenced by Selected Environmental Factors

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____1. THIS IS A TRAINING GRANT. EACH RESEARCH PROJECT INVOLVING HUMAN SUBJECTS PROPOSED BY TRAINEES MUST BE REVIEWED SEPARATELY BY THE INSTITUTIONAL REVIEW BOARD (IRB).

____2. THIS APPLICATION INCLUDES RESEARCH INVOLVING HUMAN SUBJECTS. THE IRB HAS REVIEWED AND APPROVED THIS APPLICATION ON _____ IN ACCORDANCE WITH UAB'S ASSURANCE APPROVED BY THE UNITED STATES PUBLIC HEALTH SERVICE. THE PROJECT WILL BE SUBJECT TO ANNUAL CONTINUING REVIEW AS PROVIDED IN THAT ASSURANCE.

_____ THIS PROJECT RECEIVED EXPEDITED REVIEW.

_____ THIS PROJECT RECEIVED FULL BOARD REVIEW.

____3. THIS APPLICATION MAY INCLUDE RESEARCH INVOLVING HUMAN SUBJECTS. REVIEW IS PENDING BY THE IRB AS PROVIDED BY UAB'S ASSURANCE. COMPLETION OF REVIEW WILL BE CERTIFIED BY ISSUANCE OF ANOTHER FORM 4 AS SOON AS POSSIBLE.

X 4. EXEMPTION IS APPROVED BASED ON EXEMPTION CATEGORY NUMBER(S) 4 .

DATE: 9-6-91

Russell Cunningham, MD

RUSSELL CUNNINGHAM, M.D.
INTERIM CHAIRMAN OF THE
INSTITUTIONAL REVIEW BOARD

The University of Alabama at Birmingham
212 Mortimer Jordan Hall • 1825 University Boulevard • UAB Station
Birmingham, Alabama 35294-2010 • (205) 934-3789 • FAX (205) 934-7841

APPENDIX B

Permission to Use GUCI Data Set

Vanderbilt University Medical Center

School of Nursing

Godchaux Hall
Nashville, TN 37240-0008
Telephone (615) 322-4400
FAX (615) 343-7711

August 1, 1991

Anne Turner-Henson RN, M.N.
749 Shades Crest Road
Birmingham, AL 35226

Dear Anne,

I grant you permission to use the data set from the study, "Growing Up Chronically Ill: A Survey of Chronically Ill Children's Use of Time Out-of-School." I understand that this data will be used to conduct a secondary analysis for your dissertation, and that you will be only using the Alabama portion of the data set.

If you have any questions regarding this data set please call (615-343-3292).

Sincerely,

Bonnie Holaday

Bonnie Holaday RN, D.N.S.
Associate Professor

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Anne Turner-Henson

Major Subject Community Mental Health Nursing

Title of Dissertation Chronically Ill Children's Mothers' Perceptions of Environmental Variables

Dissertation Committee:

Ann J. Clark, Chairman
Delois H. Skipwith
Charlene McKay
Kathryn Gnmerson
Patricia [illegible]
Gypsy Abbott
Bonnie Holaday RN, DNS

Director of Graduate Program E. Stullenbarger

Dean, UAB Graduate School W. A. Bible

Date

PS-1478