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A Q-Analysis Of The Self-Care Abilities Of Young, Schoolaged Children.

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A Q-ANALYSIS OF THE SELF-CARE ABILITIES OF YOUNG, SCHOOLAGED CHILDREN

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A Q-Analysis of the Self-Care Abilities of Young, Schoolaged Children

by

Norma Elizabeth Stullenbarger

A DISSERTATION

Submitted in partial fulfillment of the requirements for
the degree of Doctor of Science in Nursing in the
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ABSTRACT OF DISSERTATION
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Nurses have need for information regarding the health-related self-care abilities of children in order to provide guidance with health maintenance and health promotion activities. However, no specific measures exist that describe the self-care abilities of children.

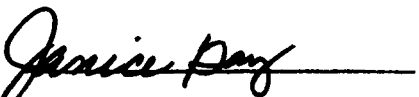
The purpose of this study was to describe the self-care abilities of young, schoolaged children. This objective was accomplished through the development and administration of a 60 item pictorial Q-sort instrument. The conceptual framework was derived from Orem's (1980) Self-Care Deficit Theory of Nursing, developmental theory, Q methodology, and primary grades health education.

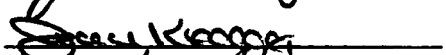
Content validity was established through use of expert judges in the areas of Orem's theory, child development, and health education. Initial reliability was determined by the test-retest method with 12 subjects. The method for instructing children on the sort procedure was piloted on 18 subjects.

The final Q-sort was administered to 36 subjects: 18 second-graders and 18 third-graders. A Q-type factor analysis of the data identified 3 person types. The subjects' assignment to types was influenced by gender and by responses to items in the Q-sort instrument. This later

conclusion was affirmed by the results of the analysis of variance procedures on each subject's sort. Overall, the sorts of 31 subjects were significant beyond the .01 level. Post hoc procedures demonstrated different response patterns for the person types. These results were further affirmed by one-tailed tests of significance on the Typal Z scores in each person types Factor Array. Type 1 and Type 2 persons were described by positive responses while Type 3 persons were characterized by negative responses. Thirty-one subjects demonstrated reliability: 18 third-graders and 13 second-graders. Criterion validity was assessed, but not established for the Q-sort.

It was recommended that the influence of age, race, gender, and developmental status on self-care abilities be studied. Since subjects adapted readily to Q technique, it was recommended that use of the methodology be extended with children. Further, the development of approaches to include children in health care were advocated. Finally, use of this Q-sort instrument with other populations of children was recommended.

Abstract Approved by: Committee Chairman 

Program Director 

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CHAPTER I

Introduction

There is increasing national and even international interest in the problems of "primary prevention, health education, self-care etc." (Milio, 1976, p. 435). This phenomenon has occurred in part because of studies that indicate the historic and contemporary limitations of medical care for improving health (Levin, 1977). Further, human behavior is recognized as a critical variable in health status.

Self-care, both as a consumer movement and a concept in the design of future health-care systems is addressed in the literature (Levin, 1976, 1978; Milio, 1977; Norris, 1979; Williams, 1980). The meager data regarding extant self-care practices has been noted (Levin, 1976, cited by Denyes, 1980). The report from an international conference on primary care suggested the need for research toward compilation of a data base describing existing self-care practices. The final point from the research priority recommendation noted: "Childhood is probably where we should begin; . . . testing innovative approaches aimed at strengthening the child's self-perception as a competent health decision-maker . . ." (p. 6).

Although exploration of self-care in the pediatric literature is sparse, there is some evidence to suggest that children are capable of self-care behaviors. Research concerning health decision-making indicated that children as young as five were able to participate actively in health care (Lewis, 1974; Lewis, Lewis, Loremer, & Palmer, 1977). Lewis

et al. (1977) suggested the need to educate children to more appropriate use of health resources. Bruhn and Cordova (1977) advocated learning health-related skills within the framework of the psychosocial developmental stages. Igoe (1980) described how children aged 6 to 15 modeled assertive health behaviors as a result of planned learning experiences. Williams (1980) advocated a self-care approach with children having chronic illnesses.

The importance of viewing the child as an active learner and participant in the process of managing self-care has been noted. Information regarding the abilities of children at specific developmental stages to engage in self-care has import for the nurse concerned with child health care. Potential areas of use for such information would be the provision of guidance for health maintenance, health promotion, and for self-management in chronic illness states.

In the nursing domain, the self-care concept is addressed by Orem's (1980) Self-Care Deficit Theory of Nursing. Within Orem's framework, the person's total capability for self-care behavior is represented by the construct, self-care agency. Orem (1979) identified the power component of self-care agency as containing prerequisite abilities needed for the performance of self-care behaviors. The power component or enabling abilities for self-care action has been investigated by nurse researchers. Denyes (1980) reported a measure to assess the power component in adolescents. Kearney and Fleischer (1979) developed an instrument to measure the exercise of self-care agency in the adult. However, no specific measures exist to assess the ability of children to participate in self-care management. Since the value of including children as active participants in their health care has been acknowledged, assessment tools

must be developed. Therefore, the purpose of this study will be the development of an instrument to describe the self-care abilities of young, schoolaged children.

Significance of the Problem

Care of self has been characterized as an extant attribute of all cultures (Levin, 1977). Recent studies, as cited by Levin, established that from 75 to 80% of all health and medical care is self-provided. Up to 90% of these self-care measures were judged relevant and appropriate for maintaining health. Knowles (1977) suggested that the consumer is the best resource for health-care systems of the future. He asserted that "the next advance in health-care will come from the assumption of individual responsibility for one's own health" (p. 11).

Presently, reserach regarding the efficacy of self-care programs is meager. In a survey of 15 research and demonstration projects in self-care, Green, Werlin, Schaeffer, & Avery (1977) concluded that little formal evlauation had taken place. However, some data about the self-care approach are available. Results from self-care programs designed for clients with both acute and chronic health problems reported considerable financial savings (Green et al., 1977; Zapka & Averill, 1979). High client satisfaction is reported as an outcome of self-care education programs (Brock, 1978; Goodwin, 1979; Irish & Taylor, 1980). Further self-efficacy (self-appraisal of abilities) is identified as a potential determinant of health behavior. Bandura (1982) suggested that self-percepts of efficacy are useful for prediction of individual success in certain kinds of treatment programs.

The previous data suggest the desirability for collaborative efforts between health professionals and consumers in the design of future

health-care systems. Efforts to implement a self-care approach are seen for adults, but little is reported in relation to children. Both Levin (1976) and Norris (1979) cited the need for self-care and health education for school children. Before such programs are designed, children's existing self-care abilities must be described.

Study Question

Using the construct of self-care agency from Orem's Self-Care Deficit Theory of Nursing, what are the self-care abilities of young, schoolaged children?

Definition of Terms

For the purpose of this study, the following definitions apply.

Young, schoolaged children - (Theoretical) Children who are regularly enrolled in the second or third grade of elementary school. (Operational) Children, between 7 and 9 years of age, who are regularly enrolled in the second or third grade of elementary school.

Self-care - (Theoretical) Care of self through behaviors which contribute to the maintenance and promotion of health. These behaviors may be learned informally as a result of socialization and formally through organized educational efforts. (Operational) Children's responses regarding care of self on a Q-Sort instrument constructed to reflect the development status of self-care behaviors and antecedent abilities.

Self-care abilities - (Theoretical) Enabling characteristics which underlie the performance of self-care. These characteristics have cognitive, affective, psychosocial and physical components. Also termed the power of self-care agency. (Operational) Antecedent characteristics inferred from children's responses on a Q-Sort instrument.

Conceptual Framework

The nature of self-care abilities in young, schoolaged children were developed through a framework from Orem's and the Nursing Development Conference Group's (1979) structural analysis of self-care agency. Since these authors' writings focus on the adult, the framework was enriched through the works of selected developmental theorists. Further, since self-care agency refers to deliberate actions taken by people to meet demands for care (Orem, 1980), a content description of self-care behaviors and a methodology to sample action was needed. The former condition was met through use of literature regarding the desired health behavioral characteristics of children. Stephenson's (1953) Q methodology was used to sample action behaviors.

Orem and the Nursing Development Conference Group (NDCG) affirmed the need to derive knowledge about human functioning as related to self-care agency from a variety of resources. Additionally, nursing investigators who employed Orem's framework with children (Denyes, 1980; Eichelberger, Kaufman, Rundahl, & Schwartz, 1980; Facteau, 1980) advocated deriving the foundational characteristics of self-care abilities from the developmental literature. Similarly, the use of literature which describes desirable health behaviors in children and the use of Q methodology was considered essential. Although Orem identified a set of ideal self-care actions, these actions were not particularized for children. Q methodology as an approach which considers "the total person in action" (Stephenson, 1953, p. 4) was consistent with the notion of self-care agency as an action concept.

A brief overview of these four areas used to describe self-care abilities is presented. Each of these areas was further developed in a subsequent section of this paper, culminating in a design to assess self-care abilities.

Self-Care Agency

The self-care agency construct represents the individual's total capacity for self-care action. Conduct required of the person to perform the self-care agency function presupposes a broad range of interactive cognitive, affective, psychosocial, and physical abilities. These abilities are directed toward identifying the demand for self-care and taking action to meet or reduce demands for care. Self-care agency is further characterized as having both form and content. The form of self-care agency is a tri-level structure consisting of human agency, self-care abilities, and self-care operations. The content of self-care agency consists of the three categories of self-care requisites which make up the therapeutic self-care demand (Orem, 1980).

Human agency represents the individual's total capabilities for conscious action. Five sets of basic capabilities and dispositions are identified as the genesis of self-care and other forms of agency. Relating these characteristics to the self-care abilities was suggested as an approach to building a body of knowledge about self-care agency (Orem, 1979). From a diagnostic perspective, these attributes of human agency are considered etiologic to the qualitative and quantitative characteristics of self-care agency.

Self-care abilities are identified as the actual beginning of self-care agency. This component consists of 10 presumptive abilities an individual must possess in order to engage in effective self-care. These

abilities are developed over time by the spontaneous process of learning, by instruction and supervision from others, and by experience in performing self-care measures (Orem, 1980). Orem asserted that:

> Self-care agency when conceptualized as a human power is constituted from or associated with distinct abilities that are empowering for engagement in the estimative, transitional and productive self-care operations, and therefore have existence prior to an individual's engagement in these operations. (1979, p. 194)

The self-care operations describe the actual production of self-care behaviors. These operations occur in a three stage sequence: estimative, transitional, and productive. The product of these self-care operations is the person's self-care behavioral system. Various elements of the abilities component are assumed to interact with the three stages of self-care operations (Orem, 1979). Further, the content of these operations is directed toward meeting the therapeutic self-care demand in one or a combination of its three specified categories of self-care requisites. Thus, self-care agency as a concrete referent is observed in relation to the person taking action to meet actual requirements for self-care.

Developmental Theory

In order to build a theoretical description of the self-care abilities of young children, their human agency characteristics must be described. These attributes were developed by consideration of characteristic behavior in each of the four major developmental domains: cognitive, affective-moral, psychosocial, and physical. These derived characteristics were related to the 10 elements of the self-care abilities. Since children are not assumed to have fully-developed agency (Orem, 1980), stage specific developmental progress was described.

Identified literature related to children's health behavior was used to support the establishment of these abilities.

The works of several developmental theorists and psychologists were used to describe the acquisition of characteristics necessary for the development of self-care abilities. The writings of Gesell, Ilg, and Ames (1978) provided a comprehensive description of the maturity traits and growth gradients in 10 major areas of behavior. The work of Piaget (1965, 1966, 1972, 1981) and several developmental psychologists who employed a Piagetian framework (Cowan, 1978; Elkind, 1978; Ginsberg & Opper, 1969; Kagan, 1971; Mussen, Conger, & Kagan, 1969) were used to develop descriptions in the cognitive and affective-moral domains.

Gesell and his colleagues are credited as major contributors to the task of ordering and describing child behavior (Thomas, 1979). Their writings are suggested to represent the most comprehensive, detailed descriptions of the behavior of the "average child" at a given age. Piaget (1966, 1981) described reference points or phases exhibited by children in their progress toward attainment of mature thought and affective expression. Each phase reflects a range of sequential organizational patterns which occur within an approximate age span (Maier, 1969). The potential capacity and probable level of behavior of children was described in each phase.

Health Education

The literature in health education was used to provide a content description of self-care agency. The content of self-care agency was identified as the three types of self-care requisites which make up the therapeutic self-care demand. It was stated elsewhere that self-care agency, including self-care abilities, is observed in relation to the

person meeting the demand for care of self. Orem (1979) stated: "The exercise by an individual of the power that is named self-care agency results in a system of actions directed to reality conditions in the environment in order to regulate them" (p. 183). Of the three types of requisites identified, the universal requisites were considered the most basic. These requisites are related to the demands for self-care which are common to all people in order to sustain life, health, and well-being. Orem (1980) identified six universal self-care requisites and delineated an ideal set of actions to accompany them. These actions were used to establish the referent items for self-care abilities.

Since the actual self-care abilities of children have not been described, the choice of a reference base was necessary. The literature in health education, specifically the writings of Ames, 1982; Bruess and Gay, 1978; Burt, Meeks, and Pottlebaum, 1980; Hoyman, 1977; Middleton, 1982; and The National Center for Health Education, 1981 provided an appropriate resource. While advocating different conceptual approaches to health education, these curricular experts described similar patterns of knowledge, practices, and skills children should possess. The recommendations of these experts were used in concert with Orem's ideal set of actions to develop items which describe self-care abilities.

Q Methodology

Since action occupies a central position in Orem's conception of self-care agency, a methodology was needed which addressed the person-in-action frame of reference. Q methodology was asserted by its developer, Stephenson (1953), to be such a methodology. Q is a general name for a group of philosophical, psychological, and psychometric ideas oriented to

research on the individual (Kerlinger, 1973). Central to Stephenson's position is the greater importance of making comparisons among different responses within persons than between persons.

Stephenson characterized his methodology as addressing "the total person in action" (1953, p. 4). He further asserts that in Q "(Man) is at issue as a total thinking and behaving being" (p. 7). Thus, inner experience and observable behavior are seen as like matters for objective operational definition and study. The objective explication of behavior is accomplished through a group of procedures known as Q technique. It centers in sorting decks of cards called Q-sorts and in the correlation among different individuals to the Q-sorts (Kerlinger, 1973).

A number of sources (Cronback, 1970; Kerlinger, 1972, 1973; Nunnally, 1978) cite the power and value of Q methodology for obtaining complex descriptions within individuals. The correlative nature of Q makes possible the comparison of whole sets of scores among individuals. Rather than obtaining an absolute score (as with normative methods) for each person, a relative score for each stimuli or content item is derived. Thus, all possible degrees of relationship within persons relative to the items in question are assessed.

Jackson and Bidwell (1959) concur as to the value of Q for the description of patterns of relationship among traits within people. They further emphasize, as did Stephenson, that the methodology's greatest strength lies in building theory into the Q-sort. Stephenson asserted that theory is the raison d'e tre for Q from the initial specification of items to analyses of the results.

A methodology which considers the interactive pattern of relationship among traits was seen as appropriate for the investigation of self-care abilities in children. The relationship among the structural elements of self-care agency and the components of self-care abilities has not been specified by Orem (1979). Q's value to this investigation is heuristic and descriptive as an initial step in building a description of the self-care abilities of children.

Assumptions

For the purpose of this study the following assumptions were made:

1. Children at various stages of growth and development are capable of self-care behaviors.

2. Developmental stage-related characteristics and skills of children can be described in relation to self-care action.

Limitations

For the purpose of this study the following limitation was identified:

1. The presence of self-care agency as a human attribute has not been empirically verified.

CHAPTER II

Review of the Literature

Development of the Self-Care Concept

Although the efforts of Greet et al. (1977), Levin (1976, 1977, 1978), and Milio (1976) recently brought the self-care concept into greater prominence, nursing has long been concerned with health and health practices. In 1859 Nightingale identified nursing's function as "to put the patient in the best condition for nature to act upon him" (cited in Orem, 1979, p. 62). Norris (1979) credits public health nursing with originating the self-care concept early in the twentieth century. She depicted nursing as the first profession to recognize the importance of client responsibility for health status.

Henderson (cited in Harmer & Henderson, 1960) developed the forerunner of the present definition of nursing's role in self-care:

> The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities concributing to health or its recovery (or to a peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge. It is likewise (her) function to help the individual gain independence as rapidly as possible. (p. 4)

However, it was not until the 1959 publication of Orem's definition that self-care became a central concept in nursing (Calley, Dirksen, Engalla, & Hennrich, 1980). Nursing was defined as giving direct assistance to people due to their inabilities in self-care resulting from a situation of personal health. Requirements for nursing are modified and eventually

eliminated when there is a favorable change in the individual's health status (Orem, 1979). Orem and the Nursing Development Conference Group (NDCG) continued to develop and refine the concept of self-care culminating in recent publications, 1979 and 1980.

The concept of self-care is manifested as a result of the relationship between two constructs in Orem's (1980) framework: self-care agency and therapeutic self-care demand. Self-care agency is the total abilities of the person to take action in meeting self-care requisites. Therapeutic self-care demand represents the sum total of self-care actions to be performed in order to meet known self-care requisites. If the demand for self-care action is greater, qualitatively or quantitatively, than the abilities of the person to meet the demand, a self-care deficit exists.

Orem asserted that nursing is a legitimate service to people in the presence of a deficit relationship between self-care agency and therapeutic self-care demand. Nursing actions in the presence of a deficit state are delineated as follows:

1. Determining the quality and quantity of the self-care demand with the client in relation to his or her current health status.

2. Assessing the ability of the client's self-care agency to meet the demands.

3. Identifying the degree and type of self-care deficits which exist (actual or potential).

4. Designing a plan of care which moves the client in the direction of self-care (Orem, 1980).

The value of the self-care concept is seen in the number of publications resulting from its use in nursing practice. Several nurses have

successfully implemented Orem's self-care concept in the ambulatory care setting (Allison, 1973; Backscheider, 1974; Crewe, 1972; Nowakowski, 1980; Williams, 1980). Joseph (1980) demonstrated the use of the self-care concept within the steps of the nursing process. Application of the self-care concept is concluded as appropriate to the care of hospitalized clients (Anna, Christenson, Hahon, Ord, & Wells, 1978; Bromley, 1980; Marten, 1978; Mullen, 1980). Further, the self-care concept was used to develop client instructional materials (Brock, 1978; Goodwin, 1979), and as a focus for nursing curricula (Fenner, 1979; Piemme & Trainor, 1977).

Self-Care Agency

Published research regarding the self-care agency construct is limited. Three articles were identified from the literature review. These articles are discussed chronologically as to their contribution to a knowledge base about self-care agency. Further, no published research was identified in relation to children's self-care agency. Two publications suggested that children are capable of exhibiting self-care agency. These authors' ideas are presented as support for the present investigation.

Backscheider (1974) reported the earliest published account of an investigation involving self-care agency. Her work focused on the action capabilities needed to manage the treatment regime in diabetes mellitus. Action capabilities were identified as a component of self-care agency. Specific capabilities identified by Backscheider appeared in the later publication by Orem and the NDCG (1979) as both human agency capabilities and dispositions and elements of the power component (self-care abilities) of self-care agency. Additionally, a posthumous account of Backscheider's development of the knowing and doing capabilities of human agency is

presented in the 1979 publication. Backscheider was reported as drawing from the writings of Bruner and Piaget in developing the cognitive aspects of agency.

Kearney and Fleischer (1979) reported the development of an instrument to assess the client's perception of the exercise of self-care agency or self-appraisal of self-care action. For the purpose of instrument construction, these authors conceived "exercise of self-care agency" to be a dispositional trait which could be sampled via self-report. Operationally, the construct was defined by four dimensions: an active versus passive response to situations, individual motivation, knowledge base, and personal sense of self-worth. Indicants which further defined these four dimensions and served as a basis for item construction were: responsible for self, ability to apply knowledge to self-care, health priorities, and self esteem.

Establishment of construct validity was the focus of these investigators' efforts. Several hypotheses were tested regarding the relationship among self-care agency and two established measures, Rotter's Internal-External Locus of Control Scale and Gough and Heilbrun's Adjective Check List. Significant positive correlations were obtained between the tool and three subscales of the Adjective Check List: confidence, achievement, and intraception. An expected negative correlation was obtained between the tool and the abasement subscale of the check list. No association was found between the instrument and the Rotter Scale. Thus, partial support was found for Kearney and Fleischer's conceptualization of the exercise of self-care agency as representative of positive goal-directed action. Support was not obtained for the hypothesis that positive self-care action required an internal locus of reinforcement.

Denyes (1980) reported an instrument to measure the power component (self-care abilities) of self-care agency in adolescents. This investigator used the major developmental domains as a basis for deriving potential self-care strengths and limitations related to the power component. These strengths and limitations were used as a content base for instrument construction. R-Factor Analysis of the Denyes tool yielded six interpretable factors labeled by the author as follows: (a) Ego-strength and health decision-making, (b) relative valuing of health, (c) health knowledge and decision-making experience, (d) physical energy levels, (e) feelings, and (f) attention to health. Significant positive correlations were reported among the six self-care agency factors and measures of self-care practices and health status.

Since the 1979 publication by Orem and the NDCG appeared in print before the Denyes' study was completed, the investigator compared her results with the published findings. Denyes noted considerable congruence with the exception of items which specifically addressed physical capabilities in her instrument. She suggested the most crucial difference lay in the area of ego strength and health values. Items related to positive feelings about one's self, one's body, and one's accomplishments as well as items related to valuing health were major contributors to the self-care agency factor solution in her research. In Orem's writings these aspects are addressed in the capabilities and dispositions foundational to self-care agency rather than as part of the power component. Denyes suggested that in subsequent investigations of self-care agency

it may prove fruitful to "explore the usefulness (or lack thereof) of separating capabilities and dispositions foundational to self-care agency from the power component" (p. 77).

Similarities and differences in approach are noted in the three accounts of self-care agency research. Backscheider's (1974) approach focused on definition of the underlying action capabilities needed to meet specific requisites related to the therapeutic self-care demand in diabetes mellitus. The influence of her conceptualization of self-care agency is seen in the later published work of Orem and the NDCG (1979). Her work suggested the tri-level structure of self-care agency with the foundational level supporting the emergence of specific self-care abilities or power.

Kearney and Fleischer (1979) and Denyes (1980) both appeared to focus on the self-appraisal of capability for action through consideration of underlying personal traits. Kearney and Fleischer's format consisted of the conception of human dimensions, identification of observed indicants, and derivation of content items related to the indicants. Their items sampled the feeling state of the person in relation to meeting personal health requirements. Denyes reported directly sampling the power component through derivation of self-care strengths and limitations from the developmental domains. Denyes carried the analysis of self-care agency a step beyond the Kearney and Fleischer investigation. In addition to pursuing the establishment of validity and reliability for the instrument, Denyes examined the relationship among her items and reported health measures: Brunswick's (1976) Health Status Measure and Belloc and Breslow's (1972) Personal Health Practice Items (cited in Denyes, 1979). Although these latter two activities were

accomplished within the framework of construct validation, their inclusion acknowledged the importance of self-care requisites in relation to agency.

Of the three accounts, only Bachscheider (1974) reported direct consideration of the therapeutic self-care demand toward derivation of underlying capabilities. This approach is seen as consistent with Orem's (1980) account of the purposeful nature of self-care action. The action system of self-care agency is directed toward meeting the demand for care manifested through one or more categories of the therapeutic self-care demand. The structural approach to the analysis of self-care agency and consideration of self-care agency content via the therapeutic self-care demand is the approach taken in this investigation. Additionally, as children's self-care abilities are not specified in relation to developmental status, consideration of human agency characteristics may yield important baseline information.

Although most of the published accounts of self-care agency focused on adults, there is evidence of interest among nurses caring for children. Facteau (1980) discussed the development of self-care abilities in children. This author suggested that the potential for self-care agency was operant at birth and developed throughout childhood. The child was characterized as exhibiting specific abilities and potentials for self-care management at each developmental stage. Eichelberger et al. (1980) concluded that children as well as adults have the ability to engage in self-care. The development of self-care agency was seen as an incremental process. These authors further suggested that because children are viewed as dependents, their self-care abilities may go unnoticed or perceived as insignificant.

Orem's framework does not explicitly recognize children as self-care agents. Infants and children through adolescence are said to require care or assistance as a result of their stage of development (Orem, 1980). The provider of care for the child is referred to as the dependent-care agent. It might be concluded from these statements that the self-care agency of the child is undeveloped.

Examination of Orem's work partially refutes this view. Self-care is characterized as learned according to the beliefs, habits, and practices that reflect the culture to which a person belongs. Further, the learning process is characterized by the gradual development of a repertoire of self-care practices and skills. Orem (1980) indicated that "children are helped to develop images of themselves as responsible self-care agents by gradually learning to perform care measures through which self-care requisites are met" (p. 70).

Age and developmental status are identified as two of the basic patient variables that condition the value of both the self-care agency and the therapeutic self-care demand (Orem, 1979). While noted to be important, the contribution of these variables is relatively unexplored. Since children are characterized as exhibiting capability for self-care (Eichelberger et al., 1980; Facteau, 1980), it is important to explore their potential for self-care management.

Research related to building a knowledge base about self-care agency was reviewed. Differences as well as similarities in approach were noted. Backscheider (1974) focused on the action capabilities needed to meet the demands of a specific treatment regimen. Denyes (1980) and Kearney and Fleischer (1979) used the trait approach. These investigators conceptualized certain traits as antecedent to the power to engage in self-

care behavior. Of the three studies, only Backscheider's study was noted to specifically consider the characteristics needed to meet requirements for self-care. It was concluded that for the purpose of investigating self-care agency both human traits and requirements for self-care are necessary factors.

Developmental Theory

Orem and the NDCG (1979) developed a list of human agency capabilities and dispositions suggested to underlie the development of self-care abilities. In the present state of the theory's development, the relative contribution of each characteristic is not specified. However, the list represents the most complete description available of factors related to the development of the self-care abilities.

A theoretical description of the developmental progress of children in acquisition of these attributes was developed by classification of the characteristics into the four major developmental domains: cognitive, affective-moral, psychosocial, and physical. The writings of selected developmental theorists and psychologists were used to build a description of these characteristics as related to the behavior of young, schoolaged children. Finally, the derived list of children's human agency characteristics was related to self-care abilities. Identified literature regarding children's health behavior was used to enhance the description of self-care abilities.

Cognitive Domain. Orem (1979) identified certain psychophysical capabilities within human agency that may be classified within the cognitive domain. These capabilities are: attention, perception, memory, and learning. Seven- and eight-year-old children can be described in relation to their progress in acquisition of these abilities.

As the child enters the school years there is a dramatic increase in the quality of performance on problems requiring focused and sustained attention (Mussen, Conger, & Kagan, 1969). This phenomenon occurs in part due to the child's improved perceptual abilities. Children are less bound by the physical organization of objects and arrangements (Elkind, 1978). Stimulus objects are systematically scanned, order is imposed, and existing configurations reorganized. The child's ability to direct attention to relevant aspects of stimuli is aided by the emergence of language as a mediating process.

The emergence of language as a mediating process at age 6 or 7 increases the proficiency with which children acquire and retain information. The use of words and concepts at the expense of imagery or physical action to interpret the environment frees the child to learn new relationships. Also, age 6 or 7 marks the stage when children experience changes in their understanding and use of concepts (Mussen et al., 1969). The child acquires certain mental operations or rules for ordering relationships among concepts. This developmental stride enables the child to learn new information more efficiently than at earlier stages.

The emergence of mediating processes and the acquisition of rules has a salubrious effect on memory. Elkind (1978) identifies three types of memory: recognition, recall, and reconstruction. Recognition memory, heavily dependent on imagery, declines in efficiency. Children now employ more sophisticated techniques in representation thought at the expense of imagery. Recall memory improves as mental processes are available to devise strategies for remembering. Additionally, the child

exhibits improvement in reconstruction memory. As their understanding of time and space concepts expands, children are better able to order experiences.

The developmental gains in the four areas discussed above laid the groundwork for acquisition of additional human agency capabilities. Orem (1979) identified these capabilities as: (a) Operational knowing, (b) rational agency, (c) learned skills, and (d) self-consistency in knowing and doing. It is assumed that rational agency and operational knowing are influenced by developmental strides in the application of judgment and reasoning skills to events within the child's experience. Beginning at age 7, important gains are made in the development of these skills. This stage marks a decline in the primitive egocentrism that limited the child at earlier stages.

Piaget (1966) terms this phase the beginning of operations versus intuitive thought. During this time, mental operations become reversible. This characteristic of the child's thinking is recognized by a decrease in contradictory thought and a growing awareness of the reciprocity of viewpoints and relations (Piaget, 1972). Children are no longer content to explain one phenomenon by recalling its common history with another. They want to connect two phenomena by a necessary relation. However, Piaget cautioned that these early deductions bear only upon reality. The child's postulates are made via direct observation vis a' vis inferential reasoning. This phase is generally termed concrete operations to emphasize the role of direct experience in thought.

Citing Piaget's work, Kagan (1971) identified four important mental operations acquired during the early concrete operational phase. The first operation, representation, is the ability to represent mentally an

entire sequence of actions relevant to a goal. The internalization of actions and thoughts frees the child from engaging strictly in a trial and error approach to problem solving. With the second operation, children acquire the ability to conserve the physical properties of substances. The child now understands that liquids and solids may be transformed in shape without changing their volume or mass.

Class inclusion is the third operation identified. This operation refers to the ability to reason about the whole and the part simultaneously. Piaget (1966) credited the appearance of this operation to the child's growing ability to decentrate. In prior modes of thought, reasoning was hindered by the inability to free oneself from the perceptual configuration of objects. The fourth operation, serialization, allows the child to arrange objects according to some quantifiable dimension. Moreover, simultaneous use of class inclusion and quaLitative seriation enables children to gain a true understanding of numerical systems.

The preceding discussion depicted the important reorganization of mental structures the child is under at approximately age 7. Children move from a system of primary intuitive thought to a system of concrete operations. These operations facilitate the development of judgment and reasoning skills and thus the rational agency of the child. Mussen et al. (1969) assert that now children can begin to evaluate the quality of their thinking.

However, Cowan (1978) cautioned in accord with Piaget (1972) that there are limitations inherent in the child's concrete operational thought. The child's classificatory operations can only be applied to concrete events. Further, the child's classification schemes have structural

limitations. For example, children may correctly classify observations and identify which phenomena go together, but their ability to make inferences regarding these phenomena is limited. Additionally, horizontal de'calages or developmental lags can occur in the application of structure to particular tasks. An example of a de'calage occurs in conservation of physical substances. Children can appropriately conserve the volume and mass, but not the weight of substances (Piaget, 1966).

In addition to the cognitive abilities described above, 7- and 8-year-old children exhibit many characteristics indicative of growth in the area of learned skills. Orem (1979) identified the necessary skills possessed by human agency as reading, writing, counting, verbal, perceptual, manual, and reasoning skills. The child's gains in language use, perceptual acuity, and reasoning were previously described as realted achievements which facilitated the efficiency of learning, the development of rational agency, and the progress of operational knowing. Specific characteristics of children in the other identified areas were developed from the writings of Gesell et al. (1978).

The majority of second- and third-grade children demonstrate good eye-hand coordinationl This improved coordination facilitates the development of both writing skills and manual skills. By age 8, most children can write or print all letters or numbers accurately, maintaining fairly uniform alignment, slant, and spacing. Seven- year-olds do not possess full binocular vision and tend to fatigue visually. Developmental lags in the ability to accommodate may create problems with copying work from the blackboard in school. By age 8, binocular visual activity is smooth and visual accommodation requires less effort.

Second- and third-grade children show steady progress in the development of reading and quantification skills. Seven-year-olds can read sentences and recognize familiar words out of context; however, individual differences in reading rate tend to be marked. In contrast, the 8-year-olds read more smoothly with mastery of mechanics and comprehension in better balance. Further, the 7-year-old can count to a hundred by ones, fives, tens, and by two to twenty, and correctly identify a penny, nickel, dime, quarter, and half-dollar. The child makes few errors in writing numbers with the exception of an occasional reversal. The 8-year-old child is learning to manipulate one-to three-digit numbers requiring the operations of borrowing and carrying. Usually, the child can recite some of the low digit multiplication tables as well as manipulate simple operations in short division.

Second- and third-grade children display more stabilization of behavior than children of earlier ages. Considerable consistency in knowing and doing is evident, but inconsistencies remain. Limitations or inconsistencies in the child's ability to apply mental operations to certain tasks were noted (Cowan, 1978; Piaget, 1972). However, the trend of the child's behavior is toward more stabilization (Gesell et al., 1978).

Elkind (1978) characterized the 7-year-old child as reflective and serious. Children are experiencing consolidation of their reasoning abilities and the course of transition is not always smooth. They often exhibit moods of pensiveness, sadness, and negativism. The increased inwardness of the child carries with it a heightened sense of self, and an increased sensitivity to the reactions of others. They are particularly concerned about success in the areas by which teachers and parents evaluate them. Classroom behavior is one area which demonstrates

children's increased ability to monitor their behavior. They are relatively careful and persistent in their work habits and concerned about the adequacy of their performance. Often children will become visably disturbed if they do not complete a task (Gesell et al., 1978). However, there are limits to the 7-year-old's persistence. Children of this age frequently expect too much of themselves. For example, they often request additional responsibility at home, but may become discouraged and give up if they feel unequal to the task.

In contrast to the pensive 7-year-old, the 8-year-old actively seeks new experiences (Elkind, 1978). Children are curious about themselves and use the term self with increasing differentiation. There is some evidence to indicate children are beginning to appraise themselves as well as others. Often, children will deliberately belittle themselves expecting or hoping for praise from others (Gesell et al., 1978).

Eight-year-olds are usually friendly and cooperative, but less persistent and helpful around the house than when they were 7 (Elkind, 1978). When children do help, a definite preference is shown for adult-like activities. In the classroom, children are eager to verbalize and to respond to questions. They tackle assignments with speed and like to be timed in a performance (Gesell et al., 1978). However, 8-year-olds' need to verbalize may interfere with getting the work done. Overall, transitional periods within the classroom are smoother, but children exhibit a tendency to dwaddle when asked to start another activity.

In the preceding paragraphs, behavioral characteristics of second- and third-grade children were described in relation to the cognitive domain. The discussion was focused on the developmental progress of

children in areas identified as prerequisite capabilities for the development of self-care abilities. Developmental strengths as well as limitations in the acquisition of these capabilities were noted.

Affective-Moral Domain. Within this domain, the human capability identified as central regulation of the motivational emotional processes was classified as well as several dispositional traits of individuals. These traits were values, interests and concerns, and a willingness to meet the needs of self. Further, several self-referent constructs were classified within this domain. These constructs are self-understanding, self-awareness, self-image, self-value, self-acceptance, and self-concern. Since the definition of these constructs were not specified by Orem (1979), discussion of these terms was subsumed by developmental changes in the perception of the self (Guardo & Bohan, 1971) and self-concept (Elkind, 1978; Long, Henderson, & Ziller, 1967). Developmental changes in the acquisition of moral values was described within a Piagetian framework. A description of children's interests and concerns as well as their ability to act on their own behalf was drawn primarily from the writings of Gesell et al. (1978).

Central regulation of the motivational-emotional processes is a theoretical perspective held by the majority of theorists in the field. Weiner (1980) reviewed seven major theorists in the area of motivation research. Weiner concluded that all but two held an essentially cognitive view of humans. These two, Freud and Hull, both assumed a drive or need reduction as the basic principle of action. In contrast, the non-mechanistic view of behavior contended that mental events intervened between input-output relationships and that thought influenced action.

Humans are viewed as always active and not needful of a special energizer to start behavior. The latter view is subscribed to here.

As children enter middle childhood, they show a progressive shift in the development of moral values. Piaget (1965) termed this shift a growth from the morality of authority to the morality of mutuality based upon peer group socialization. Generally, this trend in moral development involves a shift in judging actions and events in terms of their seriousness to judging actions by the intentions which motivated them. A desire for mutual understanding in the sphere of games appears at this stage. As in earlier stages of moral development, children seek to win, but now they try to contend with their partner by observing common rules. The specific pleasure in the game becomes social.

Seven usually marks the age when children cease to spontaneously alter the truth. The child begins to appreciate the idea of wrongness of lying. A definite developmental trend is discerned with this trait. At first, children will judge the severity of the lie in relation to its size and believability. For example, children may believe that a grossly exaggerated story is more serious because the occurrence of such an event is not possible. Not until children become 9- or 10-years of age can they consistently judge the wrongness of a lie by intentions.

Also, developmental changes occur in the child's ideas of retribution and punishment (Piaget, 1965). Very early concrete operational children tend to label children who do the most objective damage as most culpable. Children in later phases of concrete operations begin to judge culpability by the intentions behind the act. Notions regarding retribution for misdeeds also evidenced a developmental pattern. Younger children suggest harsher punishment for misbehavior.

Progress in the development of moral standards is noted. Seven-year-old children possess simple, but generalized notions of good and bad behaviors. The 8-year-old is beginning to think in terms of right or wrong instead of the more primitive good and bad (Gesell et al., 1978). Children try to live up to not only their own standards, but to what they think are the adult standards. Both age groups possess a sense of fair play and can be appealed to from that basis.

Piaget cautioned that until approximately age 10, children are bound by moral realism. The same child will judge an action in both ways: by material results and by motives. The mode children employ will often depend on the story presented to them. Elkind (1978) indicated that results of most research using a Piagetian framework suggested that children may not have a general concept of morality. Rather, the use of moral principles tends to be situation specific. Children's failure to behave at their level of understanding in novel situations may be a function of their failure to perceive the moral significance of their actions.

The reduction in egocentrism that accompanies entrance into middle childhood facilitates the development of self-awareness. Guardo and Bohan (1971) define sense of self as "the individual's sense of his/her/ own self identity or with self as an experiential reality" (p. 1910). These investigators assessed children, ages 6 to 9, on four postulated dimensions of self identify: humanity, sexuality, individuality, and continuity or sense of self over time. Their results indicated that self identity in the four dimensions was clearly demonstrated. Further, the qualitative development of self identity paralled Piagetian findings regarding cognitive development.

Six-year-old children recognized that they were distinct sexual, human individuals in terms of physical appearance and capacities. These children recognized the continuity of self into the future, but not from the past. The self identify of 7-year-olds was similar to the 6-year-olds with the exception of recognition of continuity of self into the future. Eight-year-old children recognized feelings and attitudes as well as physical appearance and behavior as part of self. Also, sex differences were apparent in the responses of 8-year-olds. For girls, individuality was the key dimension of self-identity. Sexuality or masculinity was the key dimension for boys.

Feelings and events surrounding the experience of self-identity become important to children (Gesell et al., 1978). They exhibit fear of losing identity as evidenced by displays of resistance to having their hair cut or wearing new clothes. Many children will even question parents as to whether they were adopted. Children make many possessive requests: their own place at the table, their own place in the car, their own desk at school, and their own room. Further, the growing sense of self is evident in the mother-child relationship. Children become less responsive to maternal requests and may demand rationale before complying.

Eight-year-old children are very conscious of their self-identify and their differences from other children. Their chief interests center around relationships with others, both children and adult. Eight-year-olds begin to recognize that adults may know more than they do. They want to live up to adult standards and feel guilty if their self-evaluation falls short of expectations (Gesell et al., 1978).

Also, developmental changes in children's self-concept are reported during middle childhood. Long et al. (1967) investigated five dimensions

of self-concept: individuation, esteem, power, identification, and social dependency. Individuation or the degree to which one differentiates self from peers steadily increased with age. Self-esteem or the value one attaches to self declined significantly between first- and second-grade. Following the sharp decrease at age 7, self-esteem scores increased steadily throughout the grade levels. Power as measured by the perception of self in relation to both teacher and father showed no significant effect by grade level. Scores on the fourth dimension, identification with parents, declined between first- and second-grade. After the low point in second grade, scores rose steadily through the fifth grade. Scores for social dependency or the degree to which one perceives self as part of a group increased between first and second grade. Scores for children in the third grade were consistent with the second grade scores.

Despite growth in the areas of intellectual and affective skills, limitations are noted in the child's ability to meet the needs of self. Both 7- and 8-year-old children show variability in attending to care of self (Gesell et al., 1978). With both age groups, the need for assistance in self-care is more related to parental supervision rather than physical help. For example, children may be careless about dressing appropriately and perceive reminders to do so as a nuisance.

Children's developmental progress in the acquisition of human agency characteristics in the affective-moral domain were described. In the moral sphere, children were described as moving toward mutuality (Piaget, 1965). The child's notions of right and wrong become less rigid and inflexible. Further, children become aware that motives or intentions are important considerations when judging misdeeds. Children were

described as concerned about living up to the standards expected for behavior and sensitive to other opinions (Elkind, 1978).

A reduction in egocentrism was noted among 7- and 8-year-olds. An increased sense of self-identity in both physical and emotional attributes was described (Guardo & Bohan, 1971). Developmental changes in the self-concept of children were noted by growth in individuation, affiliative tendencies, and identification with parents (Long et al., 1967). Despite the advances in several areas, children were noted to have limitations in meeting their own needs.

Psychosocial Domain. Two dispositions affecting the development of self-care abilities were classified in this domain: (a) Orientation to time, health, and other persons; and (b) ability to manage personal affairs. Seven- and 8-year-old children were described in relation to these dispositions through utilization of the works of Byler, Lewis, and Totman (1969) and Gesell et al. (1978).

An orientation to time is evident in second and third-grade children. At 7, the sense of time is becoming more detailed and sequential (Gesell et al., 1978). Seven-year-old children can usually tell time by the clock including the hour and minutes. The child is aware of the passage of time in the sense of one event following another as well as the passage from month to month. The child is aware of the sequence of months and seasons and may be able to think in terms of years. By age 8, the child begins to show responsibility in relation to time. Most 8-year-olds are very aware of punctuality and can be expected to arrive at school on time. Also, 8-year-olds are interested in times past, but possess only a rudimentary chronology.

Second- and third-grade children are interested in health and learning more about their bodies. Byler et al. (1969) reported a high degree of interest and concern regarding health among these children. For second graders, the primary concern was not to be sick so one could run and play. Further, the children were found to be conscious of their responsibility to observe routine health and safety practices. The children were familiar with common childhood ailments and indicated understanding of the routines observed in caring for them.

Third-grade children expressed a wide range of interests in relation to health. They were especially interested in how their bodies functioned. The children were satisfied and knowledgeable about their existing practices related to personal grooming, health, and nutrition. Also, the children were beginning to express an awareness of the benefits of physical exercise. Both second- and third-grade children voiced a strong desire for congenial playmates and were interested in forming relationships with others.

Important strides in interpersonal relationships are noted in middle childhood. At 7, children are becoming real members of the family group (Gesell et al., 1978). Additionally, 7-year-olds are more adept at meeting strangers and enjoy visiting outside the home. Most 7-year-olds play fairly well with other children. However, group play is loosely organized and mostly carried out for individual ends (Mussen et al., 1969). The children do worry about their place in the group and fear that they might not be able to hold their own against others (Gesell et al., 1978).

By age 8, best friends begin to play an important part in the child's life. School becomes important because the child's friends are there.

The relationships between friends are close and demanding, and disputes are common. The quality of the relationship begins to take on some of the attributes of mature friendships. Also, 8 marks the age of definite preference for same-sexed playmates.

Children entering middle childhood cannot be expected to manage themselves and their personal affairs. However, cues to this ability may be seen in the child's negotiation with two new socializing agents. Appraisal of skill in negotiating with teachers and with peers provides indications of these developmental stage self-management abilities. In general, both age groups adjust well to school. Seven-year-old children require and demand more time from their teachers than do 8-year-olds. The 7-year-olds' attention span and persistence are better than at 6, but the child may explode into noisy behavior between tasks. In contrast, 8-year-old children are less interested in their teacher and more interested in their school group. Classroom activity is more purposeful, transitions smoother, and children are more willing to wait for a turn. However, the strong desire to verbalize makes the latter behavior difficult.

It was indicated previously that both age children desire responsibility and work persistently toward task accomplishment (Gesell et al., 1978). However, adult encouragement or supervision is often required since the child's desire for responsibility can outweigh the ability to judge what tasks can be completed. Additionally, children's capability toward care of self in routine hygienic measures may be greater than the tendency to perform these measures. Some adult supervision may be required.

The child's capabilities and dispositions in the psychosocial domain were reviewed. Seven- and 8-year-old children were described as well oriented to clock time, but having only rudimentary chronology of calendar time. Children were noted to be interested in health and in learning more about their bodies. Also, children were found to be knowledgeable about personal health and safety.

Children were interested in forming relationships with others and in forming friendship attachments. In general, adjustment to school caused little difficulty. Both age groups demonstrated the ability to modify behavior in the classroom setting and follow rules. As previously noted, children do require adult supervision in some areas. Some of these areas are group activities, task completion, and some aspects of personal grooming.

Physical Domain. The child displays developmental growth in the final disposition - the ability to regulate body parts and execute coordinated movement (Orem, 1979). Overall, 7-year-olds are more cautious in physical activity than at earlier ages (Gesell et al., 1978). One noteworthy characteristic of their motor activity is perseverance. The child will repeat an activity until it is mastered. Children become totally absorbed in what they are doing and can maintain attention within a close range.

A strong theme of inventiveness characterizes play. Children may spend hours rigging inventions or designing things. Also, a strong interest is apparent in coloring, cutting, and pasting. Outdoor play is enjoyed. Children become adept at riding bicycles, roller skating, jumping rope, and climbing trees. All of these activities indicate increased control of fine and gross motor movements.

The bodily movements of 8-year-olds are fluid and graceful. Children like to dramatize and express themselves through a variety of postures and gestures. Eight-year-olds are constantly on the go, running, jumping, and chasing, but they are also ready for organized team sports such as soccer and baseball.

Both 7- and 8-year-old children display an increasing dexterity and coordination of movements. They are able to sustain attention to a project in solitary play and participate as a team member in organized play. The children enjoy accomplishing things of practical value and desire real tasks. Also, they enjoy spontaneous or planned dramatization of events. Additionally, they seek and enjoy the personal-social aspects of play. Adult supervision may be required for organized play as these activities may exceed bounds.

Human Agency Capabilities and Dispositions. Orem's (1979) listing of the five sets of basic capabilities and dispositions were reclassified within the four major developmental domains to facilitate discussion of the characteristics of children in relation to the components of human agency. Cognitive, affective-moral, psychosocial, and physical attributes were described as to the developmental stage acquisition by second- and third-grade children. The developmental strengths of these children are thought to enhance the contribution of human agency to the development of self-care abilities. The developmental limitations inherent at this stage are thought to preclude the child from full expression of self-care abilities.

Specific developmental strengths and limitations in each domain were developed (see Appendix A). The first set was drawn from the discussion of cognitive development (Elkind, 1978, Gesell et al., 1978;

Kagan, 1971; Mussen et al., 1969; Piaget, 1965, 1972). The second set was from a discussion of the affective-moral domain (Elkind, 1978; Gesell et al., 1978; Guardo & Bohan, 1971; Long et al., 1967; Piaget, 1966). Psychosocial characteristics were drawn from the writings of Gesell et al. (1978) and Byler et al. (1969). The fourth set describing physical characteristics was drawn from the writings of Gesell et al. (1978). The contribution of these strengths and limitations to the development of self-care abilities is discussed in the subsequent section.

Development of Self-Care Abilities. The central question as to whether children possess self-care abilities is addressed here. Specific human agency strengths and limitations in relation to each of the self-care abilities are described. Although specific strengths and limitations are developed for each ability, all of these characteristics are considered interactive toward a contribution to the development of the abilities. Also, research related to children's health knowledge, attitudes and behavior is included in the discussion of the development of self-care abilities. However, it should be noted that a dearth of literature exists in the area. This phenomenon has also been noted by Whalen (1976).

Orem (1979) identified 10 self-care abilities. These abilities represent those attributes one possesses that may be directed toward self-care. First, these abilities will be identified, and then discussed individually in relation to the developmental status of 7- and 8-year-old children. The abilities are:

> 1. Ability to maintain attention to self and exercise requisite vigilance with respect to (a) self as self-care agent, and (b) internal and external conditions and factors significant for self care.
> 2. Controlled use of available physical energy that is sufficient for the initiation and continuation of self-care operations.
> 3. Ability to control the position of the body and its parts in the execution of movements required for the initiation and completion of self-care operations.
> 4. Ability to reason within a self-care frame of reference.
> 5. Goal orientations for self-care that are in accord with its characteristics and its meaning for life, health, and well being.
> 6. Ability to make decisions about care of self and to operationalize these decisions.
> 7. Ability to acquire technical knowledge about self-care from authoritative sources, to retain it, and operationalize it.
> 8. A repertoire of cognitive, perceptual, manipulative, communication, and interpersonal skills adapted to the performance of self-care operations.
> 9. Ability to order discrete self-care actions or action systems into relationships with prior and subsequent actions toward final achievement of regulatory goals of self-care.
> 10. Ability to consistently perform self-care operations, integrating them with relevant aspects of personal, family, and community living. (pp. 195-196)

Several of the identified abilities are constituted from developmental capabilities and dispositions derived from the cognitive domain. The first of the abilities discussed deals with the eighth listed. Cognitive and perceptual skills as well as manipulative and interpersonal skills are considered separately in discussion.

Developing the ability to adapt cognitive and perceptual skills to the performance of self-care is aided by several human agency strengths. Children can direct and maintain attention to specific objects as well as impose order on a perceptual field. They use language as a mediating process thus decreasing the need to engage in trial and error behavior. Further, children are capable of devising strategies to enhance remembering specific materials.

Cognitive and perceptual skills are further enhanced by the child's improved visual acuity and hand-eye coordination. Evidence of improvement is noted by the child's legible printing of letters, words, and numbers. Additionally, the child has the ability to read simple materials and utilize elementary reference materials. Further, the child can perform elementary mathematical operations and is on the way to devising a system of numbers.

Despite evidence of the child's developing cognitive and perceptual skills, some limitations are noteworthy. The child's binocular vision is not fully coordinated, resulting in minor accommodation problems. Also, 7- and 8-year-old children are at the beginning stages in acquisition of reading and mathematic skills.

Several human agency strengths should lend themselves to the development of the ability to reason within a self-care frame of reference. The child has the ability to use reversible operations and is capable of understanding the phenomenon of transformation. Also, the child can use higher-order concepts to group phenomena and classify objects by some quantifiable dimension. Further, children use relational concepts appropriately and apply problem-solving methods to familiar events.

Despite the advances in reasoning skills, barriers to full ability to reason within a self-care frame of reference still exist. The ability to reason inferentially is undeveloped. Hypothesis testing is limited to events which the child has experienced or those events perceived to be similar. Developmental lags or de'clages are noted when reasoning skills are applied to unfamiliar phenomena.

Several strengths are identified in the cognitive domain that facilitate the development of the ability to make decisions about self

care and render these decisions operational. The previously discussed advances in the development of cognitive, perceptual, and reasoning skills enable children to begin to evaluate their thinking. Also, children's desire to perform tasks in accord with set standards may facilitate development of this self-care ability.

Accompanying these gains in the potential to develop self-care abilities are two important limitations. First, children exhibit a tendency to procrastinate when confronted with routine tasks that they are capable of performing. Secondly, while children are desirous of more recognition for accomplishments, they may misjudge their ability to complete tasks. Both limitations necessitate the support and guidance of significant adults.

Lewis et al. (1977) and Lewis, Lewis, and Ifekwunigue (1978) examined the decision-making process of children as the process relates to health care. Lewis et al. (1977) reported a change in the developmental basis for health decision-making between the first and third grade. First-grade children used health services based upon attitudes toward the school nurse, previous experience with a medical event, and cues from others toward determining the presence of illness. In contrast, third-grade children used services based upon identification of specific body cues, distinctions between illness and injury, and judgments as to whether body cues were serious enough to interfere with activity.

These authors concluded that third-grade or age 8 was the critical period of change in children's attitudes and health behaviors. Evidence gained through replication of the original study indicated that children of different ethnic backgrounds responded similarly (Lewis & Lewis, 1980).

Additionally, results from a sub-project of the original study demonstrated that 7-year-old children could participate in health decision-making (Lewis et al., 1978).

Several newly acquired strengths potentially aid children in development of the ability to order discrete actions toward the accomplishment of self-care. The child can mentally reconstruct past events from memory and represent an entire sequence of actions relevant to goal attainment. The child is capable of performing simple self-care skills regarding feeding, bathing, dressing, and toileting. Further, children display persistence and concern for task completion. Finally, they possess the ability to set goals for the future.

Developmental stage characteristics of children preclude full development of the ability to order actions for self-care. The child's ability to accomplish future-oriented goals is limited. This condition results from 7- and 8-year-olds' inability to realistically evaluate the probability of goal attainment. Also, the child's capability to perform self-care measures is often greater than the willingness to perform these measures in a consistent fashion. Adult supervision may be required for consistent performance.

Several human agency strengths in the affective-moral domain contribute to the development of the ability to see oneself as agent of self-care. By age 7, children are experiencing themselves subjectively as social beings. The self is recognized as a distinct, sexual being in terms of behavior, appearance, and less frequently, attitudes and feelings. Further, the self is recognized as having continuity from the present into the future. Children of this age demonstrate responsibility for their actions and generally report good feelings regarding self (Woyshner, 1979).

Several developmental characteristics limit children's potential to view themselves as full self-care agents. Seven-year-old children experience a temporary feeling of decreased self-esteem. This feeling may affect the child's confidence toward independent acts. The child's feelings of vulnerability to criticism may result in a hesitance to expose the self to unfamiliar situations. Also, children's awareness of the uniqueness of their own feelings does not extend to a similar perception of other people's feelings. This limited awareness may hamper the ability to utilize social cues in meeting self-care needs.

The ability to develop a goal orientation for self-care which is supportive of health and well-being is aided by several human agency strengths. The child is developing moral standards which are less rigid and harsh than those of earlier developmental stages. Standards of conduct for the self and others are more equitable and flexible than prior standards. Developing values support cooperation and fair play. Now, actions of wrong-doing are evaluated by intentions as well as consequences.

In addition to the development of more realistic standards for self and others, children display other strengths which aid the development of an orientation toward health and well-being. Children possess curiosity and a high interest in people, group play, hobbies, and projects. Also, children have a strong desire for affiliative relationships and a concern for the approval of others. Further, 7- and 8-year-olds report future job aspirations (Woyshner, 1979).

Some developmental characteristics limit the child's potential to develop full expression of an orientation to health and well-being. Children may be unable to consistently apply standards of conduct in new situations. Inconsistencies may also be noted in an additional area of

the child's behavior. The tendency to proscrastinate or inconsistently perform routine self-care measures was noted. An additional limitation is the child's immature judgment regarding future-oriented goals. These areas require the support and supervision of concerned adults.

A limited number of studies directly explore the salience of health for children. Natapoff (1978) examined the developmental progression in children's views of health. The opinions of a large sample of first, fourth, and seventh graders were sampled in three areas: (a) their definition of health, (b) what it felt like to be healthy, and (c) the criteria they used to judge others' health status.

The children defined health in a positive manner. Feeling good and being able to participate in desired activities were cited as the most important components of health. Health enabled them to do the things they wanted to do such as playing with friends, running, and participating in sports. Examples of the suggested criteria for good health were rosy cheeks, a good body, clear eyes, and nice skin. In addition, the healthy person had to be active, happy, perform daily chores, and have fun.

Further, specific developmental trends were indicated. First-grade children viewed health as a series of specific health practices which enabled them to go outside, play with friends, and to be with the family. Fourth-grade children were less concerned with specific health practices and more concerned with total body states such as being in good shape and feeling good. The author concluded that children see health as a positive attribute and as a necessary requisite to their lives. Maturation was suggested as the most critical variable in children's conceptions of health. Variables cited as less influential by this author were sex, intelligence quotient, and socio-economic status.

In addition, selected studies explored the value children place on health within the context of social learning theory. Locus of control, a construct which refers to the individual's beliefs regarding the contingencies of reinforcement, has been studied as a contributing factor to health behavior. Gochman (1971) reported the development of a projective pictorial instrument to measure awareness of health, health value, and adaptive health behavior. In a subsequent study, the investigator utilized the instrument to explore the relationship among perceptions of vulnerability, salience of health, potential health behavior, and perceived internal locus of control (Gochman, 1971). Subjects were equally distributed as to gender and ranged from 7- to 14-years of age. As hypothesized, children scoring high on potential health behavior and internal locus of control characterized themselves as relatively invulnerable to health problems. Children scoring low on the locus of control dimension were reported as perceiving themselves as more susceptible to the development of health problems. Salience of health was significantly related to health behavior only for children scoring high on the internal locus of control dimension. Gochman concluded that children reported as internal locus of control were better able to discern links between their actions and the prevention of environmental mishaps.

Parcel (1978) reported the development of an instrument to specifically measure health locus of control in children. The Children's Health Locus of Control Scale (CHLC) was designed to tap the concept of health motivation or readiness as a partial explanation for health behavior. In a subsequent study, Parcel, Nader, and Rogers (1980) examined the relationship among health locus of control, health value, and health status. Children scoring high on internal health locus of control and placing

high value on health reported fewer incidents of illness or feelings of susceptibility to illness. When children with high internal scores were compared to children with low internal scores, the health status reported was related to the value placed on health. For children who placed a low value on health, health locus of control scores made no difference in perceived health status. It should be noted that of the 132 children surveyed, 111 indicated a high value for health.

The next self-care ability, the ability to acquire technical knowledge about self-care and carry through with self-care measures, is aided by two strengths within human agency. Children express curiosity and interest in learning about how their bodies function. Byler et al. (1969) reported that second- and third-grade children had a high interest in acquiring information about their bodies. Second-grade children asked many questions about diseases, hospitals, ambulances, how the body works, and children with special handicaps. Third-grade children were especially interested in how the body functioned.

Second- and third-grade children show evidence of developing interpersonal and communication skills that may be adapted to the performance of self-care. The child exhibits behavioral stability and is generally optimistic and pragmatic in nature. Concern is shown for developing congenial family and peer relationships. Also, other evidence of developing interpersonal skills is noted. Children are becoming aware of differences in feelings among people. They exhibit cooperative behavior in group play and attempt to observe informal group rules.

Despite the gains in interpersonal and communication skills, some limitations are still apparent. Although the child can reflect about the feelings and motives of self and others, a third-person perspective is

not yet possible. The inability to view interaction from this perspective limits the ability to utilize all the information in an interpersonal encounter. Additionally, the child may not consistently maintain cooperative behavior in group situations, resulting in a return to more egocentric modes of behavior.

The ability to perform self-care within the context of everyday living is aided by several human agency strengths. An improved understanding of time and space concepts is evident. Children can tell clock time and demonstrate understanding about the passage of time. Additionally, children have acquired knowledge about self-care experientially. They know and generally observe routine hygenic and safety measures. Further, children demonstrate understanding of the routines involved in caring for commonly experienced childhood ailments. Finally, children demonstrate persistence in attempting to carry through tasks.

One limitation should be noted in the child's understanding of time and space concepts. The child's grasp of the chronology of events is not well developed. This condition limits the ability to foresee the self in the role of self-care provider.

The ability to control the position of the body and its parts in the execution of movements required for self is another area where the child exhibits developmental gains. The child's movement has become coordinated and graceful. Also, the child is adept at displaying a wide range of postural gestures to aid in expression. Further, children display controlled use of physical energy in a variety of ways: (a) Exhibit intense concentration when working on tasks, (b) direct skills toward the production of useful items, and (c) control physical energy during team sports.

Additionally, these strengths support the child's potential to adapt manipulative skills to the performance of self-care.

The high energy level of schoolaged children limits the development of abilities related to the three previously described elements of the self-care abilities. Children may, without supervision, overextend themselves as a result of their high interest and activity level. Additionally, children require adult supervision with team sports in order to prevent free-for-alls. These examples illustrate the continued guidance needed by children in the area of physical self-care abilities.

Summary. Human agency strengths and limitations were discussed as related to the potential to develop self-care abilities. These human agency characteristics were derived from the discussion of the developmental status of second-and third-grade children in relation to the survey list of capabilities and dispositions identified by Orem (1979).

Specification of the developmental status of children toward full acquisition of these capabilities and dispositions were considered to be necessary for the purpose of this investigation. Children were not assumed to fully possess these characteristics. Instead, children were seen as exhibiting developmental stage behaviors that indicated progress toward full development of self-care abilities. These behaviors, considered as evidence of developing capabilities and dispositions, were delineated as human agency strengths and limitations.

The identified human agency strengths and limitations were then considered as to their contribution to the development of self-care abilities. Although the development of self-care abilities is dependent on the interaction of all of the identified strengths and limitations, specific characteristics were identified as contributing most directly to certain

abilities. These specific characteristics were discussed separately as to their contribution to individual self-care abilities.

The accumulated evidence suggested that children possessed specific enabling strengths toward development of self-care abilities. Also, available research suggested that children have conceptions of health which can be elicited through a variety of measures. Further, evidence of children's ability to participate in health decision-making was presented. These data indicate that the extant status of children toward full development of self-care abilities can be described.

Health Education

The literature in health education was used to provide a content description of self-care agency. Self-care agency as the enabling abilities of the person may be inferred from observation of that person taking action to meet actual requirements for self-care. These requirements for self-care expressed as the therapeutic self-care demand, constitute the content of self-care agency.

Three categories of requirements were identified as constituting the therapeutic self-care demand: universal self-care requisites, developmental self-care requisites, and health-deviated self-care requisites (Orem, 1980). Of these three categories of requisites, the universal are considered as the most basic. The universal requisites are related to the demands for self-care that are common to all people in order to sustain life, health, and well-being. Orem (1980) described six basic requisites and an ideal set of self-care actions to accompany each requisite.

These basic requisites and accompanying actions were used to describe the status of self-care abilities in children. Since the actual self-care

abilities of children have not been described, an operational reference base of content items was needed. The literature in health education contained recommendations regarding the types of knowledge, practices, and skills needed for the development of a healthy life style. The recommendations of curricular experts for children in kindergarten through third grade were considered as the data base for description of self-care abilities.

Curricular experts have advocated a variety of approaches for teaching health content within elementary schools. Examples of recommended approaches are Lifestyle (Burt, Meeks, & Pottlebaum, 1980), Ecologic (Hoyman, 1977), and Conceptual (Bruess & Gay, 1978). Regardless of the approach recommended, 10 content areas were recognized as necessary to the provision of minimum comprehensive health education. These content areas endorsed by the State School Health Education Task Force of the Educational Commission of the States were identified by Ames (1982) as: (a) Personal health, (b) mental and emotional health, (c) prevention and control of disease, (d) nutrition, (e) substance use and abuse, (f) accident prevention and safety, (g) community health, (h) consumer health, (i) environmental health, and (j) family life education.

Further direction was provided by the National Center for Health Education's (1981) Primary Grades Health Curriculum Project (PGHCP/SHCP). This project, under the directorship of Bruess, developed a curricular progression chart for the primary grades. The chart contains broad objectives that outline content and expected behaviors in each of the 10 health content areas by grade level. Although labeled differently, the chart is in accord with the areas recommended by the State School Health Education Task Force.

The recommendations of the State School Education Task Force and the PGHCP/SHCP as to content areas and expected behaviors served as a primary source of deriving content items to describe children's self-care abilities. Where additional information was needed, the writings of previously mentioned curricular experts were used (Bruess & Gay, 1978; Burt et al., 1980; Hoyman, 1977).

Appendix B contains a listing of Orem's (1980) universal self-care requisites and the accompanying ideal set of actions in order to meet the therapeutic self-care demand in the area of universal self-care. Since the actions are suggested to be the ideal actions of the adult as full agent of care, children's behavioral capabilities were specified in relation to these actions. The behavioral capabilities were developed from the recommendations advanced by the curricular experts in health education. The source for each behavior is identified within the table.

Q Methodology

Q methodology is a general name for a group of philosophical, psychological, and psychometric ideas oriented to research on the individual (Kerlinger, 1973). The methodology was developed by Stephenson (1953) for the study of such apparently diverse areas as preferences, self descriptions, aesthetic judgments, and personality dimensions. Central to Stephenson's position is the greater importance of making comparisons among different responses within persons than between persons.

Stephenson characterized his methodology as addressing "the total person in action" (p. 4) frame of reference. Thus, inner experience and observable behavior are seen as like matters for objective, operational definition and study. The philosophic referent for Stephenson's (1979) methodology is the "self" theory of an early psychophysicist, Koffka.

Stephenson sought to represent the self abstractly in spatial terms and mathematical language through the application of factor-analytic methods.

The objective explication of the "self" is accomplished through a group of procedures known as Q technique. The method centers particularly in sorting decks of cards called Q-sorts and in the correlations among the responses of different individuals to the Q-sorts. The subject is presented with a deck of cards and asked to sort the cards along some dimension: approve/disapprove, like me/not like me, etc. The number of cards sorted varies between 50 and 100 with a low acceptable limit of 50 (Polit & Hungler, 1978).

The sorting instructions as well as the objects to be sorted vary with the requirement of the research. Technically, each card is considered a distinct stimulus item which the subject ranks in comparison with the rest of the stimuli (Q-sort cards). Kerlinger (1973) characterized the technique as mainly a sophisticated way of rand-ordering items and then assigning numerals to subsets of the items for purposes of statistical analysis. For statistical convenience, the sorter is instructed to put varying numbers of cards in several piles usually approaching a quasi-normal distribution.

Data gathered in this matter are termed ipsative vis-a-vis the more usual normative. With ipsative type procedures, the stimuli in a defined set are ordered or scaled relative to each other according to a specific criterion. A further characteristic of these procedures is the "specific subject" frame of reference (Nunnally, 1978). Since the shape of the distribution or number of stimuli which may be put in each pile has been specified in advance by the researcher, the task forces all subjects to have the same mean rating. Nothing is learned about the level of response

to the stimuli as a group nor can absolute levels of response be assessed among individuals. The application of inferential statistics to such data are usually not appropriate since technically the sampling unit are considered stimuli rather than people.

Types of Q-sorts. Block (1956) delineated three ways that Q-sorts may be constructed. The first method consists of defining a domain of intended coverage and enumerating a list of variables. These variables are then assembled into a Q sample. The pitfall ensuing from this method is the increased likelihood that the obtained results would be an idiosyncratic function of the unspecified basis for originally including items. With the second method, all possible items in a universe are collected and a random sample of these items is generated. Q-sorts derived by this method are seen as truly representative of the delimited universe, and as a corollary, comparable Q sets can be achieved by successive sampling.

The third type, structured sorts, has the variables of a theory or hypothesis built into the set of items along Fisherian experimental and analysis of variance design principles. The Q-sort is so constructed to reflect the interrelation of at least two variables in a theory. Use of Q methodology in this manner is the raison-d'-etre that Stephenson envisioned. Kerlinger (1973) quoted him as emphasizing the testing of theories rather than individuals.

The simplest example of a structured sort is one-way analysis of variance design with the items partitioned into subsets A_1 and A_2. One identifies the dimension, and then generates items that reflect a partitioning of the dimension at least two ways. Individuals thought to possess characteristics reflective of each subset are identified a priori

and Q-sorts administered. If the correlational and factor analytic techniques used to analyze the data confirm a bipolar dimension, support for the theory and for the Q-sort as a valid measuring instrument is gained.

Strengths of Q Methodology. A number of sources (Cronbach, 1970; Kerlinger, 1972, 1973; Nunnally, 1978; Stephenson, 1953) cite the power and value of Q-methodology for the obtaining of complex descriptions among individuals that may be systematically compared. The correlative nature of Q makes possible the comparison of whole sets of scores among individuals. Rather than obtaining an absolute score (as with normative methods) for each person, a relative score for each stimuli or content item is derived. Thus, all possible degrees of relationship among persons relative to the stimuli in question are considered.

Jackson and Bidwell (1959) suggested that Q methodology's greatest strength may be the notion of building theory into the Q-sort. They acknowledged that most studies that employ Q opted for the unstructured variant, but see great promise in the use of theoretically oriented structured sorts. Although subject to controversy, analysis of variance procedures may be applied to test significance of means among subsets of Q items in structured sorts.

Perhaps more useful than analysis of variance are complex correlational analysis procedures such as Q-Factor Analysis. Information as to how people factor or cluster together on the content items may be obtained as well as how individuals vary within content domains. The information obtained allows exploration of the underlying dimension that may have caused these individuals to cluster together. A related technique, construction of Factor Arrays, permits the derivation of a "typical" sort

that expresses the nature of each person factor. Factor Arrays of known dimensions can be compared with Q-sorts of unspecified individuals.

Perhaps as important as the analytic possibilities of Q is a characteristic described by both Kerlinger (1972) and Polit and Hungler (1978). People like to do Q-sorts. The centrality of the individual to the question under investigation is affirmed as well as the potential to actively place the stimuli to be judged along some dimension. The confounding effects of response set bias found with paper and pencil tests are not usually found with Q-sorts (Nunnally, 1978; Polit & Hungler, 1978).

Limitations. There are five main disadvantages or areas of controversy regarding Q methodology: representativeness of domain sampling, sample size, generality of results, use of inferential statistics, and the forced-choice procedure. Critics have argued that the results obtained in sorting are a function of the particular Q-sort employed. The question is: What assurance can there be that the items reflect the underlying domain? The question becomes more crucial when directed toward unstructured sorts. In this case, results of data analysis cannot lend direct support for appropriate or inappropriate conceptualization of the domain. Block (1956) suggested that content experts can provide consensual validation of items for a particular purpose. He argued that functional relationships educed by one Q-set can be expected to be very similar to the functional relations via another set constructed for the same purpose.

Q-sorts are characterized as being difficult and time-consuming to administer to large groups or persons (Polit & Hungler, 1978). Kerlinger

(1972) concurs that Q may not be practical for large-scale testing. He recommends that Stephenson's advice to use carefully selected small samples be followed.

The concern regarding the generalizability of findings and the use of inferential statistics raise closely related questions. The use of these statistics is sometimes difficult to interpret when the sampling unit is stimuli and the degrees of freedom are determined by the number of stimuli (Sunderland, 1962). Logically, in such cases, inferential statistics may only concern probability statements about relations between samples of content and hypothetical domain of content - statistical confidence that the domain correlation is different than zero (Nunnally, 1978). The statistical criticism deals with violation of the assumption of independence. Q-sorts violate this assumption because placement of a card on the continuum affects placement of others (Cronbach & Glesner, 1954). As remediation for this problem, Kerlinger (1972) suggests raising the alpha level to .01 before conclusions are drawn. Interactions must be treated with special care since these cannot be treated as exact tests of significance. A Q-sort of at least 60 is further advised. The potential for placing a particular card in any pile may then approach 60 factorial.

The forced choice criticism deals with the shape of the response distribution in Q studies. It is argued that by specifying the number of cards that subjects may place in each pile, important information on elevation and scatter is lost. Nunnally (1978) refutes this argument by suggesting that correlation coefficients and the factors obtained from them are largely insensitive to changes in distribution shapes. Block (1956) found correlations of .90 among subjects when comparing free versus

forced-choice procedures. Livson and Nichols (1956) recommended a rectangular distribution for maximum retest reliability. Actually, the shape of the distribution whether-rectangular, quasi-normal, or otherwise-appears to make little difference in Q-factor structures (Cottle & McKeown, 1980).

Use With Children. Q has been used extensively in social science research since Stephenson introduced the methodology in 1953. Several bibliographies appear in the literature (Brown, 1968; Wittenborn, 1961). However, Q techniques do not appear to have been used extensively with children. A literature search of the past five years yielded 123 articles concerning the use of Q with children, but only a small number employed children as sorters or active subjects in studies.

Bennett (1964) reported the development of self-concept Q-sort for use with elementary-aged children. Bennett modified the distribution of items to five sets. Test-retest reliability for the sample using the reduced distribution was .81. Further, the investigator commented that children found the sorting task to be interesting and enjoyable. Johnson (1976) reported the development of a Q-sort personality test for children, ages 5-16. The Missouri Children's Picture Test utilized 238 simple line drawings divided into 8 subscales. The test has been normed on a large sample of children and found to be clinically useful for discrimination of behavioral problems (Register & L'Abate, 1972).

Summary. The use of Q methodology to obtain complex descriptions within and among individuals was described. Various approaches to the construction of Q-sorts were explored. Structured sorts employing a

theoretical perspective were characterized as the most potentially valuable approach (Jackson & Bidwell, 1959; Kerlinger, 1972, 1973; Stephenson, 1953).

The strengths and limitations of Q methodology were discussed as well as caveats for employing the method. Several authors suggested that Q is a valuable heuristic tool if the methodology's limitations are acknowledged. Although the methodology has been employed frequently for 30 years, available research reflects limited use with children. The research that employed children as subjects, however, does not negate use of the methodology.

Summary

The nature of self-care abilities in young, schoolaged children was developed through a framework from Orem (1979) and the Nursing Development Conference Group's Structural Analysis of Self-Care Agency. Since these authors' writing focused on the adult, the framework was enriched through the works of selected developmental theorists. Further, since self-care agency refers to the potential to take deliberate action to meet demands for care (Orem, 1980), a content description and a methodology to sample action was necessary to complete the description of self-care abilities. The literature in health education provided the content description of self-care behavior. Q methodology served as the suggested vehicle for assessment of action.

Three investigations related to self-care agency were described (Backscheider, 1974; Denyes, 1980; Kearney & Fleischer, 1979). Backscheider investigated the underlying action capabilities needed to meet specific requisites related to the therapeutic self-care demand in diabetes mellitus. The influence of this investigator's conceptualization of

self-care agency is seen in the work of Orem and the Nursing Development Conference Group (1979). Backscheider's work suggested the tri-level structure of self-care agency with the foundation level supporting the emergence of specific self-care abilities.

Denyes (1980) and Kearney and Fleischer (1979) focused on the self-appraisal of capability for action through consideration of underlying traits. Kearney and Fleischer identified the human dimensions of self-care agency, specified indicants, and derived content items related to the indicants. Denyes directly sampled self-care abilities through derivation of content items from the developmental literature. Further, this investigator reported the relationship among her items and measures of health status and health practices. This activity suggested the importance of self-care behavior in relation to investigation of self-care abilities.

Although most of the published accounts of self-care agency focused on adults, interest was evident among nurses caring for children. Facteau (1980) saw the potential for self-care agency as present from birth. At each developmental stage, children exhibited specific developmental capabilities for self-care management. Also, Eichelberger et al. (1980) viewed the acquisition of self-care abilities as a developmental process. Orem (1980) stated that children were socialized as self-care agents through gradual acquisition of a repertoire of abilities and skills required for the performance of self-care.

The status of children in relation to the development of self-care agency was described through employment of several developmental theorists. The underlying dimensions or human agency characteristics identified by Orem (1979) were classified within four major developmental domains:

cognitive, affective-moral, psychosocial, and physical. The cognitive capabilities were identified through the writings of Piaget (1965, 1972) and several developmental psychologists who employed a Piagetian framework (Cowan, 1978; Elkind, 1978; Ginsberg & Opper, 1969; Kagan, 1971; Mussen et al., 1969). Affective-moral characteristics were identified from several sources (Gesell et al., 1978; Guardo & Bohan, 1971; Long et al., 1967; Piaget, 1965, 1981). Psychosocial capabilities were identified from the writings of Byler et al. (1969) and Gesell et al. (1978). Physical characteristics were derived from the writings of Gesell et al. (1978).

The derived list of the stage-related developmental capabilities of children were identified in terms of human agency strengths and limitations. These human agency characteristics were related to the 10 self-care abilities. Research related to children's conception of health (Natapoff, 1978), ability to participate in health decision-making (Lewis et al., 1978; Lewis & Lewis, 1980), health interests (Byler et al., 1969), and health values (Gochman, 1971, 1979; Parcel, 1978; Parcel et al., 1980) were reported. It was concluded that children possessed specific strengths toward the development of self-care abilities. Additionally, developmental limitations which precluded children from acting as full agents of their self-care were described. The role of responsible adults was suggested to be one of the provision of support and guidance as the child matured.

A format for the development of content items to sample self-care abilities was presented. Orem's (1980) universal self-care requisites and accompanying ideal set of actions were considered in conjunction with the recommendations of experts in health education. The literature

encompassing kindergarten through third grade was used to develop suggested self-care behaviors reflective of the 10 self-care abilities. The writings of several curricular experts and authoritative sources were utilized (Ames, 1982; Bruess & Gay, 1978; Burt et al., 1980; Hoyman, 1977; The National Center for Health Education Curriculum Project, 1981).

Q methodology as a means for sampling self-care behavior choice and action was described (Stephenson, 1953). The strengths and limitations of Q were discussed (Block, 1956; Cronbach & Glesner, 1954; Kerlinger, 1972; Livson & Nichols, 1956; Sunderland, 1962). The greatest strengths of the methodology for the purposes of this study were identified as the method's affinity for theory (Jackson & Bidwell, 1959; Kerlinger, 1973) and ability to explicate complex descriptions of traits within and among individuals (Kerlinger, 1973; Nunnally, 1978; Stephenson, 1953).

CHAPTER III

Methodology

In order to ascertain the self-care abilities of children, an instrument was developed from a framework incorporating Orem's Self-Care Deficit Theory of Nursing, selected developmental theorists, and the recommendations of curricular experts in primary grades health education. It was assumed for the purpose of instrument development that the self-care abilities of children could be described through assessment of their self-reported propensity to take certain types of action.

Q methodology was viewed as the appropriate choice to sample behavioral choices among different types of action. Within the framework of Q, people are asked to build a self-description of traits, preferences, or feelings that best describe their position along some dimension. The methodology's requirement of making deliberate choices among a variety of stimuli was viewed as consistent with Orem's (1979) specification of self-care as deliberate and purposeful.

Purpose

The purpose of this study was to describe the self-care abilities of young, schoolaged children. This objective was accomplished through the development of a Q-sort instrument.

Study Questions

Stephenson (1953) emphasized the impossibility of stating specific hypotheses prior to the analysis of the results from Q-sorts. General

assertions about the direction of the results are recommended. In this investigation, the following questions were explored:

1. What is the distribution of the pattern of self-care abilities in young, schoolaged children?

2. Are the results of the analysis of variance procedures and the factor analytic solution congruent as to the pattern of self-care abilities?

3. What items in the Q-sort are descriptive of the factor solution of person types in relation to self-care abilities?

Scope and Setting

The focus of this study was on children regularly enrolled in the second and third grades of elementary school. The sample consisted of Caucasian children, ages 7 through 9, who were in the second or third grade for the first time. Non-white children were excluded from data analysis, but not participation in the study. This decision was dictated by the financial resources of the investigator. In order to preclude threats to internal validity of employing the Q method, an additional 120 items would have been needed.

The setting was a neighborhood elementary school located in an area adjacent to a Southeastern metropolitan area. The school contained levels kindergarten through fifth grade. Children attending this school are from a defined geographic area.

The school is large, well equipped, and has a teacher-student ratio of approximately 1:24. The parent-teacher organization is actively involved in school improvements. Recent school acquisitions include a multi-media center and computer hardware. During the present school year,

the Primary Grades Health Curriculum Project (National Center for Health Education, 1981) was initiated in selected classrooms on a trial basis.

Sample

Forty-four second- and third-grade children participated in the study. Thirty-six of the children met the study criteria and were selected for data analysis. Criteria for the study included: (a) be between 7 and 9 years of age, (b) be at the appropriate grade level for age, (c) be able to understand the instructions for test administration, and (d) be of the Caucasian race.

Methods and Materials

Two instruments were used to obtain the data. A 60-item pictorial Q-sort instrument, constructed by the investigator, was used to gain information about the self-care abilities of children. The Child Health Questionnaire (CHQ), a teacher rating scale, was employed as a criterial referent for the factor solution obtained from Q-factor analysis of the sort items (Butler, 1978). The process of the Q-sort instrument will be described in subsequent paragraphs.

Instrument Development

Several sequential steps were necessary in the process of building a description of children's self-care abilities. These steps are delineated as follows:

1. Identification of a framework through which to view the child development literature that was consistent with the assumptions regarding self-care agency. A Piagetian framework (1965; 1966; 1972; 1981) was chosen as the vehicle for viewing cognitive and affective-moral development. Supplementation for the framework was provided through the work of

the maturational theorists Gesell et al. (1978) as well as other investigators (Guardo & Bohan, 1971; Long et al., 1967).

2. Specification of the stage-appropriate characteristics of children in relation to the capabilities and dispositions of human agency (Orem, 1979). Human agency characteristics were reviewed within the major developmental domains: cognitive, affective-moral, psychosocial, and physical. Stage-appropriate developmental strengths and limitations in each area were described (Appendix A).

3. The identification of a method to sample self-care actions of children. The identification of self-care actions was accomplished through joint consideration of Orem's (1980) universal self-care requisites and accompanying ideal set of actions, and the recommendations of curricular experts in health education (Ames, 1982; Bruess & Gay, 1978; Burt et al., 1980). Joint consideration of these items is illustrated in Appendix B.

4. Development of a scheme to illustrate the proposed relationship among human agency strengths and limitations, development of self-care abilities, and the self-care actions. The relationship of specific human agency characteristics to discrete self-care abilities has not been sepcified. At this stage of framework development, the relationship is considered interactive. However, for the purposes of instrument construction, specific strengths and limitations were related to singular self-care abilities. Further, specific self-care actions suggested to exemplify possession of these abilities were chosen from items presented in Appendix B. This relationship is illustrated in Appendix C.

5. Generation of sample items for each of the 10 self-care abilities from the scheme illustrated in Appendix C. The sample items were

developed as line drawings illustrative of the self-care actions. A commercial illustrator was employed to produce the drawings. Support for use of line drawings to investigate health-related variables was available from the literature review (Gochman, 1970; 1971; Register & L'Abate, 1972; Whalen, 1976).

6. Compilation of the items into a Q-sort instrument. Construction and validation of the instrument will be discussed in subsequent paragraphs.

Structure of the Sort. According to Stephenson (1953), Q methodology is appropriate for the measurements of traits of a single case. Further, Q permits a description of the uniformities or regularities in the relationship among these traits. The theoretical framework utilized for the investigation indicates the nature of the relationship among the traits under study, and thus permits general predictions regarding uniformities in this relationship. The elements of the theoretical framework are represented along Fisherian design lines, thereby creating categories within which samples of items may be placed. When the one-way analysis of variance design is employed vis-a'-vis a factorial design, Stephenson recommended balancing the design for at least one effect. This condition is accomplished by including an equal number of positive and negative items.

For the purpose of the present investigation, a one-way structured sort, balanced for positive and negative effects, was developed. The items were placed into categories created by consideration of the universal self-care requisites. Table 1 contains the illustration of placement of the items into categories. It should be noted that items are not equally distributed among the categories. The larger number of items

Table 1

Structure of Q-sort Instrument

Universal Self-Care Requisite	Self-Care Action Items	Self-Care Action Items
1. Maintains sufficient intakes of air, food, and water	Selects foods that contribute to strong bones and teeth	Practices good dental hygiene
	Selects appropriate food for healthful snacks	Chooses appropriate breakfast
Provision of care associated with the eliminative processes and excrements	Identifies relationships of cleanliness to health	Carries out personal health practices
2. Maintenance of a balance between solitude and social interaction	Demonstrates consideration of others	Identifies need to be alone as well as with others
	Considers consequences of behavior as it relates to others	Observes rules and waits turn in group
	Identifies ways friends can help each other	Identifies importance of playground safety rules
3. Prevention of hazards of life and well-being	Maintains a safe environment	Explains how use of unknown substances can be hazardous
	Takes appropriate action in emergency situation	Observes safety practices in everyday living

Table 1 (continued)

Universal Self-Care Requisites	Self-Care Action Items	Self-Care Action Items
	Demonstrates habits that reduce the spread of infectious diseases	Recognizes safe and unsafe patterns of behavior
4. Promotion of normalcy	Identifies role in family group	Recognizes that health decisions can be influenced by the media
	Describes ways to deal with feelings	Differentiates between acceptable and unacceptable behavior
	Recognizes that one can have different feelings about self and others	Identifies personal responsibility for reducing hazards and preventing accidents in the environment
5. Maintenance of a balance between activity and rest	Identifies need for a balance of activity and rest	Recognizes need for regular physical activity
	Identifies personal physical fitness	Identifies characteristics of good posture
	Selects pleasurable activities that are beneficial to health	

contained in category 3, prevention of hazards to life and well-being, is reflective of the number of recommendations representative of this category from the health education literature. Also, 2 categories were combined to produce the first category (see Table 1). The small number of items as well as the congruence of these items necessitated the decision to combine categories.

Validation Procedures. Content validity is the central concern for inclusion of items into the Q-sort (Stephenson, 1953). Content validity was established by inviting 3 expert judges to rate the items established by the investigator. Judges included experts from the following areas: child development, primary grades health education, and Orem's framework. The judges were asked to rank 2 sets of line drawings, one for girls and one for boys. A total of 120 line drawings were assessed, a positive and a negative example for each of the 30 items for both sexes. The degree of congruence between the items and the line drawings was assessed via a ranking procedure (Appendix D).

Kendall's coefficient of concordance (W) was used to ascertain the agreement among the judges' rankings. A significant degree of agreement was found ($W = .493$), $\chi^2(119) = 175.3$, $p < .001$. Fourteen of the drawings were revised to incorporate suggestions made by the content experts. The final Q-sort instrument for each sex contained 60 line drawings. These drawings were bipolar representations of the 30 self-care action items (Appendix E).

Criterion validity for the instrument was assessed through use of the CHQ (Butler, 1978). The important notion in Q methodology is to obtain representative samples of the major patterns of behavior addressed

in the Q-sort instrument (Talbot, 1971). In other words, a sample is selected which maximizes the differences among the traits under study, thereby producing a structured sample.

A priori specification of eligible children could not be accomplished for this study. Instead, a posteriori data were collected through the use of the CHQ (Appendix F). The CHQ is a 20-item teacher rating scale pertaining to a child's psychological health. Individual scores for each of the 20 items are totaled to produce an overall score from 0 to 40. A cut-off score of at least 34 without any zero ratings has been established as the point of identifying the healthy child (Butler, 1975). Three levels of functioning have been distinguished within the scoring: (a) psychologically healthy, (b) normal, and (c) low. The scale is applicable to the behavior of the 6- to 9-year-old child.

Reliability. The accepted method for establishing reliability for a Q-sort instrument is test-retest (Nunnally, 1978; Talbot, 1971). Initial reliability for the instrument was established by administering the sort individually to twelve 7- to 9-year-old children. The children were retested after an interval of 2 weeks. Correlation between the two administrations of the sort was assessed through use of the Spearman rank-order correlation coefficient (rho). The obtained medial coefficient was $p = .84$.

An alternate method was used to determine reliability for the study subjects. A measure of intraindividual consistency, the intraclass correlation coefficient, was employed. This statistic was used to determine relative homogeneity within classes, and thus to determine whether subjects sorted items that belonged together in a similar fashion

(Haggard, 1957; Winer, 1962). The measure was calculated from the data generated by the analysis of variance procedure on each subject's Q-sort.

Pilot Study

The objectives of piloting the Q-sort instrument were twofold: (a) to determine the appropriate shape of the distribution of items, and (b) to determine the number of discriminations possible. Information as to how many discriminations 7- to 9-year-old children could make within a Q-sort was unavailable. A single study, Bennett (1964), suggested that 5 piles or discriminations were possible. J. A. Sines, first author of the Missouri Children's Picture Test, suggested that further discriminations could be made (personal communication, September 8, 1983).

Eighteen children, 9 girls and 9 boys, between the ages of 7 and 9 were tested individually with the instrument. These children were able to make 7 discriminations. Attempts to produce a larger number of discriminations resulted in empty piles and a loss of understanding of the intent of the sort procedure. Further, attempts to control for shape of the distribution by specifying the number of cards in each pile proved distracting to the children. The decision was made to employ a free sort procedure. Support for this approach is documented (Block, 1956; Livson & Nichols, 1956).

Procedure for Data Collection

An Institutional Review Board application was completed and submitted for approval to the chairman of the Institutional Review Board at the University of Alabama in Birmingham. Subjects were deemed to be not at risk, and approval was granted to conduct the study. An appointment was made with the principal of the elementary school to discuss the procedures

for conducting the study within the school. The principal assured his cooperation and wrote a letter of endorsement to accompany the letters of invitation and consent to the parents.

Letters of invitation and consent were given to the second- and third-grade classroom teachers for distribution to the children (Appendix G). A total of 44 letters were returned to the school. All of the children who returned signed consent forms participated in the study.

The investigator was given a room adjacent to the Media Center for administration of the Q-sort instrument. The room was carpeted, well lighted, and quiet. During administration of the sort, both the child and the investigator sat on the floor. This procedure allowed the child adequate space to complete the sort.

Testing Procedure

Each child was individually tested under an approximately standard set of conditions. The investigator greeted each child at the classroom door, introduced herself, and explained that she was a nurse who was doing a study to learn more about children's ideas regarding health. Then the child accompanied the investigator to the assigned room. Instructions to the child were given in the following format:

1. I would like to know what you think about doing things to be healthy. Imagine you are the boy/girl in these pictures. I will ask you to place the pictures in several piles in order to tell me about what you do. In some pictures more than one child is present. In these pictures, imagine you are the child outlined heavily in black. These pictures are not a test and I won't be giving you a grade on your answer. I want to know what you think you do about being healthy.

2. First, I would like you to put the pictures into three piles (three 5 X 7 index cards labeled "Like Me, "?", and "Not Like Me" are placed on the floor in front of the child). Place the pictures that are like you under the "Like Me" sign. Place the pictures that are not like you under the "Not Like Me" sign. If you aren't certain about the pictures, place them under the "?" sign.

3. Next, I would like to take the pictures that you decided were like you and put them into two piles (another 5 X 7 card labeled "More Like Me" is placed beside the "Like Me" card). Now, decide which pictures are just like you and which pictures are even more like you. Place the pictures that are like you under the "Like Me" sign. Place the pictures that are even more like you under the "More Like Me" sign.

4. Next, I would like you to take the pictures that you decided werenot like you and place them into two piles (another 5 X 7 card labeled "Less Like Me" is palced beside the "Not Like Me" card). Now, decide which pictures are not like you and which pictures are even less like you. Place the pictures that are not like you under the "Not Like Me" sign. Place the pictures that are even less like you under the "Less Like Me" sign.

5. I would like you to take the pictures that you decided were more like you and place them into two piles (a 5 X 7 index card labeled "Most Like Me" is palced beside the "More Like Me" card). Now, decide which pictures are more like you and which pictures are the very most like you. Place the pictures that are more like you under the "More Like Me" sign. Place the pictures that are the most like you under the "Most Like Me" sign.

6. This task is the last thing we will do. I would like for you to take the pictures that you decided were less like you and place them into two piles (z 5 X 7 index card labeled "Least Like Me" was placed beside the "Less Like Me" card). Now, decide which pictures are less like you and which pictures are the very least like you. Place the pictures that are less like you under the "Less Like Me" sign and the pictures that are the least like you under the "Least Like Me" sign.

The children took approximately 20 minutes to complete the sort procedure. The 20-minute interval included the time necessary for the child to follow each set of instructions. The scoring procedure took 5 minutes, thus the total administration time was 25 minutes. All of the children understood the instructions; however, an occasional child attempted to clarify the distinction between less like me and least like me. For example, a query might have been stated, "Does least like me mean I never do it (the picture)"?

After the completion of the sort administration, the child was escorted back to the classroom. When all of the children had completed the sort procedure, the CHQ scale was distributed to the teachers. The teachers completed forms for each child who participated in the study. The completed forms were retrieved from teh school secretary by the investigator.

Scoring Procedure

Each Q-sort item was identified by a coded number indicating its numerical progression and its representative universal self-care requisite category. Individual item scores for each subject were derived from the

placement of items along the distribution, that is, an item placed in the most like me pile was scored as 7 and an item placed in the least like me pile was scored as 1.

Procedures for Data Analysis

Two types of statistical procedures were used to analyze the results of the Q-sorts. ANOVA procedures were employed to assess the different patterns of response within persons, that is, mean levels of item responses between partitions in the structured sort were tested for significance (Stephenson, 1953). Q-factor analysis was the second statistical procedure employed. Q-Factor Analysis is a method of intercorrelating the responses of people to the Q-sort and thus producing factors which describe types of people (Nunnally, 1978). The two sets of results, ANOVA and Q-Factor Analysis, should agree if the theoretical framework of the Q-sort is valid (Kerlinger, 1972).

A related technique in Q-Factor Analysis is the construction of Factor Arrays (Stephenson, 1953). After the factors have been derived via factor analysis, the weighted averages of the responses of the individuals substantially loaded on a factor are used to determine the items most associated with the factor. Thus, a typical Q-sort for each person factor is derived that expresses the nature of the factor. Usually, only the highest and lowest items describing the factor are of interest.

Data from this investigation were analyzed via two computer packages. Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, & Sternbrenner, 1975) was used for the analysis of variance procedures within individuals. SPSS was also used to obtain the reliability estimates and Kendall's coefficient of concordance. Data from the Q-sort were analyzed by Quanal, a program specifically designed for Q methodology (Van Tubergen,

1980). Program capabilities include item means and standard deviations, correlation matrices, several tests for determining the optimum number of factors, unrotated and rotated factor solutions, factor weights for each item and typal Z values. Typal Z values for each factor is analagous to the term Factor Array. The purpose of the analyses was threefold: (a) Determining how children cluster together on items, (b) obtaining Typal Z scores for each factor, and (c) comparing results from the analyses of variance solution to the factor solution.

The use of parametric statistics, that is, analysis of variance procedures with ipsative measures, is particularly subject to controversy. Nunnally (1978) emphasized the difficulties with interpretation when the sampling unit is stimuli rather than persons. This author suggests that probability statements regarding samples of content be limited to assertions that the "domain correlation among samples of content is different than zero" (p. 621). Cronbach and Glesner (1954) advocated conservatism in establishing significance via raising the level of significance to $\alpha = .01$. Freeman (1974) stipulated the most stringent criteria. These criteria include establishing the level of significance at .01, increasing the number of items in the sort, analyzing the factors in terms of the postulated framework and establishing a pretest and posttest measure of reliability. These criteria were met in the present study.

CHAPTER IV

Presentation and Analysis of Data

Purpose

The purpose of this study was to describe the self-care abilities of young, schoolaged children. This objective was accomplished through the development and administration of a Q-sort instrument.

Description of the Subjects

Forty-four second- and third-grade elementary school children participated in the study. Thirty-six of these children met the criteria for sample selection and were chosen for data analysis. The sample included 18 children from each grade level. A classification of subjects by grade, gender, and age category is presented in Table 2. The occurrence of 8-year-old subjects in the second grade and 9-year-old subjects in the third grade was the result of the enrollment policy of the school system. The policy stipulated an October cut-off date for initial school enrollment. The data for this study were collected in February after several children had their 8th or 9th birthdays.

Table 2

Classification of Subjects by Grade, Gender, and Age Category

Grade and Gender	Age Category 7	8	9	Total
Second				
Female	3	5	0	8
Male	7	3	0	10
Third				
Female	0	6	4	10
Male	0	6	2	8
Total	10	20	6	36

Study Questions

In this study the following questions were explored:

1. What is the distribution of the pattern of self-care abilities in young, schoolaged children?

2. Are the results of the analysis of variance procedures and the factor analytic solution congruent as to the pattern of self-care abilities?

3. What items in the Q-sort are descriptive of the factor solution of person types in relation to self-care abilities?

Although the procedures used to address the study questions are similar, each question will be discussed separately. Also, information on Q-sort reliability and criterion validity will be presented.

Pattern of Self-Care Abilities

Q-type factor analyses were used to determine the shared patterns of self-care abilities among the children. Data from the 60 item Q-sort for the 36 subjects were factored through the use of Quanal (Van Tubergen, 1980). Quanal is a factor analytic program with special capabilities for Q research. The data matrix was transformed to a correlation matrix through use of Pearson product-moment coefficients. The squared multiple correlations of the variables (SMC) replaced unity in the diagonals of the correlation matrix.

The principal axes technique was used to determine the initial factor solution. The number of factors chosen for rotation was determined by the Scree test (Cattell, 1965, cited in Kim & Mueller, 1978). The eigenvalues of the three factors selected were 15.6817, 1.7608, and 1.3372. An oblique (oblimax) rotation was attempted unsuccessfully. The number of complex polynomials generated by this approach exceeded the capacity of the rotation algorithm. An orthogonal (varimax) rotation was attempted and completed after 15 iterations. The matrices for the principal axes solution and the rotated factor solution are depicted in Table 3. The proportion of total variance explained by the factor solution was 52%.

After the factor solution was obtained, behavioral types were formed. Each factor was developed as a single Q-type person. Factor scores or weights were calculated for each subject assigned to a factor. These weights were used to determine how well individual subjects loaded on their assigned factors. Factor scores and variable assignments for the person types are displayed in Table 4. The factor scores are pure, weighted standard (Z) scores. The procedure used to obtain the scores had the effect of canceling out all but the highest positive loadings.

Table 3

Factor Matrices for the Three-Factor Solution

Variables (Persons)	h^2[a]	Unrotated Factors			Rotated Structure Matrix		
		1	2	3	1	2	3
1	577	.74	-.86	-.14	.47	.58	.12
2	665	.79	-.17	.02	.60	.49	.24
3	595	.61	.38	.26	.09	.44	.61
4	676	.79	-.13	-.16	.53	.61	.11
5	770	.83	-.25	-.10	.66	.55	.11
6	575	.61	.44	-.04	-.00	.64	.39
7	585	.76	-.10	.07	.46	.50	.34
8	440	.60	-.16	.22	.51	.23	.33
9	578	.70	-.28	-.05	.62	.42	.09
10	434	.48	-.36	.24	.61	.06	.22
11	697	.81	-.08	-.18	.50	.65	.12
12	541	.71	.13	-.13	.28	.64	.22
13	362	.53	.21	-.16	.10	.56	.16
14	362	.55	.21	.04	.15	.46	.34
15	284	.52	.02	-.05	.27	.42	.16
16	556	.63	-.34	.17	.67	.22	.23
17	690	.80	-.17	.08	.61	.46	.29
18	547	.65	.11	-.33	.22	.70	.02
19	659	.75	.29	-.09	.18	.71	.33
20	342	.57	-.09	-.04	.40	.39	.14
21	303	.53	-.04	.10	.33	.32	.29
22	593	.48	.35	.47	.07	.22	.73
23	613	.77	.05	-.06	.39	.62	.26

Table 3 (continued)

Variables (Persons)	h^{2a}	Unrotated Factors			Rotated Structure Matrix		
		1	2	3	1	2	3
24	297	.16	-.50	.10	.52	-.13	-.08
25	667	.69	.40	-.15	.04	.74	.32
26	331	.57	-.02	.02	.35	.39	.22
27	150	.37	-.01	.09	.24	.21	.21
28	624	.77	-.12	.09	.56	.45	.31
29	577	.73	-.15	-.08	.53	.51	.13
30	433	.64	.02	.15	.37	.38	.37
31	747	.84	.12	-.11	.37	.72	.28
32	624	.44	.13	.64	.26	.01	.74
33	522	.71	.02	-.11	.37	.59	.19
34	627	.77	-.15	-.00	.57	.50	.21
35	333	.53	.14	.17	.22	.34	.40
36	404	.60	.03	-.20	.28	.56	.07

a = communalities
b = Varimax Rotation
Percent of Total Variation .4356, .0489, .0371
Percent of Common Variation .8350, .0938, .0712

The scores only affected weight assignments for one factor type. Additionally, the person with the highest loading on factor type had an exponentially greater effect on the formation of typal patterns than those persons with low loadings.

Table 4

Subject Assignment with Factor Scores by Type

Type 1 (N = 14)		Type 2 (N = 18)		Type 3 (N = 4)	
Subject	Score[a]	Subject	Score[a]	Subject	Score[a]
2	0.9412	1	0.8816	3	1.0048
5	1.2133	4	0.9821	22	1.5834
8	0.7144	6	1.1205	32	1.6815
9	1.0284	7	0.6810	35	0.4884
10	0.9964	11	1.1440		
16	1.2242	12	1.0888		
17	1.0035	13	0.8422		
20	0.4831	14	0.5927		
21	0.3763	15	0.5217		
24	0.7133	18	1.3914		
27	0.2479	19	1.4617		
28	0.8254	23	1.0152		
29	0.7587	25	1.7002		
34	0.8545	26	0.4657		
		30	0.4553		
		31	1.5487		
		33	0.9046		
		36	0.8283		

[a] Pure, weighted Z score

An interesting phenomenon was noted in relation to the subjects who comprised the person types. The 14 subjects assigned to Type 1 person were male. The boys were evenly distributed between the second and third grade. Type 2 persons were 15 females and 3 males. Nine of the 15 female subjects were in the third grade and 6 of the female subjects were in the second grade. Subjects 11, 30, and 33 were the male subjects in

this type: 2 in the third grade and 1 in the second grade. Type 3 persons were 3 female subjects and 1 male subject. One female subject was in the third grade. The remaining subjects were in the second grade.

Analysis of Variance of the Q-sorts

The purpose of these analyses was twofold: (a) To examine subjects' results for congruence with the factor solution, and (b) to calculate the measure of internal consistency (reliability) for each subject. The Q-sort of each subject was subjected to a one-way analysis of variance. This procedure was accomplished by treating each response on the Q-sort instrument as a subject. Each response was placed into groups created by the categories of the universal self-care requisites (Orem, 1980). A total of 10 categories was created: five positive and five negative categories. These categories became the 10 levels of the independent variable. The dependent variable was the score on the self-care action items.

The data were analyzed by subprogram Oneway of the SPSS program (Nie et al., 1975). The intraclass correlation coefficient (R), the measure of internal consistency, was hand-calculated from the output of the Oneway procedure. This coefficient was used to determine whether subjects had sorted like items together. The question of reliability in Q studies is focused on the consistency of the sorter vis-a'-vis the test items.

Table 5 contains the results of the Oneway procedure on the individual sorts. Also, the intraclass correlation coefficient and the assignment of subjects to factor types is presented. The F-ratio was used to determine significance for both the analyses of variance and the intraclass correlation coefficient (Haggard, 1957). The Q-sorts of 31 of the

36 subjects were significant at greater than the .01 level. The five subjects with nonsignificant results were in the second grade. Three of these subjects were assigned to Type 3 person.

Table 5

F-Ratios for BiPolar Categories and Coefficients of Intraclass Correlation

Person	F	R	Person Type
1	3.834*	.32	2
2	8.518*	.56	1
3	3.103*	.26	3
4	13.739*	.68	2
5	9.896*	.60	1
6	3.410*	.29	2
7	3.994*	.33	2
8	4.388*	.36	1
9	4.454*	.37	1
10	4.054*	.34	1
11	7.928*	.53	2
12	5.881*	.45	2
13	3.865*	.32	2
14	2.905*	.24	2
15	3.350*	.28	2
16	4.508*	.37	1
17	8.500*	.56	1
18	7.226*	.51	2
19	10.150*	.60	2
20	2.510	.20	1
21	3.167*	.27	1
22	1.735	.11	3
23	8.735*	.56	2
24	1.164	.03	1
25	5.308*	.42	2
26	4.789*	.39	2
27	3.166*	.27	1
28	4.700*	.38	1
29	5.897*	.45	1
30	2.958*	.25	2

Table 5 (continued)

Person	F	R	Person Type
31	10.49 *	.61	2
32	1.162	.03	3
33	8.001*	.54	2
34	5.123*	.41	1
35	2.371	.19	3
36	3.028*	.25	2

*$\underline{p}$ <.01, df 9,51

The interpretation of the magnitude of R was more difficult. Haggard (1957) indicated that the distribution of R was asymmetric with an upper limit of +1.00, and an unknown lower limit. Kerlinger (1956) suggested that any coefficient greater than .40 be designated high, and any coefficient less than .40 low. Application of this criterion produced 14 subjects with high internal consistency: 5 or 36% of Type 1 persons and 9 or 50% of Type 2 persons. The subjects were evenly divided between the second and third grade.

Post hoc procedures were performed on subjects' Q-sorts that had significant F-ratios. The procedure used was Duncan's Multiple Range Test. The means and standard deviations for each subject are displayed in Table 6. The categories in which subjects had mean scores of greater magnitude are indicated by asterisks.

These data are summarized by the categories of universal self-care requisites and person type in Table 7. All of the differences for Type 1 persons were in the positive categorizations. The data for Type 2 persons are mixed. In three categories of the requisites, subjects had either significant means in the positive and the negative classifications or the

Table 6

Means and Standard Deviations for Post hoc Tests by Subjects

		AFWE		Activity		Solitude		Hazards		Normalcy	
Subject	Valance	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Positive	6.50*	0.83	3.80	2.28	6.16*	0.75	6.57*	0.78	5.16	2.12
	Negative	3.00	2.52	4.60	0.54	2.83	2.22	3.42	1.90	3.33	2.87
2	Positive	5.16*	2.40	6.80*	0.44	5.33*	2.33	4.71*	1.88	6.00*	1.09
	Negative	3.33	1.63	3.40	0.54	1.33	0.81	1.71	1.25	2.50	1.22
3	Positive	5.50*	1.37	5.00	1.87	5.16*	2.22	4.28	2.36	5.33*	1.50
	Negative	4.83	2.13	4.20	1.78	2.16	1.83	1.71	1.25	3.50	2.16
4	Positive	5.33*	1.36	5.00*	1.22	5.16*	1.32	5.57*	1.27	5.16*	1.47
	Negative	3.50*	1.22	3.00	1.41	1.00	0.00	1.42	1.13	2.00	1.54
5	Positive	6.16*	1.32	5.00*	1.87	5.83*	2.04	4.85*	2.54	5.50*	1.97
	Negative	2.00	0.89	2.75	2.21	1.00	0.00	1.00	0.00	2.00	1.67
6	Positive	5.16*	1.60	5.20*	0.83	4.50	2.07	4.57	1.81	4.33	1.63
	Negative	2.33	1.96	3.80	0.83	2.50	2.07	2.28	1.60	2.00	1.54
7	Positive	6.16*	1.32	6.00*	1.22	6.00*	1.09	5.71*	2.62	6.33*	1.21
	Negative	4.00	2.68	4.20	2.77	3.00	2.44	2.85	1.57	2.16	1.47
8	Positive	3.50	2.34	4.40	1.81	4.66*	2.33	5.42*	1.27	4.33	1.63
	Negative	2.00	1.26	2.00	1.00	2.50	1.37	1.71	1.25	2.16	1.32

Table 6 (continued)

Subject	Valance	AFWE		Activity		Solitude		Hazards		Normalcy	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
9	Positive	6.33*	0.81	4.20	0.83	6.16	1.32*	5.57*	2.22	5.66*	2.16
	Negative	3.33	1.86	3.60	1.67	2.00	1.54	2.85	2.47	2.50	2.51
10	Positive	4.83*	1.60	4.20	0.83	4.33*	0.81	4.71*	1.88	5.71*	1.38
	Negative	4.00	2.44	3.40	1.34	2.66	1.36	3.00	0.81	1.60	0.89
11	Positive	6.16*	0.98	4.00	0.70	6.66*	0.81	6.28*	1.25	5.00*	2.75
	Negative	3.50	2.51	4.40*	2.19	1.85	1.46	1.42	1.33	2.40	1.94
12	Positive	7.00*	0.00	4.60	1.51	5.50*	0.54	5.28*	2.92	4.50	1.87
	Negative	2.00	1.54	4.20	1.64	2.16	1.47	2.00	1.29	3.16	2.31
13	Positive	4.83*	1.16	4.00	2.12	6.66*	0.51	4.14	0.89	4.83*	1.16
	Negative	3.83	1.72	4.40	1.81	2.83	2.13	2.14	1.46	3.83	1.94
14	Positive	4.50	1.51	5.00*	1.58	4.00	2.96	5.00*	2.00	4.33	2.33
	Negative	3.50	2.58	2.40	1.51	3.66	1.36	1.42	1.13	2.00	1.54
15	Positive	4.66	2.16	5.20	1.09	6.50*	0.83	5.28	1.97	6.66*	0.81
	Negative	4.16	1.16	3.80	0.83	2.83	2.13	3.85	1.67	4.50	2.07
16	Positive	4.50	1.51	5.60*	1.34	4.16	2.22	5.71*	0.95	5.33*	1.63
	Negative	3.66	1.42	3.40	2.30	2.33	1.50	2.00	2.23	1.50	0.83

Table 6 (continued)

Subject	Valance	AFWE Mean	AFWE SD	Activity Mean	Activity SD	Solitude Mean	Solitude SD	Hazards Mean	Hazards SD	Normalcy Mean	Normalcy SD
17	Positive	5.50*	1.37	4.20*	2.28	5.66*	1.36	4.14*	2.54	5.66*	1.50
	Negative	2.16	1.83	2.00	1.22	1.00	0.00	1.14	0.37	2.16	1.60
18	Positive	6.50*	1.22	5.40*	1.14	5.66*	1.21	4.71*	1.60	5.33*	1.36
	Negative	4.00*	0.00	4.60*	1.51	2.83	1.72	1.42	1.13	4.33*	1.96
19	Positive	6.16*	1.60	6.00*	1.41	5.16*	0.98	5.42*	1.13	5.83*	1.16
	Negative	2.00	1.54	3.40	1.51	3.00	1.67	2.00	1.41	2.00	1.26
21	Positive	4.16	1.16	4.00	1.22	2.33	1.86	4.00	1.63	5.66*	1.21
	Negative	2.50	1.64	4.40	0.54	4.00	1.63	2.57	1.13	3.33	1.96
23	Positive	6.50*	0.83	4.40*	0.89	5.83*	1.32	5.57*	1.39	4.83*	1.16
	Negative	5.16*	1.72	3.20	0.83	1.83	1.32	2.42	1.81	2.66	1.50
25	Positive	5.83*	1.60	5.00*	1.22	4.66*	1.86	5.00*	1.41	5.50*	1.37
	Negative	3.00	1.09	4.00	1.87	3.33	1.75	2.42	1.83	2.00	0.63
26	Positive	6.66*	0.81	4.60	2.07	5.00	1.89	6.57*	0.78	5.33	2.25
	Negative	6.50*	0.83	3.40	2.19	2.00	1.67	2.85	2.47	3.00	3.09
27	Positive	3.50*	2.51	1.20	0.00	1.00	0.0	2.85	2.03	2.66	0.44
	Negative	1.00	0.0	1.40	0.00	1.00	0.0	1.00	0.00	1.20	0.89

Table 6 (continued)

Subject	Valance	AFWE Mean	AFWE SD	Activity Mean	Activity SD	Solitude Mean	Solitude SD	Hazards Mean	Hazards SD	Normalcy Mean	Normalcy SD
28	Positive	6.00*	1.67	5.20*	1.78	4.83	2.30	5.71*	2.36	5.00*	2.44
	Negative	2.00	2.00	3.00	1.54	1.50	0.83	2.42	1.90	1.83	1.60
29	Positive	4.50*	1.04	4.40*	0.89	4.83*	1.16	5.28*	2.36	5.33*	1.03
	Negative	3.50	2.25	3.00	1.22	1.50	1.20	1.57	0.97	2.50	1.64
30	Positive	6.66*	0.51	6.00	1.41	6.00	1.26	4.71	1.38	4.83	2.40
	Negative	3.50	1.97	3.20	1.48	3.33	2.65	3.14	1.86	3.83	2.48
31	Positive	6.16*	1.32	4.80*	1.30	5.66*	1.21	5.85*	1.06	5.33*	1.86
	Negative	2.50	1.64	3.20	0.83	2.00	1.54	1.85	1.46	1.83	1.32
33	Positive	5.33*	1.36	5.40*	0.89	4.66*	1.50	3.71	2.28	5.66*	1.63
	Negative	1.83	1.60	3.00	2.44	1.33	0.81	1.57	1.51	1.16	0.40
34	Positive	5.66*	2.42	5.20	2.16	5.16	1.47	6.14*	1.46	6.16*	1.32
	Negative	3.33	2.42	3.80	2.68	1.83	1.32	1.85	1.46	2.83	1.72
36	Positive	5.83*	1.32	5.60	0.89	5.33	1.21	5.00	2.00	4.83	1.94
	Negative	3.50	0.83	3.20	2.16	3.33	1.86	3.42	1.39	2.83	1.47

*p <.01, Ranges - 3.79, 3.95, 4.06, 4.14, 4.20, 4.26, 4.30, 4.34, 4.37

negative classifications had the higher scores. One subject in Type 3 persons accounted for both significant findings. The Q-sorts of the other three subjects were not analyzed post hoc. The percent of subjects in each category is given in parenthesis beside the number of subjects. The total number of significant findings in each category for all subjects is presented in the last column of Table 7.

Table 7

Categorization of Significant Findings by Universal Self-Care Requisites, Person Type and Category Totals from Post hoc Tests

Universal Self-Care Requisites	Person Type 1	2	3	Total
1. AFWE				
Positive	10 (.71)[a]	16 (.89)	0	26
Negative	0	4 (.22)	0	4
2. Activity				
Positive	6 (.43)	10 (.56)	0	16
Negative	0	2 (.11)	0	2
3. Solitude				
Positive	6 (.43)	13 (.72)	1 (.25)	20
Negative	0	0	0	0
4. Hazards				
Positive	10 (.71)	12 (.67)	0	22
Negative	0	0	0	0
5. Normalcy				
Positive	10 (.71)	11 (.61)	1 (.25)	22
Negative	0	1 (.06)	0	1

[a] % of total in category

Q-sort Items

The Quanal program produces a complete Q-sort (Factor Array) for each person type in a selected factor solution. The typal Z or pure, weighted standard score is given for each item. These scores are then arrayed from highest to lowest for each type. The highest and lowest items with the accompanying Typal Z scores give the salient characteristics of each person type. These items and the accompanying Z scores are presented in Table 8. A complete list of typal scores for the person types is presented in Appendix H.

Table 8

Items and Typal Z Scores Characteristic of Person Types

Type	Loading	Item	Description	Score[a]
1	Highest	34	Good dental hygiene positive	1.78
		23	Acceptable behavior positive	1.71
		13	Safe and unsafe patterns of behavior positive	1.60
		9	Reduce spread of disease positive	1.59
		60	Observes rules in groups positive	1.39
	Lowest	58	Acceptable behavior negative	-1.51
		1	Dental hygiene negative	-1.53
		24	Observes rules negative	-1.55
		39	Friends help each other negative	-1.57
		51	School environment negative	-1.62
2	Highest	34	Good dental hygiene positive	1.66
		19	Personal grooming positive	1.50
		41	Healthy school environment positive	1.49
		48	Role in family group positive	1.39
		2	Relationship of cleanliness to health positive	1.22

Table 8 (continued)

Type	Loading	Item	Description	Score[a]
	Lowest	44	Playground safety rules negative	-1.49
		30	Habits to reduce spread of disease negative	-1.58
		52	Safe patterns of behavior negative	-1.68
		24	Observes rules negative	-1.87
		58	Acceptable behavior negative	-1.96
3	Highest	9	Reduce spread of disease positive	1.61
		6	Consequences of behavior to others positive	1.52
		23	Acceptable behavior positive	1.50
		16	Need for regular physical activity positive	1.39
		41	Healthy school environment positive	1.39
	Lowest	7	Different feelings about self and others negative	-1.61
		44	Playground safety rules negative	-1.68
		24	Observes rules negative	-1.68
		29	Maintains a safe environment negative	-1.75
		52	Safe patterns of behavior negative	-1.81

[a] Typal Z scores

One-tailed comparisons of typal scores among the Q-sorts of the three types revealed some significant differences. Type 1 persons ranked the item, healthy school environment positive, significantly lower than Type 2 persons, Z - -1.69, $p < .05$. Type 1 persons rated items significantly higher than Type 3 persons in the following areas: (a) Observes rules in groups positive, Z - 1.99, $p < .05$, (b) role in family group

positive, Z - 1.94, $p < .05$, (c) action in emergency positive, Z = 1.90, $p < .05$, and (d) selects foods for healthful snacks positive, Z = 1.87, $p < .05$.

Type 3 persons ranked two items significantly higher than Type 1 persons: (a) Need to be alone negative, Z - 1.67, $p < .05$, and (b) personal responsibility for reducing hazards negative, Z - 1.67, $p < .05$. Also, Type 3 persons ranked two items significantly higher than Type 2 persons: (a) Appropriate breakfast foods negative, Z = 1.77, $p < .05$, and (b) personal responsibility for reducing hazards negative, Z - 2.34, $p < .05$.

An additional comment regarding analysis of the Q-sorts is pertinent. The decision to employ a free sort is controversial. This issue is discussed in Chapter III. Information regarding the mean score and variance of each subject's Q-sort is presented in Table 9. A check of these data revealed one subject, number 27, whose scores were substantially different.

Table 9

Descriptive Statistics for the Individual Q-Sorts

Subject	Mean	Standard Deviation
1	4.48	2.26
2	4.06	2.24
3	4.36	2.12
4	3.75	2.11
5	3.56	2.48
6	3.70	1.89
7	4.80	2.19
8	3.33	1.95
9	4.23	2.30
10	4.11	1.63
11	4.15	2.41
12	4.06	2.23
13	4.13	1.78
14	3.56	2.06

Table 9 (continued)

Subject	Mean	Standard Deviation
15	4.75	1.85
16	3.80	2.18
17	3.33	2.29
18	4.40	1.90
19	4.13	2.08
20	4.38	1.99
21	3.63	1.60
22	3.73	2.01
23	4.25	1.98
24	3.61	1.90
25	4.05	1.82
26	4.61	2.41
27	1.83	1.63
28	3.75	2.48
29	3.63	1.96
30	4.50	2.10
31	3.91	2.16
32	3.63	1.85
33	3.33	2.22
34	4.18	2.36
35	4.18	2.41
36	4.40	1.70

Criterion Validity. Criterion validity of the Q-sort instrument was assessed by comparison with the Child Health Questionnaire (CHQ). The CHQ samples five health domains: physical, cognitive, social, emotional, and play (Butler, 1975). Individual item scores for the 20 items are totaled to produce an overall score from 0 to 40. A cut-off score of 34 without any zero ratings has been established as the point of identifying the healthy child.

Rank on the CHQ was determined by the five teachers from whose classrooms the subjects were drawn. The equal length Spearman-Brown reliability coefficient was .91 for this sample. This result compared favorably with the reported reliability coefficient range of .82 to .89.

The mean CHQ score for all subjects was 33. The mean ratings given by the five classroom teachers were 34, 21.7, 38, 34 and 37.5. Analysis of variance revealed a significant difference among the mean scores, $F(4, 31) - 15{,}803$, $p < .0001$. The post hoc procedure indicated that teacher 2 ($M = 21.7$) rated children significantly lower than the other 4 teachers, $K = 5$, df (31), $p < .05$. Teacher 2 was a third grade classroom teacher. Mean scores for the second grade were significantly higher ($M = 37.33$), than mean scores for the third grade children ($M = 38.55$) $t(34) = 4.10$, $p < .01$. No difference was observed for gender, $t(34) = 0.99$, $p > .05$.

The mean scores for Person Types 1 through 3 were 32, 33, and 36, respectively. Because overall scores were affected by teacher ratings for one group of subjects, individual item scores on the CHQ were assessed in relation to person types. Eta was used to determine if there was an association between single item scores and type assignment in the factor solutions. All of the resulting associations were weak (Eta $\leq .3$).

Summary of the Findings

Q-type factor analysis was used to determine shared patterns of self-care abilities among children. Data from a 60-item Q-sort for 36 subjects were factor analyzed through the use of Quanal (Van Tubergen, 1980). The obtained factor solution identified 3 person types. Type 1 persons were 14 male subjects equally divided between the second-and third-grade. Type 2 persons were 15 females, 9 third-grade girls and 6 second-grade girls, and 3 males, 2 third-grade boys and 1 second-grade boy. The Type 3 person factor contained 3 females and 1 male. One female subject was in the third grade. The remaining subjects were in the second grade.

One-way analysis of variance was performed on the Q-sorts of each subject. The independent variable was the universal self-care requisites with 10 levels of categories. The scores in these categories were the bipolar self-care action items. The Q-sorts of 31 of the 36 subjects were significant at greater than the .01 level. All subjects with non-significant results were in the second grade. The intraclass correlation coefficient was employed as a measure of internal consistency of the Q-sort data for subjects. The Q-sorts of 5 (46%) of Type 1 persons and 9 (50%) of Type 2 persons had high internal consistency. Overall, 31 (86%) of the subjects demonstrated internal consistency as determined by significant F-ratios.

Post hoc procedures on subjects' Q-sorts showed different patterns of response among categories for the person types. A greater percentage of Type 2 persons reported positive self-care actions in three of the categories: (a) Maintaining sufficient intake of air, food, water, and care of excrements, (b) maintenance of a balance of activity and rest, and (c) maintenance of a balance of solitude and social interaction. Type 1 persons reported more positive self-care actions in the category of promotion of normalcy. Type 1 and Type 2 persons reported approximately the same percentage of positive self-care actions in the category of prevention of hazards. Type 3 persons tended to report fewer positive self-care actions in all of the categories.

Factor Arrays or Q-sorts for each person type were generated by the Quanal program. The highest and lowest ranked items in these arrays depicted the salient characteristics of the person types. The application of one-tailed tests revealed some significant differences among the person types. Type 1 persons ranked the item healthy school environment

positive significantly lower than Type 2 persons, $Z = -1.69$, $p < .05$. Type 1 persons ranked several items significantly higher than Type 3 persons: (a) Observes rules in groups positive, $Z = 1.99$, $p < .05$, (b) role in family group positive, $Z = 1.94$, $p < .05$, (c) action in emergency positive, $Z = 1.90$, $p < .05$, and (d) selects foods for healthful snacks positive, $Z = 1.87$, $p < .05$.

Type 3 persons ranked two items significantly higher than Type 1 persons: (a) Need to be alone negative, $Z - 1.67$, $p < .05$, and (b) personal responsibility for reducing hazards negative, $Z - 1.67$, $p < .05$. Also, Type 3 persons ranked two items significantly higher than Type 2 persons: (a) Appropriate breakfast foods negative, $Z - 1.77$, $p < .05$, and (b) personal responsibility for reducing hazards negative, $Z = 2.34$, $p < .05$.

Criterion validity of the Q-sort instrument was assessed by comparison with the CHQ. The mean CHQ score for all subjects was 33. The mean ratings given to subjects by the five classroom teachers were 34.0, 21.7, 38, 34.0, and 37.5. Analysis of variance revealed a significant difference among the mean scores, $F(4, 31) = 15.803$, $p < .0001$. The post hoc procedure indicated that teacher 2 ($M = 21.7$) rated children significantly lower than the other four teachers, $K = 5$, $DF(31)$, $p < .05$. Teacher 2 was a third-grade teacher. Means scores for the second-grade children were significantly higher ($M = 37.33$) than mean scores for the third-grade children ($M = 28.55$), $t(34) = 4.10$, $p < .01$. No difference was observed for gender, $t(34) = 0.99$, $p > .05$. The mean scores for person types 1 through 3 were 32, 33, and 36, respectively. Eta was used

to assess association between individual item scores on the CHQ and type assignment in the factor solution. All of the resulting associations were weak (Eta $\leqslant$ .3).

CHAPTER V

Summary, Conclusions, Discussion, and Recommendations

Summary of the Study

The purpose of this study was to describe the self-care abilities of young, schoolaged children. This objective was accomplished through the development and administration of a Q-sort instrument. The conceptual framework for the study was derived from Orem's (1980) Self-Care Deficit Theory of Nursing, developmental theory (Gesell et al., 1978; Piaget, 1965, 1966, 1972, 1982), a Q methodology (Stephenson, 1953), and the area of primary grades health education (Ames, 1982; Bruess & Gay, 1978; Burt et al., 1980; Hoyman, 1977; National Center for Health Education, 1981). The Q-sort instrument was developed to address the problem: What are the self-care abilities of young, schoolaged children? The study questions were related to the distribution of the pattern of self-care abilities among children, the congruence between the pattern and other methods of analyses, and derivation of a description for the typical child associated with specific patterns.

Several steps were taken in order to construct the Q-sort instrument. The qualities identified by Orem (1979) as necessary for the development of self-care abilities were examined in relation to children. A list of strengths and limitations was derived from this analysis. Next, the literature in primary grades health education was reviewed in light of Orem's (1980) universal self-care requisites and the set of ideal self-care actions. These materials were considered jointly with the

recommendations for children from the health education literature. This step resulted in the development of a list of self-care actions for each category of the universal self-care requisites. The scheme for item construction for the Q-sort was developed through the interrelationship of the list of strengths and limitations, the 10 self-care abilities, and the self-care actions. A final list of 30 bipolar items was delineated for a total of 60 items. The items were developed as line drawings illustrative of positive and negative behavioral choices.

Content validity for the items was established by inviting three expert judges to review the items. The judges included experts in the areas of child development, Orem's framework and primary grades health education. The judges' suggestions for revision were incorporated into the final instrument. Initial reliability was established by determining test-retest reliability on 12 subjects. The method for instructing children in the sort procedure was piloted on 18 subjects.

The final Q-sort instrument was administered to 36 subjects, 18 second-grade children and 18 third-grade children. The data were subjected to Q-type factor analysis. Additionally, the data from each subject's Q-sort were analyzed by oneway analysis of variance. These analyses served the dual purposes of determining congruence between the sort and the factor solution, and calculating a measure of internal consistency for the subjects. A typical Q-sort (Factor Array) was developed for each person type identified by the factor solution. Criterion validity of the instrument was assessed by comparison of the subjects' scores on the Child Health Questionnaire and subjects' assignment to factor types.

Findings

The findings of the study are listed in relation to the study questions. Findings were as follows:

1. The distribution of the pattern of self-care abilities in young, schoolaged children was determined by subjecting the data from the subjects' sorts to Q-type factor analyses. The analysis identified 3 person types or factors. The proportion of total variance explained by the factor solution was .5216. Type 1 persons were 14 males, equally divided between the second and the third grade. Type 2 persons were composed of 15 females and 3 males. The division of subjects was as follows: (a) 9 third-grade girls, (b) 6 second-grade girls, (c) 2 third-grade boys, and (d) 1 second-grade boy. Type 3 persons were 3 females and 1 male. One female subject was in the third grade. The remaining subjects were in the second grade.

2. The extent of congruence between the factor solution and the analysis of variance procedures was assessed through the use of post hoc procedures. Only the data from subjects who had significant overall F ratios were analyzed post hoc. The F value was significant at greater than the .01 level for 31 of the subjects. The 5 subjects who had non-significant results were in the second grade: 2 Type 1 persons and 3 Type 3 persons. The post hoc tests revealed different patterns of response for the categories of universal self-care requisites among the person types. The positive responses for the 14 Type 1 persons were: (a) Air, food, water, and excrement, 10 (71%), (b) activity and rest, 6 (43%), (c) solitude and social interaction, 6 (43%), (d) prevention of hazards, 10 (71%), and (e) normalcy, 10 (71%). The positive responses for the 18 Type 2 persons were: (a) Air, food, water, and excrements,

16 (89%), (b) activity and rest, 10 (56%), (c) solitude and social interaction, 13 (72%), (d) prevention of hazards, 12 (67%), and (e) normalcy, 11 (61%). In three of the categories, Type 2 persons reported significant negative responses: (a) Air, food, water, and excrements, 4 (22%), (b) activity and rest, 2 (11%), and (c) normalcy, 1 (6%). The 4 Type 3 persons revealed a total of two positive responses, one in the category of solitude and social interaction and one in the category of normalcy.

3. In descending order of overall numbers of positive self-care actions per category reported by subjects were: (a) Air, food, water, and excrements, 26 (72%), (b) hazards, 22 (61%), (c) normalcy, 22 (61%), (d) solitude and social interaction, 20 (56%), and (e) activity and rest, 16 (44%).

4. Overall, 7 of the 36 subjects reported themselves as taking a significant number of negative self-care actions in three of the categories. The categories in descending order of frequency were: (a) Air, food, water, and excrements, 4 (11%), (b) activity and rest, 2 (6%), and (c) normalcy, 1 (3%).

5. The coefficient of intraclass correlation was used to assess the internal consistency or reliability of the subjects' Q-sorts. Overall, 31 of the 36 subjects had Q-sorts that demonstrated a significant degree of internal consistency. High internal consistency was demonstrated by 14 (39%) of the subjects. These subjects were equally divided between the second and third grade. The factor distribution of subjects with high internal consistency was: (a) 5 (36%) of Type 1 persons, (b) 9 (50%) of Type 2 persons, and 0 Type 3 persons.

6. A complete Q-sort or Factor Array for each person type was generated from the factor solution. Rankings from the 60 items were

indicated by typal Z scores. Significant differences from item preference were observed among the person types. All tests of significance are one-tailed. Type 1 persons ranked the item, healthy school environment positive, significantly lower than Type 2 persons, $Z = -1.69$, $p < .05$. Type 1 persons rated items significantly higher than Type 3 persons in the following areas: (a) Observes rules in groups positive, $Z = 1.99$, $p < .05$, (b) role in family group positive, $Z = 1.94$, $p < .05$, (c) action in emergency positive, $Z = 1.90$, $p < .05$, and (d) selects foods for healthful snacks positive, $Z = 1.87$, $p < .05$. Type 3 persons ranked two items significantly higher than Type 1 persons: (a) Need to be alone negative, $Z = 1.67$, $p < .05$, and (b) personal responsibility for reducing hazards negative, $Z = 1.67$, $p < .05$. Also, Type 3 persons ranked two items significantly higher than Type 2 persons: (a) Appropriate breakfast food negative, $Z = 1.77$, $p < .05$, and (b) personal responsibility for reducing hazards negative, $Z = 2.34$, $p < .05$.

7. Criterion validity of Q-sort instrument was assessed by means of comparison with the Child Health Questionnaire (CHQ). The equal length Spearman-Brown reliability coefficient for the sample CHQ data was .91. The mean CHQ score for all subjects was 33. The mean ratings given by the five classroom teachers were 34.0, 21.7, 38, 34, and 37.5. Analyses of variance revealed a significant difference among the mean scores, $F(4, 31) = 15.803$, $p < .0001$. The post hoc procedure indicated that teacher 2 (M - 21.7) rated children significantly lower than the other four teachers, $K = 5$ df (31), $p < .05$. Mean scores for the second-grade children were significantly higher ($M = 37.33$) than mean scores for the third-grade children ($M = 28.55$), $t(34) = 4.10$, $p < .01$. No difference was observed for gender, $t(34) = 0.99$, $p > .05$. The mean scores for

person types 1 through 3 were 32, 33, and 36, respectively. Eta was used to assess association between individual item scores on the CHQ and type assignment in the factor solution. All of the resulting associations were weak (Eta $\leq .3$).

Conclusions

Based on the findings of the study, the following conclusions can be drawn subject to the limitations of the study:

1. The person types identified by factor analysis of the subjects' Q-sort data were influenced by gender. It was concluded that subjects' choice of self-care action items within the categories of universal self-care requisites was affected by gender.

2. The comparison of the factor solution and the analysis of variance procedures identified children who demonstrated both similar and different patterns of response in relation to the universal self-care requisites: (a) Type 1 persons reported a greater percentage of positive responses in the category of normalcy. It was concluded that Type 1 persons were more likely to describe themselves as taking positive action in this category; (b) Type 2 persons reported greater percentages of positive actions in three of the categories: air, food, water, and excrements; activity and rest; and solitude and social interaction. It was concluded that Type 2 persons were more likely to describe themselves as taking positive actions in these categories; (c) Type 1 and Type 2 persons reported approximate equal percentages of positive self-care actions in the category, prevention of hazards. It was concluded that both types described themselves similarly in this category; (d) In three of the categories, Type 2 persons reported significant negative responses. It was concluded that some Type 2 persons were likely to describe

themselves as taking both positive and negative self-care actions; (e) Type 3 persons reported positive self-care actions in two categories; however, these responses were attributed to one subject. It was concluded that Type 3 persons did not clearly describe themselves by either positive or negative actions.

3. In descending order of frequency, the subjects reported positive self-care actions in the following universal self-care requisite categories: (a) Air, food, water, and excrements, (b) hazards, (c) normalcy, (d) solitude and social interaction, and (e) activity and rest. It was concluded that subjects were most likely to describe themselves as taking positive action in relation to meeting requirements for air, food, water, and excrement, and least likely to take positive action in relation to meeting requirements for activity and rest.

4. Seven of the subjects reported negative self-care actions in three of the categories. In descending order of frequency, these categories were: (a) Air, food, water, and excrements, (b) activity and rest, and (c) normalcy. It was concluded that subjects were most likely to describe themselves as taking negative self-care actions in these categories. Subjects did not describe themselves as taking negative actions in the categories related to hazards and solitude and social interaction.

5. Thirty-one of the 36 subjects had Q-sorts that demonstrated a significant degree of internal consistency or reliability. The five subjects who failed to demonstrate internal consistency were in the second grade. The subjects who demonstrated high internal consistency were equally divided among the second and third grade. Also, Type 2 persons had a greater percentage of subjects with higher internal

consistency. It was concluded that the majority of the subjects sorted like items together. Further, it was concluded that age had an effect on whether subjects demonstrated reliability, but not whether they scored high or low. Finally, it was concluded that Person Type 2 had a greater percentage of subjects with high reliability.

6. Significant differences for some items were found among the Person Types. Type 1 and Type 2 persons were significantly higher on selected positive items. Type 3 persons scored significantly higher on negative items. It was concluded that Type 1 and Type 2 persons were more likely to be characterized by positive responses, and Type 3 persons were more likely to be characterized by negative responses.

7. Criterion validity for the Q-sort instrument was assessed by comparison with the Child Health Questionnaire. Significant differences were observed for grade and for the teachers' ratings. No differences were found for gender or person type assignment. It was concluded that criterion validity of the Q-sort instrument was not established through use of the Child Health Questionnaire.

Discussion

Orem's Self-Care Deficit Theory of Nursing

Published research regarding the self-care agency construct is limited. Further, no published research was identified in relation to children's self-care agency. Three studies, two related to adults and one related to adolescents, were identified in the literature review. All of these studies were conducted prior to Orem's (1979) delineation of the tri-level structure of self-care agency. In this structure, self-care abilities are identified as the link between the underlying characteristics of people and the adaptation of these characteristics to the

performance of self-care. Although the three studies were conducted prior to identification of the characteristics underlying self-care abilities, they provided guidance in formulating the approach used in this study.

Backsheider (1974) focused on the action capabilities needed to meet the therapeutic self-care demand in a health-deviated state. Kearney and Fleischer (1979) and Denyes (1980) conceived that self-care agency attributes could be sampled through self-report. Additionally, Denyes used the developmental characteristics of adolescents as a content basis for deriving items to measure self-care abilities in this age group. Also, two groups of authors (Eichelberger et al., 1980; Facteau, 1980) suggested that the development of self-care agency was an incremental process, and more importantly that children at various stages of growth and development exhibited specific abilities for self-care.

Using these published accounts, an approach to the investigation of self-care abilities was formulated. The rationale for the approach used in this study was that the presence of developing self-care abilities in children could be inferred from their reports of positive action in relation to meeting the therapeutic self-care demand. The therapeutic self-care demand in relation to meeting universal self-care requisites was chosen as basis for item development.

Several problems remained. In the present state of theory development, self-care abilities are described as interactive toward the production of self-care behaviors (Orem, 1979). This condition precluded a definitive approach to their investigation. Q methodology which considers the interactive pattern of traits within people vis-a'-vis between people was seen as a viable approach for an exploratory study of self-care

abilities. Further, Q methodology demands that subjects make choices along the dimension under study. This criterion was seen as consistent with Orem's (1980) specification of self-care action as deliberate and purposeful.

In the study, children were asked to describe themselves in relation to what they did to take care of their health. Support for this approach and for the presence of self-care abilities was suggested. Thirty-one of the 36 children reported positive self-care actions in one or more categories of the universal self-care requisites. Also, evidence suggested that the same number of children sorted like items together. Further, not all children reported themselves as taking similar actions. The factor solution identified three patterns: A type for boys, a type for girls, and a type for children who did not discriminate among items. Whether these patterns represent real differences in health-related behavior among children cannot be answered here. It is possible that the line drawings developed as the Q-sort instrument tapped some dimension of sex-linked behavior.

The data suggested that children are most likely to describe themselves as taking care of their health in the area of air, food, water, and excrements. Children were least likely to describe themselves as taking care of their health in the area of activity and rest. Less than one-half of the children reported positive actions in the category of activity and rest. This phenomenon indicated that either children of these ages do not associate activity with health or that the items depicting the activity behaviors were unclear. Girls were more likely to describe themselves positively in the category of solitude and social interactions. Items in this category addressed such areas as observance

of rules, consideration of others, helping friends, and recognizing the consequences of one's actions. Boys were more likely to describe themselves positively in the category of normalcy. Items in this category dealt with such areas as role in family group, personal responsibility, ways to deal with feelings, and consumerism.

Chidlren's Health Behaviors

Palmer and Lewis (1976) suggested that the third grade or age eight was a critical period of change in children's attitudes and health behaviors. Later results from a sub-project of the original study indicated that 7-year-old children could participate in health decisions (Lewis et al., 1978). The results of this study tended to support the original findings. All 18 third-grade subjects reported significant positive self-care actions. Five of the 18 second-grade subjects failed to report any significant actions.

Natapoff (1978) reported that the crucial variable in children's conceptions of health was maturation. Other variables such as gender, socio-economic status, and ethnic background were seen as less important. The author concluded that children view health as a positive attribute. Although children's definitions of health were not sought in this study, the number of positive self-care actions reported by the children suggested a positive valuation of health. Additionally, some support was seen for the maturation variable. Five of the second-grade children did not report positive self-care actions. One notable difference was observed in the findings of this study. Gender was found to have a decided influence on how children descirbed their health actions.

The studies that focused on the relationship between locus of control (Gochman, 1970, 1971), health locus of control (Parcel, 1978) and

children's reports of health behaviors did not explore the same dimensions as this study. However, a similar finding emerged from the Parcel study. This author reported that 84% of his sample placed a high value of health. Approximately the same percentage (86%) of the study sample demonstrated a positive valuation as evidenced by reports of positive self-care actions. The health locus of control construct may prove a useful avenue of exploration with the Q-sort instrument.

Byler et al. (1969) reported from a large scale survey of children that by age 7, children possessed knowledge about routine hygiene and safety measures. Further, it was noted that 8-year-old children were concerned about getting along with age mates and cooperative behavior. Data from the study tended to support these contentions. In the categories of air, food, water, and excrements, and prevention of hazards both age children described themselves as exhibiting positive actions. In the category of solitude and social interaction, third-grade children accounted for more than one-half (65%) of the responses.

Q Methodology

The stimuli (self-care action items) were structured by the categories of the universal self-care requisites. Biploar items were included to produce a total of 10 categories: 5 positive and 5 negative categories? The children were presented the 60-item deck of cards and instructed to place the cared into piles along a comtinuum from Most Like Me to Least Like Me. The Q-sort was free, that is, the number of items per pile was not specified. Information regarding subjects' means and standard deviations presented in Chapter IV supported the decision not to specify the distribution shape. Several sources agreed that the distributions tend to correlate and that factor structures tend to be

insensitive to the shape of the distribution (Block, 1956; Cottle & McKeown, 1980; Nunnally, 1978). Kerlinger (1972) did recommend the forced-choice approach if analysis of variance procedures were used. For this reason, homogeneity of variance was assessed in every instance. Thirty-five of the 36 Q-sorts were homogeneous.

The children in this study scaled all stimuli relative to each other instead of making dichotomous choices per item. Polit and Hungler (1978) noted that this type of procedure tended to reduce response bias. This approach can complicate interpretation. Seven children described themselves as taking either significant positive and negative actions or significant negative actions. While more difficult to reconcile, these findings would not have been evident in more traditional testing methods. In the air, food, water, and excrements category, the items chosen that produced significant negative findings were primarily nutritional items. Some children described themselves as drinking milk and eating a nutritionally balanced breakfast, and drinking colas and eating doughnuts and candy bars. It is suggested that this phenomenon is reality based and not an artifact produced by using the Q-sort method.

It was noted here as in other sources (Bennett, 1964; Polit & Hungler, 1978) that the subjects enjoyed the sorting procedure. Several children spontaneously commented that the Q-sort was fun. None of the children were observed having difficulty with either attending to the sort or following instructions. Several times, the investigator was stopped in the school hallway and presented with "Q-sort" pictures they had drawn.

The test took approximately 20 minutes to administer and 5 minutes to score per child. This time period was considered reasonable. Other

approaches with these age children would probably take an equivalent amount of time, particularly if reading level was a consideration.

Implications

Because of the limited generalizability of the findings of this study, only tentative implications are presented. Nurses whose practice is involved with child health care should be sensitive to the emerging capabilities of young, schoolaged children. The number and variety of positive self-care actions reported by the children in this study suggested that children may be capable of active participation in their health care. Further, the positive value placed on health in this study indicates that these age children would be amenable to positive reinforcement regarding health teaching.

The finding that children were less aware of the benefits of activity and rest than of the other universal self-care requisites points to the need for nursing assessment and health teaching in this area. On the other hand, it is important to note that maturation or chronological age may have accounted for this finding. Byler et al. (1969) reported that fourth-grade children were aware of physical fitness.

It is unclear whether the influence of gender in this study is a real difference. Other studies, few in number, have primarily focused on either health interests and concerns or conceptualizations of health. These studies chose distinct grade levels, that is, first, third or fourth, and sixth grade. The emphasis was placed on changes in children's reports rather than a description of the current health behaviors of children. Also, such variables as gender, ethnic background, and IQ were suggested as less influential than chronological age on health behaviors. The possible influence of race was not reported.

These findings suggest several directions for future research. The use of ipsative methods that provide in-depth sampling of behavior within individuals is suggested as an approach for gaining information about complex dimensions such as health attitudes and behaviors. Also, more studies that focus on describing children at various grade levels vis-a'-vis changes in children's health conceptualizations are needed to provide direction for nursing practice and curricula in schools of nursing. Further, the effects of variables such as gender and race need exploration.

Recommendations

Recommendations derived from the findings, discussion, and conclusions are as follows:

1. The influence of age and developmental status on the development of self-care abilities should be studied.

2. The influence of gender and race on the development of self-care abilities should be studied.

3. The use of Q methodology with children should be extended.

4. Approaches should be developed to include children as active participants in health care decisions concerning them.

5. The use of this Q-sort instrument with other populations of children should be done.

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Appendix A

Human Agency Capabilities and Dispositions

Human Agency Capabilities and Dispositions

I. Cognitive Domain

Strengths

1. Imposes order on a perceptual field.
2. Directs and maintains attention to a presenting stimulus.
3. Uses language as a mediating process to decrease trial and error behavior.
4. Devises strategies to facilitate remembering.
5. Reconstructs past events from memory.
6. Mentally represents an entire sequence of actions relavent to goal attainment.
7. Understands that substances can be transformed in shape without alteration in essential characteristics.
8. Uses higher order concepts to group phenomena.
9. Classifies objects by some quantifiable dimension.
10. Begins to evaluate own thinking.
11. Displays beginning understanding of causal relationships.
12. Uses relational concepts appropriately.
13. Possesses accurate hand-eye coordination.
14. Prints letters and numbers accurately and legibly.
15. Has improved visual acuity.
16. Performs self-help skills, (manipulation of silverware, dressing self and bathing).
17. Reads simple materials and manipulates elementary reference materials.
18. Employs elementary mathematical operations.
19. Known value of common coins.
20. Concerned about adequacy of performance in relation to standards held by parents, teachers, and peers.
21. Displays persistence toward computing tasks.
22. Desires responsibility at school and home.
23. Applys problem-solving methods to familiar events.
24. Sets goals into the future.

Limitations

1. Development of the hypotheses is limited to familiar or experienced events.
2. Limited ability to evaluate future-directed goals.
3. Overestimates ability to perform tasks.
4. Limited faculty with reading, writing, and arithmetic skills.
5. Need for supervision or guidance to complete some type of tasks.
6. Minor limitations in binocular vision.
7. Tends to procrastinate over familiar tasks and self-help measures.

II. Affective-Moral Domain

Strengths

1. Cooperates and observes common rules in organized play.
2. Beginning understanding of the wrongness of lying.
3. Begins to evaluate behavioral intentions as well as consequences.
4. Accepts responsibility for actions.
5. Possesses standards of conduct for self and others.
6. Has sense of fair play.
7. Recognizes self as distinct, sexual being in terms of behavior, appearance and less frequently, attitudes and feelings.
8. Recognizes continuity of self into the future.
9. Concerned about living up to standards of others.
10. Displays remorse if behavior falls short of standards held by significant other people.
11. Possesses strong interest in affiliative relationships.
12. Experiences self subjectively in personal-social sense.
13. Exhibits a wide variety of age appropriate interests.
14. Has a sense of property.
15. Expresses pride in good behavior.

Limitations

1. Inconsistent application of moral standards in novel situations.
2. Recognizes uniqueness of own feelings, but may not recognize uniqueness of other's feelings.
3. Unwillingness to expose self to criticism.
4. Decrease in self esteem at age seven.
5. Inconsistent in performing measures related to own care.
6. Careless of other people's property.

III. Psychosocial Domain

Strengths

1. Tells time by hour and minute.
2. Aware of passage of time by months and seasons.
3. Understands care routines for common childhood ailments.
4. Knows and observes routine practices associated with care of self.
5. Expresses interest in learning more about own body.
6. Concerned about family and peer relationships.
7. Evidences behavioral stability.
8. Plays cooperatively in groups.
9. Adjusts to demands of school life.
10. Realizes that there are differences in the way people thing and feel.
11. Enjoys verbal give and take.

Limitations

1. Limited understanding of time and space concepts.
2. Inconsistent toward helping out in family.

3. Displays periods of noisy behavior and excessive verbalization.
4. Unable to coordinate perspectives in relation to their view of others.
5. Inconsistent display of cooperative behavior in groups.
6. Requires guidance (at times) to complete tasks.

IV. Physical Domain

Strengths

1. Works for mastery of activities.
2. Maintains attention on task.
3. Displays prowness on activities requiring fine motor movements.
4. Interested in construction objects of practical value.
5. Cooperates in games requiring team effort.
6. Body movements coordinated and graceful.
7. Uses body gestures to express self.

Limitations

1. May overextent self as a result of high interest and activity level.
2. Requires guidance at intervals in order that play does not become a free-for-all.

Appendix B

General Set of Actions for Meeting Universal Self-Care Requisites

General Set of Actions for Meeting Universal Self-Care Requisite

Universal Self-Care Requisite	Ideal Action	Elementary Health Recommendations
1. Maintaining sufficient intakes of air, food, and water.	A. Taking in required quantity for normal function with adjustment for internal and external factors affecting requirements	1. Explains role of breakfast in providing energy for work and play (PGHCP/SHCP). 2. Illustrates food combination that provides a balanced diet (PGHCP/SHCP). 3. Knows quality of diet affects health (Burt, Meeks, & Pottlebaum).
	B. Preserving the integrity of associated anatomical structures.	1. Identifies food that contributes to strong bones and teeth (PGHCP/SHCP). 2. Explains how certain foods can be harmful to oral health (PGHCP/SHCP). 3. Explains care of teeth (Bruess & Gay). 4. Identifies simple concepts related to structure and function of body (Bruess & Gay). 5. Recognizes harmful effects of drugs such as tobacco on body (Bruess & Gay).
	C. Enjoying experiences of breathing, eating and drinking without abuse.	1. Knows certain foods have limited nutritional value (PGHCP/SHCP). 2. Identifies appropriate foods for healthful snacks (PGHCP/SHCP).
2. Provision of care associated with eliminative process and excrements.	A. Bringing about and maintaining internal and external conditions necessary for regulation.	Observes appropriate hygiene and tolieting practices (Burt, Meeks, & Pottlebaum).
	B. Managing processes including protection of structures and disposal of products of elimination.	Knows physical and social implications of personal health practices (PGHCP/SHCP).
	C. Providing subsequent care of body parts.	Understands relationship of cleanliness to health (Bruess & Gay).

Universal Self-Care Requisite	Ideal Action	Elementary Health Recommendations
3. Maintenance of a balance between activity and rest.	A. Selecting activities that stimulate and keep balance physical movement, affective responses, intellectual effort and social interaction.	1. Identifies need for a balance of activity and rest (Bruess & Gay). 2. Knows benefits of exercise and hazards of inactivity (Burt, Meeks, & Pottlebaum). 3. Identifies characteristics of goof posture (PGHCP/SHCP).
	B. Recognizing and attending to needs for activity and rest.	1. Indicates importance of a good night's rest (Burt, Meeks & Pottlebaum). 2. Identifies benefits of regular activity for body function (Bruess& Gay).
	C. Using personal capabilities and interests as well as culturally prescribed norms as basis for developing activity/rest patterns.	1. Develops pattern of regular exercise or activity 2. Identifies pleasurable activities that are beneficial to health (Bruess & Gay).
4. Maintenance of a balance between solitude and social interaction.	A. Maintaining balance necessary for the development of personal autonomy and social relationships.	1. Identifies that it is necessary to be alone sometimes as well as with other people (Bruess & Gay).
	B. Fostering bonds of affection, love and friendship; effecitvely managing impulses to use others for selfish purposes.	1. Describes ways friends help each other (PGHCP/SHCP). 2. Refrains from exploiting other people (Burt, Meeks, & Pottlebaum). 3. Evaluates consequences of behavior as it relates to others (PGHCP/SHCP).
	C. Providing conditions of social warmth and closeness.	1. Compares responsible versus irresponsible expression of emotion (PGHCP/SHCP). 2. Explains why people should be considerate of each other (PGHCP/SHCP).

Universal Self-Care Requisite	Ideal Action	Elementary Health Recommendations
	D. Promoting individual autonomy as well as group membership.	1. Names ways people are same and different from one another (PGHCP/SHCP).
		2. Observes rules and waits turn when part of group/team games (Hoyman).
		3. Explains importance of playground safety rules (PGHCP/SHCP).
5. Prevention of hazards to life and well being.	A. Being alert to all types of hazards that are likely to occur.	1. Identifies ways sound health habits help prevent disease (PGHCP/SHCP).
		2. Identifies safety hazards at home, at school and in between (PGHCP/SHCP).
	B. Taking action to prevent hazardous situations from occurring.	1. Names people who can be contacted in an emergency (PGHCP/SHCP).
		2. Identifies ways to help keep a healthy school environment (PGHCP/SHCP).
		3. Demonstrates habits that reduce spread of infectious diseases (Burt, Meeks, & Pottlebaum).
	C. Removing or protecting self from hazardous situations that cannot be elimitated.	1. Explains how use of unknown substances can be hazardous (PGHCP/SHCP).
		2. Recognizes safe and unsafe patterns of behavior (Burt, Meeks, & Pottlebaum).
	D. Controlling hazardous situations to eliminate danger to life and well being.	1. Observes safety precautions when riding bicycle (PGHCP/SHCP).

Universal Self-Care Requisite	Ideal Action	Elementary Health Recommendations
6. Promotion of normalcy.	A. Developing and maintaining a realistic self-concept.	1. Describes positive qualities of self and others (PGHCP/SHCP).
		2. Identifies role in family constellation (Burt, Meeks, & Pottlebaum).
	B. Taking action to maintain and promote the integrity of one's structure and functioning.	1. Describes personal health responsibilities (PGHCP/SHCP).
		2. Recognizes that health decisions can be influenced by the media (Bruess & Gay).
		3. Identifies personal responsibility to maintain a safe environment (Bruess & Gay).
		4. Identifies one can have different feelings about self and others (Bruess & Gay).
	C. Taking action to foster specific human developments.	1. Identifies personal health practices that can protect self and others (PGHCP/SHCP).
		2. Knows that the quality of personal body care influences health (Bruess & Gay).
		3. Expresses ways to deal with feelings; anger, sadness, and joy (Burt, Meeks, & Pottlebaum).
	D. Identifying and attending to deviations from one's structural and functional norms.	1. Can define meaning of personal fitness (PGHCP/SHCP).
		2. Differentiates acceptable versus unacceptable behavior (PGHCP/SHCP).

Appendix C

Format for Item Development

Format for Item Development

Human Agency Strengths and Limitations	Self-Care Ability	*Actions to Meet Universal Self-Care Requisites	Bipolar Self-Care Action Items
Strengths			
1. Experiences self subjectively as a social being.	Ability to maintain attention to self and exercise requisite vigilance to: (a) Self as self-care agent and (b) internal and external conditions and factors significant for self-care.	1. Recognizes that one can have different feelings about self and others.	7, 36
2. Accepts responsibility for actions.		2. Evaluates consequences of own behavior as it relates to others.	6, 12
3. Recognize continuity of self into the future.		3. Maintains a safe environment	29, 40
4. Feels good about self.			
Limitations			
1. Transient feelings of decreased self esteem.			
2. Vulnerability to criticism.			
3. Limited ability to recognize feelings of others.			
Strengths			
1. Maintains attention on tasks.	Controlled use of physical energy that is sufficient for initiation and continuation of self-care operations.	1. Identifies benefits of regular activity.	16, 45
2. Works for mastery of activities.		2. Indicates importance of good night's rest.	
3. Cooperates in activities requiring team effort.		3. Identifies pleasurable activities that are beneficial to health.	3, 26
		4. Identifies need for a balance of activity and rest.	5, 47

Human Agency Strengths & Limitations	Self-Care Ability	*Actions to Meet Universal Self-Care Requisites	Bipolar Self-Care Action Items
Limitations			
1. May overextend self.			
2. Requires guidance at intervals to maintain consistent team participation.			
Strengths			
1. Body movements coordinated and graceful.	Ability to control the position of the body and its parts in the execution of movements required for initiation and completion of self-care operations.	1. Identifies characteristics of good posture.	32, 53
2. Uses body gestures to express self.		2. Carries out personal health practices, i.e., bathing, grooming, brushing teeth.	19, 38
Limitations			
- None noted.			
Strengths			
1. Ability to use reversible operations.	Ability to reason within a self-care frame of reference.	1. Chooses appropriate breakfast foods.	14, 43
2. Uses higher order concepts to group phenomena.		2. Identifies food that contributes to strong bones and teeth.	28, 56
3. Possesses classification schemas.		3. Identifies relationship of cleanliness.	2, 25
4. Uses relational concepts appropriately.		4. Explains how use of unknown substances can be hazardous.	11. 17
5. Applies problem solving methods to familiar events.			

Human Agency Strengths & Limitations	Self-Care Ability	*Actions to Meet Universal Self-Care Requisites	Bipolar Self-Care Action Items
Limitations			
1. Limited ability to reason inferentially.			
2. Unable to evaluate future directed goals.			
Strengths			
1. Concerned about adequacy of performance in relation to standards held by parents, teachers, and peers.	Goal orientation for self-care that are in accord with its characteristics and its meaning for life, health, and well-being.	1. Describes ways friends help each other.	20, 39
2. Has standards of conduct for self and others.		2. Differentiates between acceptable and unacceptable behavior.	23, 58
3. Values support cooperation and fair play.		3. Explains why family members should be considerate of each other.	4, 21
4. Has wide variety of interests in people, group play, hobbies, and projects.			
5. Strong desire for affiliative relationships.			
6. Holds health as an instrumental value.			

Human Agency Strengths & Limitations	Self-Care ability	*Actions to Meet Universal Self-Care Requisites	Bipolar Self-Care Action Items
Limitations			
1. Inconsistent application of moral standards in novel situations.			
2. Immature judgement regarding future oriented goals.			
3. Tends to procrastinate.			
Strengths			
1. Begins to evaluate own thinking.	Ability to make decisions about care and operationalize these decisions.	1. Demonstrates habits that reduce spread of infectious disease.	9, 30
2. Beginning understanding of causal relationships.		2. Recognizes safe and unsafe patterns of behavior.	13, 52
3. Able to perform self-help skills.		3. Recognizes that health decisions can be influenced by the media.	3. 59
4. Sets goals into the future.			
5. Concerned about adequacy of performance according to standards.			
6. Desire responsibility.			
Limitations			
1. Limited ability to evaluate future directed goals.			
2. Overestimates ability to perform tasks.			
3. Tends to procrastinate over familiar tasks and self help skills.			

Human Agency Strengths and Limitations	Self-Care Ability	*Actions to Meet Universal Self Care Requisites	Bipolar Self-Care Action Items
Strengths			
1. Curiousity and interest in how body functions. 2. Adjusts to the demands of a classroom situation. 3. Demonstrates persistence.	Ability to acquire technical information about self-care from authoratative sources, to retain it, and operationalize it.	1. Names people who can be contacted in an emergency.	50, 10
Limitations			
1. Needs supervision and guidance from adults. 2. Inconsistent in performing measures related to own care. 3. Display periods of noisy behavior and excessive verbalization.			
Strengths			
1. Direct and maintain attention to presenting stimulus. 2. Imposes order on a perceptual field. 3. Uses language as a mediating process. 4. Devises strategies to facilitate remembering. 5. Reconstructs past events from memory	A repertoire of cognitive, perceptual, manipulative, communication and interpersonal skills adapted to the performance of self-care operations.	1. Explains care of teeth. 2. Identifies role in family constellation. 3. Expresses ways to deal with feelings. 4. Observes rules and waits for turn in group play.	34, 1 48, 57 54 & 27

Human Agency Strengths and Limitations	Self-Care Ability	*Actions to Meet Universal Self Care Requisites	Bipolar Self-Care Action Items
6. Improved visual acuity.			
7. Good eye-hand coordination.			
8. Prints legibly.			
9. Reads simple materials.			
10. Employs mathematical operations.			
11. Cooperates and observes common rules in organized play.			
12. Experiences self subjectively in personal-social sense.			
13. Interested in family and peer relationships.			
14. Enjoys verbal give and take.			
15. Realizes there are differences in way people feel and think.			
16. Improved fine motor skills.			
Limitations			
1. Binocular vision is not fully coordinated.			
2. Possesses limited reading and mathematical skills.			
3. Hypothesis testing limited to familiar events.			
4. Unable to coordinate perspectives.			

Human Agency Strengths and Limitations	Self-Care Ability	*Action to Meet Universal Self Care Requisites	Bipolar Self-Care Action Items
5. Inconsistent maintenance of cooperative behavior in groups.			
6. Tendency to overextend self.			
7. Requires supervision of group activities.			
Strengths			
1. Reconstruct past events from memory.	Ability to order self-care actions into relationships with prior and subsequent actions toward final achievement of regulatory goals of self-care.	1. Describes personal responsibilities for reducing hazards and avoiding accidents.	35 & 46
2. Mentally represent an action series relevant to goal attainment.		2. Observes playground safety rules.	15 & 44
3. Capable of performing simple self-care skills.			
4. Display persistence and concern for task completion.			
5. Can get goals into the future.			
Limitations			
1. Unable to realistically evaluate probability of goal attainment.			
2. Inconsistent performance of self-care measures.			
3. Requires adult guidance to maintain consistent patterns of behavior.			

Human Agency Strengths and Limitations	Self-Care Ability	*Action to Meet Universal Self Care Requisites	Bipolar Self-Care Action Items
Strengths			
1. Improved understanding of time and space concepts.	Ability to consistently perform self-care operations, integrating them with relevant aspects of personal, family and community living.	1. Identifies need to be alone as well as with others.	49 & 48
2. Known and observe routine hygiene and safety measures.		2. Identifies ways to keep a healthy school environment.	41 & 51
3. Understand routines observed for commonly experienced childhood ailments.		3. Observes safety practices in everyday living.	31, 42
4. Demonstrate persistence toward task completion.			
Limitations			
1. Limited understanding of the chronology of events.			
2. Require guidance to consistently perform self-care measures.			

*From Appendix B, Health Education Recommendations

Appendix D

Instructions to Content Judges

Instructions

The pictures on the following pages are graphic illustrations of self-care actions related to taking care of one's health. Self-care actions are defined as activities that maintain or promote life, health, and well-being. The self-care actions as illustrated were developed from a framework incorporating Orem's Self-Care Deficit Theory of Nursing, selected developmental theorists and the work of specialists in primary grades health education.

The pictures will be compiled as a Q-sort instrument for administration to 7- and 8-year-old children. The children will be requested to sort the cards in order to build a self-description of self-care actions in relation to health. The children will be instructed to identify what is most like them along a continuum to what is least like them. Some illustrations contain more than a single child. In these pictures, the central figure is outlined heavily in relation to supporting figures. Children will be instructed to identify with the outlined figure.

Please indicate your degree of agreement regarding the appropriateness of the illustrated actions by ranking each picture on a scale from one to four. The scale key is as follows: (1) indicates complete disagreement, (2) indicates moderate disagreement, (3) indicates moderate agreement, and (4) indicates complete agreement. For example, if you disagree entirely with the illustrated actions indicate disapproval by ranking the picture (1) or if you completely agree with the illustrated action indicate approval by ranking the picture (4). Gradients in degree of approval or disapproval may be indicated by the rankings of (2) or (3).

Two complete sets of pictures are presented; a set for girls and a set for boys. The self-care action items are bi-polar - one picture will illustrate the positive action and its correspondent will illustrate the negative action. The positive illustration will be labeled a and the negative illustration will be labeled b. The pictures will be numbered to correspond with the individual self-care action items on the ranking sheets. Four pictures are presented for each item; a positive and a negative illustration for girls, and a positive and a negative illustration for boys.

Space is provided for suggestions or comments beside each item. Please comment if you have suggestions for strengthening or revising the illustrations or the self-care items.

Self-Care Action	Complete Disagreement	Moderate Disagreement	Moderate Agreement	Complete Agreement	Complete Disagreement	Moderate Disagreement	Moderate Agreement	Complete Agreement	Comments and Suggestions
	Girls' Set				Boys' Set				
1. Maintains a safe environment									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
2. Demonstrates consideration of others									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
3. Considers consequences of behavior as it relates to others									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
4. Takes an appropriate action in an emergency situation.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
5. Demonstrates habits that reduce the spread of infectious disease									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
6. Maintains a healthy school environment									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
7. Identifies need for a balance of activity and rest.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
8. Identifies ways friends can help each other									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	

Self-Care Action	Complete Disagreement	Moderate Disagreement	Moderate Agreement	Complete Agreement	Complete Disagreement	Moderate Disagreement	Moderate Agreement	Complete Agreement	Comments and Suggestions
	Girls' Set				Boys' Set				
9. Identifies need to be alone as well as with other.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
10. Selects foods that contribute to strong bones and teeth.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
11. Carries out personal health practices - i.e., bathing, grooming, etc.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
12. Identifies role in family group.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
13. Describes ways to deal with feelings.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
14. Selects appropriate foods for healthful snacks.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
15. Identifies personal physical fitness.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
16. Selects pleasurable activities that are beneficial to health									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	

Self-Care Action	Girls' Set: Complete Disagreement	Girls' Set: Moderate Disagreement	Girls' Set: Moderate Agreement	Girls' Set: Complete Agreement	Boys' Set: Complete Disagreement	Boys' Set: Moderate Disagreement	Boys' Set: Moderate Agreement	Boys' Set: Complete Agreement	Comments and Suggestions
17. Recognizes that one can have different feelings about self and others.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
18. Explains how use of unknown substances can be hazardous									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	2	2	3	4	
19. Identifies personal responsibility for reducing hazards and avoiding accidents in environment.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
20. Identifies relationship of cleanliness to health.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
21. Recognizes need for regular physical activity.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
22. Practices good dental hygiene.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
23. Observes safety practices in everyday living									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	1	3	4	
24. Observes rules and waits for turn in group situations.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	

Self-Care Action	Girls' Set				Boys' Set				Comments and Suggestions
	Complete Disagreement	Moderate Disagreement	Moderate Agreement	Complete Agreement	Complete Disagreement	Moderate Disagreement	Moderate Agreement	Complete Agreement	
25. Recognizes safe and unsafe patterns of behavior									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
26. Identifies importance of playground safety rules									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
27. Recognizes that health decisions can be influenced by the media									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
28. Differentiates between acceptable and unacceptable behavior.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
29. Chooses appropriate breakfast foods.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	
30. Identifies characteristics of good posture.									
A. Positive Illustration	1	2	3	4	1	2	3	4	
B. Negative Illustration	1	2	3	4	1	2	3	4	

Appendix E

Q-sort Instrument

Appendix F

Child Health Questionnaire

Appendix G

Letters of Invitation and Consent

Dear Parent(s):

I would like permission for your child to participate in a study of children's self-care abilities. For the purpose of this study, self-care abilities are the activities that children are likely to do for themselves in order to be healthy. It is hoped that information from this study will provide health care professionals with a better understanding of young children's health attitudes and practices. Your child is being invited to participate because he or she is 7- to 8-years of age and attends the second or third grade of elementary school.

In addition to my obtaining a teacher-completed form of the child's classroom health behaviors, your child will be asked to arrange a series of cards from those most like him or her to those least like the child. The cards will contain drawings of children doing various activities related to health practices. For example, the cards will show children brushing their teeth, taking a nap and playing games. The cards were developed in line with the objectives of the Primary Grades Health Curriculum Project, Grades K-3. This program is part of your child's regular health instruction in the classroom. The entire session should take approximately 30 minutes with an allowance for the time needed by the child to arrange the cards. You are free at anytime to withdraw permission for your child to participate in the study. Additionally, your child may withdraw from the study if he or she expresses the desire to do so. Withdrawing of consent will not affect the child's treatment in the school. The session will be scheduled so that it does not interfere with the child's instructional schedule.

If you grant permission for your child to participate, his or her permission will also be obtained. Children, age 7 and above, are considered of age to give assent in conjunction with their parent(s). A copy of the child's letter is attached. Please ask your child to sign his or her letter. The parent is also asked to sign this form. Copies of both forms will be returned to you.

There is little risk to your child's participation except that he or she might think it is a test. Care will be taken to emphasize to your child that the activity is not a test. In fact, most children enjoy doing the task. The University of Alabama in Birmingham has made no provision for monetary compensation to anyone in the event of physical injury resulting from the procedures. Medical treatment is available, but is not provided free of charge.

I will be willing to share the results of the study with you when it is completed. This will be the only direct benefit to you. The only direct benefit to your child is supplementation of regular classroom health instruction. However, your child's participation will help health care providers learn more about children's health attitudes and practices.

No identifying information will be included in any reports of this study. Children's responses will be coded to insure confidentiality. Consent forms will be filed separately from individual responses so that no individual child's responses can be identified.

I will be glad to answer any questions about the study. You may reach me by calling 934-4210 during the working day or 942-9014 in the evening.

You are making a decision as to whether your child may participate. Your signature indicates that you have read the information and given your consent. You will receive a copy of this form to keep. Please ask your child to return the form to his or her teacher.

Thank you for your time and attention.

Sincerely,

Elizabeth Whited, R.N., M.S.N.
Clinical Specialist
Pediatric Nursing

- -

Date	Time	Signature of Parent
Date	Time	Signature of Investigator

BW/kr

Dear _____,

Your parent(s) have said that you can help me in my study. I am a nurse who would like to know what children your age think and do about being healthy.

You can let me know what you think about health by placing cards in five stacks. The cards have pictures of children doing things to stay healthy.

If you would like to help me, please sign this paper. I will keep a copy and also give a copy of the paper to you.

Thank you,

Elizabeth Whited, R.N., M.S.N.

- -

_____	_____	_____
Date	Time	Child's Signature
_____	_____	_____
Date	Time	Investigator's Signature
_____	_____	_____
Date	Time	Parent's Signature

BW/kr

Appendix H

Item Descriptions for Q-sort Instrument

Item Descriptions	Typal Z's 1	2	3
N's for each type are	14	18	4
1. Dental hygiene negative	-1.5	-0.7	-1.0
2. Relationship of cleanliness to health positive	0.4	1.2	1.1
3. Pleasurable activities beneficial to health positive	0.5	1.0	0.4
4. Consideration of others positive	1.1	1.2	-0.4
5. Need for balance of activity and rest negative	-0.6	-1.1	-1.1
6. Consequences of behavior to others positive	-0.1	1.1	1.5
7. Different feelings about self and others negative	-1.0	-0.7	-1.6
8. Identifies need to be alone negative	-0.7	0.2	1.0
9. Reduce spread of disease positive	1.6	0.6	1.6
10. Action to emergency negative	-0.3	-1.2	-1.1
11. Use of unknown substance harmful positive	0.5	0.6	0.8
12. Consequences of behavior negative	-1.1	-0.6	0.0
13. Safe and unsafe patterns of behavior positive	1.6	0.9	0.7
14. Appropriate breakfast foods positive	0.8	1.0	0.5
16. Playground safety positive	0.5	0.8	-0.4
16. Need for regular physical activity positive	0.1	0.8	1.4
17. Use of unknown substance harmful negative	-1.3	-0.8	-1.1
18. Selects foods for healthful snack positive	1.1	1.0	-0.8
19. Personal grooming positive	0.7	1.5	0.8
20. Ways friends help positive	0.9	0.7	-0.1
21. Consideration of others negative	-1.2	-1.4	0.1
22. Personal physical fitness positive	0.8	0.2	-0.1
23. Acceptable behavior positive	1.7	0.6	1.5
24. Observes rules negative	-1.5	-1.9	-1.7
25. Cleanliness to health negative	-1.2	-0.0	-0.8
26. Pleasurable activities beneficial to health negative	-0.4	0.2	0.2
27. Ways to dealwith feelings negative	-1.3	-1.4	0.2
28. Foods for strong bones and teeth negative	0.1	-0.2	1.0
29. Maintains a safe environment negative	-1.4	-1.3	-1.7
30. Habits to reduce spread of disease negative	-1.3	-1.6	-0.3
31. Safety practices everyday living positive	0.8	0.8	0.5
32. Characteristics of good posture positive	1.0	0.2	0.7
33. Media influence positive	0.3	-0.1	1.0
34. Good dental hygiene positive	1.8	1.7	0.8
35. Personal responsibility for reducing hazards positive	1.2	0.9	0.2
36. Different feelings about self and others positive	1.1	1.1	1.3
37. Healthful snacks negative	-0.3	-1.1	-0.6
38. Personal health practices negative	0.2	-0.2	0.6
39. Friends help each other negative	-1.6	-1.1	-1.3
40. Maintains safe environment positive	0.9	0.7	0.8
41. Healthy school environment positive	-0.2	1.5	1.4
42. Safety practices everyday living negative	-0.1	-0.3	-1.1
43. Playground safety rules negative	-0.1	-1.1	0.7

	Item Descriptions	Typal Z's 1	2	3
	N's for each type are	14	18	4
44.	Playground safety rules negative	-1.0	-1.5	-1.7
45.	Need for regular activity negative	0.6	0.4	0.9
46.	Personal responsibility for reducing hazards negative	-0.7	-0.9	1.4
47.	Balance activity and rest positive	0.9	0.8	-0.7
48.	Role in family group positive	1.3	1.4	-0.6
49.	Need to be alone positive	0.3	0.7	0.7
50.	Action in emergency positive	0.3	0.3	-1.6
51.	School environment negative	-1.6	-1.0	-0.9
52.	Safe patterns of behavior negative	-0.6	-1.7	-1.8
53.	Good posture negative	-1.4	-0.1	-0.9
54.	Ways to deal with feelings positive	0.5	0.7	0.9
55.	Personal fitness negative	-0.4	-0.5	0.9
56.	Food for strong bones and teeth positive	1.0	0.8	1.0
57.	Role in family group negative	-0.2	-0.7	-1.2
58.	Acceptable behavior negative	-1.5	-2.0	-1.2
59.	Health decisions media negative	-0.5	-0.4	-0.2
60.	Observes rules in groups positive	1.4	1.0	-0.6

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA IN BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Norma Elizabeth Stullenbarger

Major Subject Maternal Child Health Nursing

Title of Dissertation A Q-Analysis of the Self-Care Abilities of Young, Schoolaged Children

Dissertation Committee:

[signature], Chairman [signature]

[signature]

[signature]

[signature]

Director of Graduate Program [signature]

Dean, UAB Graduate School [signature]

Date 5/15/84

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