

Children's Conception of Health: An Exploratory Study

BY

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A Thesis

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in Partial Fulfilment of the Requirements
for the Degree of

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AN EXPLORATORY STUDY

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DAWN-MARIE TURNER (BOUGHNER)

A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

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Dawn-Marie Turner

Abstract

This study explored how children conceptualize health across the developmental continuum. Specific components of health were examined including; definition, measurement (personal indicators of health), maintenance, and healthy with an illness or disability. In addition this study also explored where children learn their health concept, and maintenance practices.

Forty children ranging in age from five to fourteen (21 females and 19 males) participated in the study. All children were attending the same suburban school, were of the same culture and similar socio-economic status.

Data were collected using a semi-structured interview. A developmental pattern was found to exist in children's conceptualization of health. Five categories of responses were found for the children's definition of health (proceeding from the specific to the abstract); don't know, behaviour, not sick, physiological and affective. A similar five categories were found with the children's measurement of health; external, behaviour, not sick, physical/appearance, and affective.

Health maintenance practices were found to reflect the developmental level of the child with younger children stating very specific behaviours and the older children giving more global responses.

Healthy with an illness or disability was found to depend on

children's experience with the illness and their developmental level. Older children were able to look beyond the illness to assess the overall capabilities of the person.

Eating was the primary behaviour reflected in all components of health. Health was most frequently defined and measured by what the child ate, or did not eat, and eating healthy was the chief health maintenance practice.

Findings of this study indicate that health concepts change along the developmental continuum. Health education needs to be aware of how health is conceptualized at each developmental level and use this information to build developmentally appropriate health education programs.

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INTRODUCTION

In the last two decades there has been a gradual shift from the medical model of health care to a more socio-ecological perspective of health. The movement has been away from disease and cure, to prevention of disease and promotion of a healthy lifestyle. Responsibility for the shift has been largely due to a change in the major causes of mortality and morbidity. That is, a shift from the infectious diseases of the past to the chronic diseases or the diseases of lifestyle of the present. According to Matarazzo (1984) the chronic diseases of today (e.g., heart disease, cancer etc.) are a result not from single bacterial pathogens but from behavioral pathogens. These behavioral pathogens are related to the personal habits and lifestyle of the individual.

The LaLonde document (1974) recognized the interrelationship of four factors in the prevention of these chronic diseases; biology, environment, lifestyle, and the healthcare organization. Documents such as the Lalonde paper, and similar ones in the United States (e.g., Califano report 1979) focused on lifestyle, encouraging people to change unhealthy behaviours into healthy ones and attain a healthier lifestyle.

However, changing people's behaviour proved to be a difficult task. It was initially assumed that once individuals were given the right information, they consequently would make the appropriate changes (Henderson et al. 1979). "Indeed most behaviours are not easy to change ... "(Henderson et

al. 1979 p. 142). The realization of just how difficult changing unhealthy behaviours was, focused the attention on the need to prevent unhealthy behaviour. Prevention of unhealthy behaviours in adults meant, increased attention was given to the health education of children.

Unfortunately, the increased attention given to the health education of children continued to be from an adult perspective. How the child thinks and their understanding of the topic (health) has been for the most part largely ignored and they have been given information on the basis of adult thought. That is, how we (as adults) think they should think about the subject (health). Children are not miniature adults, their view of the world is qualitatively different. This means not only do they know less, but there are rapid changes occurring in their ability to think, reason and understand (Roberts, Wright, Maddux, 1984; Bibace & Walsh, 1981).

The literature (Gochman, 1971, 1982; Deilman, 1980, 1982; Bibace & Walsh, 1979, 1980; Natapoff, 1978) indicates that age and cognitive development are the consistent factors associated with children's beliefs about health and illness. Bibace and Walsh (1981) found that, what might appear on the surface to be cute, silly and haphazard actually is part of an orderly developmental sequence of knowledge. If health education is to be effective it must look beyond the surface and understand the developmental sequence of health knowledge. Thus any fears or misconceptions the child may have about health or illness can be dealt with more appropriately and to

the child's level of understanding (Kalnins & Love, 1982; Bibace & Walsh, 1980, 1979). If the child's ability is not considered, not only may education be ineffective, but there is the risk of scaring and confusing children with a message that is too sophisticated. Conversely, information which is too simplistic may bore or insult the child, and result in the message being ignored (Micklaide, 1986).

Understanding how health is conceptualized and having a working concept of health must be the first step in any health education program. This is especially important when dealing with the education of children, given the differences between adult and child thinking. The child does not simply imitate his\her environment, but rather assimilates it to his\herself, then selects and digests it according to his\her own structure (Piaget 1971a).

Kreuter (in Natapoff 1982) stressed the importance of having a working concept of health as a first step toward helping learners develop an intrinsic personal health awareness. Effective health education and health promotion requires an understanding of what health means to the individual.

To date, health professionals have been preoccupied with illness (Kalnins & Love, 1982; Natapoff, 1982). Most of the research has focused on children's perception of illness, for the purpose of preventing disease or assisting them to cope with illness. Kalnins and Love (1982) suggest this may have occurred for two reasons; a misunderstanding of the definition of

health, or, it may reflect an orientation toward the medical model in which illness is the problem and cure is the solution. What ever the reason, the data on children's concept of health, the relationship of health to illness, and how children perceive their role in maintaining health (Kalnins & Love, 1982; Natapoff, 1982) is limited.

Most of the research to date has employed one of two frameworks, the Health Belief Model and developmental theory.

The Health Belief Model research (Deilman, 1982; Gochman, 1971, 1982; Weisenberg, Kegeles, & Lund 1980) explores the value children place on health. Research using the health belief model examines the costs, or benefits children anticipate from their health behaviours. It attempts to understand when children's health beliefs develop, and how these beliefs affect their health behaviour. The attempt is to understand children's illness or health behaviour, expectations and intentions (Bush & Iannotti, 1990). However, the health belief model research does not explore children's ideas or explain why they develop as they do.

Research employing developmental theory, examines the way children think. Its emphasis is on how developmental changes in cognitive processes influence children's understanding of social and physical events such as illness and health (Bush & Iannotti, 1990).

The major difference between the two frameworks is that the health belief model is concerned with what children know and how the information

affects their behaviour. A developmental framework is interested in how children know what they know and how their level of understanding changes across the developmental continuum.

Most of developmental health and illness research (Bibace & Walsh, 1979; Pidgeon, 1985; Natapoff, 1982) has used Piaget's theory of cognitive development. Cognitive development theory reflects the progressive changes in children's ability to think and assimilate information. As such, children's developing conception of health may be viewed within this framework.

The literature on adults recognizes health and illness as two different concepts. Cognitive ability in one content area (e.g., illness) does not mean it will transfer to another (e.g., health). Therefore, knowledge of children's conceptions of both health and illness are necessary for developing effective health education.

As already noted, most of the research done to explore children's health and illness concept formation has focused on the concept of illness. The research on illness concepts has given us valuable insight into the thinking of children and their understanding of illness. Since illness and health concepts have been found to parallel one another (Natapoff, 1978), information gained about illness can be used to provide direction and a starting point for health concept research.

Evidence suggests that children's conception of illness undergoes

development changes in certain specifiable directions (Bibace & Walsh, 1980; Perrin & Gerrity, 1981). Children's conception of illness proceeds from a very vague almost magical understanding of illness, to a concrete or specific understanding, and finally to an abstract complex understanding of the intricate processes affecting a person, and illness. Understanding this pattern of change allows health professionals to grasp the cognitive principles underlying children's conception of illness. In the same manner research is needed to explore if a comparable pattern exists with children's conception of health.

Assessment of a child's illness concept can tell educators or clinicians: (a) the conceptual stage the child is functioning at to understand illness; (b) whether the child is aware of objective indicators of illness and; (c) the accuracy or inaccuracy of information the child currently has (Pidgeon, 1985). A similar assessment of the child's health concept would help educators to understand the conceptual stage the child is at to understand health, the accuracy of their information, and what they use as indicators of health. Thus enabling educators to teach children a positive health concept and the practice of health enhancing behaviours.

Health educators are seeking to help children develop a personal health awareness and sound health behaviour early in life, so they may become informed, participating consumers of health care (Natapoff 1982). These goals will more likely be realized if programs are organized around

children's developing cognitive abilities (Natapoff 1982) and understandings. Effective education means helping people make positive health enhancing behaviour choices, as early as childhood.

The concept of illness and what it means to children has been found to be complex and subtle. It evolves slowly utilizing the developing child's emotions, cognitive ability and experiences (Brodie, 1974). The development of a health concept has been found to be similarly complex to that of illness (Natapoff, 1978, 1982, 1989; Rashkis, 1965). This study will begin to explore from a developmental framework the complex processes involved in the formation of children's health concept.

PROBLEM STATEMENT AND RATIONALE

According to Richmond and Kotelchuck (1984) personal health maintenance for children is important for four reasons:

1. engaging in preventive health behaviours is conducive to a healthier childhood;
2. the probability of a healthier adulthood is enhanced;
3. positive health values are shaped and personal health responsibility is strengthened;
4. it may have long term benefits for decision making on future

health behaviours.

However, unless educators understand how children think about health and how their cognitive development influences that thinking, we may not be able to provide an education in sync with their development and thus the children may not develop personal health maintenance practices.

The aim of this study was to identify, how children conceptualize health, and how their concept changes over the developmental process. It is this knowledge of how children understand health across the developmental continuum that should form the foundation for all subsequent health education. Bibace & Walsh (1990) stated that children understand phenomena in ways unique to their developmental level and suggest it is more critical than providing information. Using a developmental framework health education can be developed around the ways children think about health at different levels of development.

The framework for this study was Piaget's Developmental theory. Piaget was chosen because the framework was consistent with other work done in the area (Bibace & Walsh; Natapoff, 1978; Perrin & Gerrity, 1981); and his cognitive developmental theory is a comprehensive theory of intellectual development (Sigel & Cocking, 1977). His theory includes; development that proceeds in orderly stages; a significant body of knowledge on how children think or acquire information about their environment and finally a clinical method that reveals how children think and

reason, rather than just what the child knows (Sigel & Cocking, 1977). Two additional reasons for choosing Piaget's theory of development (although not studied directly in this study), bear mentioning. First the importance Piaget placed on developing a sense of autonomy in children. That is to develop their ability to make decisions based on relevant factors independently of rewards or punishments (Kamii, 1989). When making health behaviour decisions, autonomy is important because the rewards of healthy behaviour are not always apparent or they are difficult to measure. Punishment or rather the consequences of unhealthy behaviour in some cases takes a lifetime to be delivered (e.g., lung cancer from smoking). Thus decisions concerning the practising or not practising of healthy behaviours based solely on reward or punishment will not lead to adults who are active participants in their own health care. Second, Piaget's constructivist approach to education, has implications for how we deal with the information gained on children's conceptualization of health. Constructivism and autonomy are not separate issues; rather autonomy is the goal of constructivism. Constructivism will be discussed further (as an area needing more investigation) in the conceptual framework and the discussion.

This study has attempted to answer the following questions:

1. What are children's conceptions of health?
2. Do children define health and illness differently? Can you be healthy and unhealthy at the same time?

3. How do children know when they are healthy? What do they do to stay healthy?
4. How do children's perceptions of health change with development?

Justification for the Study

Unlike illness which can be encompassed into rather defined parameters, that of sickness or symptoms of sickness or disease, health does not fit into such parameters.

Health is a concept that every adult is familiar with. Yet, despite the universal familiarity with the concept a universal definition of health is difficult. The literature reveals many definitions of health both lay and professional.

A brief review of some of the more well known definitions helps to reveal some of the common elements throughout the many definitions. Probably the most well known definition of health is from the World Health Organization, which defines health as "a state of complete physical, mental and social well being and not merely the absence of disease (World Health Organization, 1947)". Greenberg (1985) noted the importance of the spiritual dimension to a definition of health. The term wellness has also become synonymous with health, Baranowski (1981) describes a capacity to

function continuum with health\wellness at one end and disease\illness at the other. Antonovsky (1979) describes a similar wellness or health continuum that goes from ease to dis-ease. These are only a sample of the many definitions that can be found, indicating that a universal concept of health is diverse, abstract, and depends on the definer.

However, within the definitions there are common elements. These common elements help to provide a basis from which health can be defined for any individual. The common elements found in most definition are; Health is influenced by disease; multi faceted, holistic and socially determined, linking people with their environment. It reflects a person's ability to maintain and cope with roles in their environment and reflects the internal state of the individual. Health is not a condition of ones self but rather a goal to be obtained; "Health in itself is not an ultimate value; it is, rather an instrumental value. People cherish health because it serves other ends" (Green, 1980 p. 18).

Much of the research into what health is has been done with adults. We do not have much indication of how the concept of health is formed or what beliefs children have about health.

Effective communication and education relies on understanding how children think, form concepts and interpret information. According to Piaget (1970) the appropriate experience must be given to the child at the most favourable time. When teaching health we must learn when this favourable

time is. Then as educators we must seek to provide the optimum conditions that will foster growth and development (Boyle, 1969; Piaget, 1970) of a positive health concept leading to the development of health enhancing behaviours and practices.

Health education can meet this goal if it is based on an understanding of children's conceptualization of health. Understanding how children think about health throughout development should provide the basis for health education programs. If we want to teach children about health then we must develop programs consistent with their understanding of health.

Limitations of the study

This was a qualitative exploratory study, as such the sample size was small and consisted of children from only one school and of the same culture and socio-economic background.

The limitation of the sample and the exploratory nature of the study make it difficult to generalize, across a broad spectrum.

Time and economic resources did not allow for a longitudinal study of the children, which would be ideal to measure developmental change directly. While the cross sectional design of this study did not permit the study of development directly, it can be inferred by using children at various stages of development and ages (Klausmeier & Allen 1978, Ausubel,

Sullivan & Ives, 1980). Other developmental studies have used a cross sectional design effectively (Piaget, 1967; Bibace & Walsh, 1980; Natapoff 1978) and it is considered an acceptable method for studying developmental changes in a given content area (e.g., causality, illness, and health).

CONCEPTUAL FRAMEWORK OF THIS STUDY

Piagetian Model of Child Development

Piaget's theory of cognitive development includes sequential changes (approximating age levels) in at least four major areas of cognitive function, namely perception, objectivity-subjectivity, the structure of ideas of knowledge and the nature of thinking or problem solving (Ausubel et al. 1970). Piaget's description of the qualitatively distinct stages of intellectual development has been a powerful stimulus to research (Ausubel et al. 1970).

An understanding of children's cognitive development in general will assist the understanding of the more specific concept health. A brief description of Piaget's theory follows.

Before talking about the specific stages of Piaget it is helpful to discuss several basic concepts of Piagetian theory. First, intelligence is defined as a process of adaptation and organization. Adaptation is the equalizing of the organisms interaction with the environment. Organization is the structural side of intelligence and it involves the coordination and integration of "schema" (Ausubel et al. 1970). Schema are types of programs or "strategies", the individual is able to use when interacting with the environment (Ausubel et al. 1970).

Two processes are important to adaptation, assimilation and

accommodation. Assimilation is the incorporation of the environment into present behaviour patterns. Assimilation occurs when the experience (schema) match the existing cognitive structures. Accommodation refers to changes in the schema or strategies needed to respond to the demands of the environment (Ausubel et al. 1970). Accommodation occurs when the experience (schema) does not match the existing structures. The result is an imbalance or disequilibrium. Thus a change must occur for the individual to process the experience and relieve the stress of disequilibrium. This change is known as equilibration. Transition from stage to stage results from resolution of this disequilibrium, thus forming new structures or changing existing ones (Sigel & Cocking, 1977).

Piaget (1970) identified four stages of cognitive development, sensori-motor, pre-operational, concrete operational, and formal operational. He defined the stages by the child's ability to think, and related each stage to age.

These age and stage levels are not absolute. Piaget (1967) notes the ages are approximations . Transition from one stage to another is not instantaneous, but occurs over time and fluctuations between the stages are common (Ausubel et al. 1970; Piaget, 1967).

Sensori-motor Stage

This stage occurs from birth to approximately two years and is characterized by preverbal behaviour and reflexes. By the end of the sensori-motor stage the child will have achieved all the necessary prerequisites for more advanced cognitive development.

Pre-operational Stage (2 through 7 years)

This stage is a transitional stage from the predominately autistic and egocentric stage of early childhood to the early forms of social behaviour (Modgil, 1974).

The most characteristic feature of this stage is the egocentrism of the child which Piaget has called the stop gap between sensori-motor and intelligent thinking.

It has two substages, preconceptual and intuitive thinking.

Preconceptual is the more immature type of thinking. At this level the child is unable to form classes or concepts because the child is unable to recognize the signifier (gesture, word, or icon) and distinguish that it is different than what it represents but nevertheless it still represents it (Piaget & Inhelder, 1969).

In the pre-conceptual substage the child uses transductive reasoning rather than the deductive and inductive reasoning of adults. Transductive thinking moves from the particular to the particular (Flavell, 1963). The

child sees only beginning and end states.

The intuitive substage is the halfway point between the pre-operational and the concrete stages of development. Intuitive thoughts lead to the threshold of the operation (Piaget, 1971b). Although the child is still pre-logical, some decentering can be seen. While they do not see relationships simultaneously, they can see alternative relationships. However, they still do not understand, the whole is a sum of its parts (Ausubel et al. 1970).

The pre-operational child is perception bound - he/she sees, decides and reports, but does not think about his/her own thinking (Renner, 1976). The child is unable to take another's point of view, (nor do they want to), and feel no need to justify their response or look for contradictions (Renner, 1976). In this early stage of development the child puts his/her whole consciousness on the same plane and makes no distinction between the internal and the external world.

The child's intellectual structure changes as he/she matures and this maturity is often reflected in their language (Boyle, 1969). The words the child uses are the same, but their meaning may be different, either wider or narrower (Piaget, 1971a). Associations are different; syntax and style will be similar (Piaget, 1971a). Thus it is important to ascertain the child's meaning of the words they use.

Operational Stage (Concrete Operations 7 through 11 years)

The child at the concrete operational stage is concerned with information received from objects, the organization and relations between these objects (Renner, 1976; Piaget & Inhelder, 1969). At this level the child can seriate, categorize, perform, and compare to accommodate his/her thinking to the real world, (Renner, 1976). Although decentering from themselves the child is still very much in the real world and does not go beyond it. Thought still remains in the material (Piaget, 1971a).

The major difference between this stage and formal operations (the next stage) is at this stage, the child is still concerned with the actual, the judgements and organization are inseparable from the content (Piaget & Inhelder, 1969; Boyle, 1969). Until at least age eleven to think is to speak (Piaget, 1971a).

Crucial to the development of operational thinking is reversibility. It is at this stage reversibility is first possible. Reversibility refers to the possibility of reversion of an alternative condition. Now, thought structures (schema) become apparent, the child starts to reason inductively and deductively.

Formal Operations (12 through adulthood)

Formal operations can be identified because the child is able to draw conclusions and handle the propositional language such as, the what if,

therefore, and then construct with it (Renner, 1976; Piaget & Inhelder, 1969). These two operations require the individual to move from reality to the abstract (Renner, 1976) and constitutes the beginning of hypothetico-deductive or formal thought (Piaget & Inhelder, 1969).

For the first time the child thinks in the hypothetical, beyond the present and forms theories about things that are not (Renner, 1976; Ausubel et al. 1970; Piaget, 1971b).

The child's mental abilities at this stage have formed an equilibrium with the structure of thinking. This is revealed in his/her relationship to the world around him/her (Piaget, 1967; Boyle, 1969).

Formal thought continues to develop through out the remaining life span dependant on the experiences of the individual. With increasing maturity the child begins to think more realistically and distinguish between what is conceptually possible with what is attainable in fact (Boyle, 1969).

In summary, the development of the child appears in four successive stages. Each one extends the preceding one and reconstructs it at a new level, then later surpasses it to an even greater degree (Piaget & Inhelder, 1969). The pre-operational thinker cannot think about what it is he thinks. A concrete thinker can think about thinking, as long as the objects are present for him to manipulate, and a formal-operational thinker can think about the consequences and/or implications of his/her thinking (Renner, 1976).

Concept Development

The development of concepts cannot be separated from cognitive development. It is toward the understanding of concepts of greater and greater complexity that cognitive development is directed (Klausmeier & Allan, 1978). Concepts as mental constructs are the critical component of a maturing individuals, continuously changing, and enlarging cognitive structure (Klausmeier & Allan, 1978). Arieti (1967) described concept development as the last known stage of development.

Several researchers have proposed definitions for the term concept. Klausmeier and Allan (1978) defines a concept as "... both a mental construct of the individual and the societally accepted meaning of one or more words that represent the particular concepts" (p. 4,6).

Pidgeon (1985) defined a concept as a mental idea that encompasses the attributes of a class of events (e.g., illness) or objects.

Arieti (1967 p. 129) stated, "concepts represent acquisitions of the human race attained through the ages, collectively adopted and transmitted from generation to generation".

Ausubel et al. (1970) describe subconcepts as secondary concepts whose meaning is learned indirectly by inference or instruction without the children having direct experience with the attributes (Pidgeon, 1985). Subconcepts are important when trying to define a concept that is as intangible as health. Herzlich (1973) & Noack (1987) noted many

lay people view health as not being sick, thus if children have not experienced illness they may not have any mental idea of what health is. Therefore, their conceptualization will develop from secondary concepts.

For the purpose of this research a concept was seen as an integration of Klausmeier & Allan (1978) and Pidgeon (1985). That is, a concept is a mental idea individually and societally defined by the word (health) that represents it and encompasses the attributes of a class of events (e.g., illness, role maintenance).

Arieti (1967) describes two ways in which concepts are formed, first people collect data and then recognize an association between the data. By discovering or adding new attributes people continuously form new concepts from old ones. Second, concepts are developed from the realization that some attributes can be omitted and thus form new and different classes containing only some of the essential elements.

As with cognitive development stages of concept development have been described through the life span (Pidgeon, 1985).

There are two stages of concept development for school aged children; 1. descriptive - at this stage the essential attributes of the concept are identified;

2. relational stage - in addition to the attributes being identified the relationships between the attributes are discovered. Older school age children are able to identify relationships between other concepts and

develop subconcepts (Pidgeon, 1985).

Whatever the concept, it must not be forgotten that most concepts are learned from others, either individual persons, or social and culture institutions (Arieti, 1967). In addition the individual must advance through the cognitive development stages in order to develop concepts. The cognitive development of the child and his/her ability to form concepts are interrelated and mature together.

The understanding of concept formation is crucial to this study, and the formation of the children's conception of health.

Constructivism

As an exploratory study, this research did not focus on the development of the health curriculum. This research only represents a first step toward planning a health curriculum for children, as such it explored the way the child at different stages of development thought about health.

Because this research was only the first step, one area that was not addressed directly but does need to be mentioned whenever we are talking about planning education, is constructivism. Constructivism (now enjoying a resurgence of popularity) bears mentioning as a framework for building a health curriculum.

Probably the most powerful expression of constructivism come from

Piaget (as discussed in Bruner 1985). Piaget felt that the world is not found but made and made according to a set of structural rules that are imposed on the flow of experiences (Bruner, 1985). Constructivist educational philosophy builds on the tenets of Piaget. Piaget proved children do not just acquire information they construct it, through their interaction with the environment (Kamii, 1982).

Constructivism holds that learning is a process of building up structures of experience. Knowledge is not simply transferred from the external to the memory; rather it is created based on past experience and interaction with the world (Cunningham, 1991). Such a perspective suggests a curriculum that is developmentally appropriate for the students.

The role of education from a constructivist view, is to assist students to build knowledge from within their own structures, to promote collaborations, and multiple perspectives of a problem (Cunningham, 1991). Under constructivism instruction is a guided journey not imposed in a particular way (Winn, 1991). Learners learn to learn, as opposed to being passive recipients of information.

Constructivism, may well play an important role in the development of health education. If our goal is to teach children to be active participants in their own health care, we must provide education that is not only developmentally appropriate, but is presented in such away that the child is allowed the opportunity to be an active participant. This is the aim of a

constructivist approach to education. "By encouraging children to construct their own knowledge and moral values we can go much farther than "right" answers and "good" behaviours (Kamii, 1989 p. 53)."

LITERATURE REVIEW

Introduction

The problem in teaching is knowing what children think about what it is we are trying to teach them.

A seven year old girl was provided with information at some length regarding an upcoming operation. Afterwards she was asked what the doctor had told her, the young patient's inscrutable reply was, "search me" (Bannard, 1987; Gellart, 1978). This story emphasizes the need to talk with children in their own language. What children know about what we tell them, may be different than our perception of what they know. The following literature review provides insight into what is currently understood about how children conceptualize illness and health and how their concepts relate to their cognitive development.

Illness Research

"By far, the most extensive area of research in the domain of health has concerned itself with children's developing conceptions of illness" (Bibace & Walsh, 1990). Within this, the major focus has been to link cognitive development and the development of illness concepts.

Nagy (1951) conducted the first study examining illness concepts in children. Although she did not focus on cognitive development specifically, she did find children's ideas of health proceeded from unicasual to multicasual at maturity (Micklaide, 1986). Nagy's findings indicated that the concept of illness becomes a complex and multifaceted concept by approximately the age of twelve (Perrin, 1981). An age breakdown was not given in her study, so a developmental look at the data within the age range was not possible (Blos, 1978).

Cook (1975 as discussed in Perrin & Gerrity 1981) noted children proceed from the global undifferentiated and egocentric principles to more abstract principles. These studies documented the difference between the adult's and the child's conception of illness.

The results of a study by Palmer & Lewis (1976) to examine the decision making processes of children related to their own healthcare found a developmental bases for their decision making and their definition of illness. Palmer & Lewis (1976) interviewed 189 children, between the ages of five and twelve, and identified grade three or eight years old as the critical period of change for children's health attitudes and beliefs. Bibace & Walsh (1979, 1980), Gochman (1971, 1982) and Deilman (1982) also noted this as a pivotal period of development for health beliefs and understanding health and illness concepts. This period of development corresponds to the concrete operational stage of Piaget at which time the children begin to

think or reason and also begin to understand the concept of reversibility.

Blos (1978) in a study conducted in 1956 was the first to identify stages in the development of children's thinking about disease. Forty-two children between the ages of five and ten years were interviewed using nine stimulus pictures. The pictures were designed to illustrate a variety of common illness states (e.g., getting a cold, stomach ache). Following a brief introduction of the picture the children were asked to explain if the person would get sick and if so why.

He identified three stages, that supported the developmental progression of children's concept of illness (Figure 1).

Figure 1 Three Stages of Illness Concept in Children (Blos 1978)

Stage 1: Descriptive. At this stage the child explains causality by events or actions that are contiguous with the onset of the illness. Example: A boy is near and he coughs at you ... that means you will get sick (Blos, 1978 p. 3)".

Stage 2: Exploratory. The child now begins to lose some of his\her egocentrism and recognize a causative agent. Although he\she has begun to understand cause and effect the explanation is still largely descriptive.

Example: "Because he sprayed his breath ... all over his face ... Cause his germs come in his breath, you can see that on the paper (Blos, 1978 p. 4)."

Stage 3: Causative. At this stage we now begin to see more mature thinking. He\she becomes aware of multiple causality and that they may or may not become ill even if exposed.

Example: "Well when you cough, everyone has germs ... you can't see the germs come out but they spray and give other people what you have (Blos, 1978 p. 4)".

Brewster (Bannard, 1987) developed a three stage Piagetian model for

children's concept of illness. The stages proceeded from a definition of illness caused by rule transgressions to a multi dimensional cause from the interaction of external and internal events.

Perrin and Gerrity (1981) further supported the developmental findings that children's concept of illness proceeded in stages, similar to those described by Piaget. In their study of 128 children in grades kindergarten two, four, six and eight, they rated the process and developed a sequence for the development and understanding of illness in children. Using a two part semi-structured interview with eight standardized questions and fourteen questions to assess developmental level they outlined a scoring system for the responses given by the children. Children were given a score ranging from 0 to five for each question, with 0 for the global responses and five for the recognition of principles. Figure 2 depicts their scoring stages. They found overall the number of responses recognizing principles increased with age. Older children were found to have higher scores, significant of a more abstract and higher level of understanding than the younger children.

Figure 2 The categories of Perrin and Gerrity (1981)

0. No Response.
1. Global Responses - Consisted of vague undifferentiated rationale based on external event.
2. Concrete Rules - Responses are very stereotypical of the common parental rules, but without evidence of the child understanding them. The child also feels as a victim of illness, vulnerable, and without of control.
3. Internalization and Relativity - Responses demonstrate a beginning understanding of the process of illness. The child has now internalized illness. Also at this stage there is a preoccupation with germs and illness.
4. Generalized Principals - Responses reflect the beginning of the notion that conditions have to be there for disease to occur. There is evidence of understanding the body processes with illness.
5. Physiologic Process and Mechanisms - The child now knows illness can be triggered by an external event but describes it in terms of internal body processes and organs.

Bibace & Walsh (1979, 1980, 1981, 1990) have done the most extensive work with children's concepts of illness. Believing that cognitive development could not be generalized into a variety of content areas, they set out to specifically match each of Piaget's stages of cognitive development with the development of an illness concept. Their initial work consisted of two phases a pilot phase and a testing phase with different subjects being used in each phase (Bibace & Walsh, 1979). The initial pilot phase was done to develop the category system and involved the interviewing of 180 children between the ages of three and thirteen years. Children were asked twelve question pertaining to specific content areas of

illness, cause, effect and cure. Data from the pilot studies revealed three main categories congruent with Piaget's developmental stages and within these main categories were three substages. During the testing phase 72 children between the ages of four and eleven were tested using the same twelve questions. Figure 3 depicts the relationship between Piaget's developmental stages and those proposed by Bibace & Walsh. Their findings were congruent with the theoretical expectations regarding the qualitative differences in the cognitive process relied on by children (Bibace & Walsh, 1980, 1981). Further work with specific diseases such as AIDS (Bibace & Walsh, 1990), has shown these categories to be reliable.

Figure 3 Bibace & Walsh (1979, 1981) Concept of illness stages, as related to Piaget's developmental stages.

PIAGET	BIBACE & WALSH
<p>Prelogical - (2-6 yrs) characterized by egocentrism. Failure to separate self from environment and the immediate events around them.</p>	<p>Phenomenism - The most immature explanation. Illness caused by concrete external factors but unable to explain the relationships.</p> <p>Contagion - Seen in more mature children of prelogical stage. Cause of illness is located in objects that are close to the child but not touching. The link is through magic or proximity.</p>
<p>Concrete Logical - (7-11 yrs) In this stage there differentiation between self and environment.</p>	<p>Contamination - Now recognize cause and the effect. The cause is viewed as a person, object, or action and the child gets sick as a result of coming in contact with it or engaging in the harmful activity.</p> <p>Internalization - Illness now seen to be caused by external factors but to be within the body. It is still described in nonspecific, vague terms, and confusion about internal organs exists (Bibace & Walsh 1981). Prevention now understood.</p>
<p>Formal Logical - (11 + yrs) Greatest amount of differentiation between self and world. The child is now able to think abstractly and hypothesize.</p>	<p>Physiologic - Although cause is external the extent and nature of the illness is internal. The result of a breakdown of some internal function and can be described in a step like process.</p> <p>Psychophysiological - The most mature thought. The child can identify both the physiological and the psychological causes illness.</p>

Bibace & Walsh's categories are useful because they highlight the ways children assimilate information in a particular phenomenon at a given point in their cognitive development (Micklaide, 1986).

One significant implication of Bibace & Walsh's categories, was their identification of internalization, corresponding with Piaget's recognition of reversibility. At this stage, the child first understands he/she can prevent

illness through what he\she does (Bibace & Walsh, 1979, 1990). Before this, the concept of prevention is not understood. Children recognize during the contamination phase, they can avoid illness, but at internalization, they understand that they can actually help prevent illness (Bibace & Walsh, 1979). Bibace & Walsh (1979) also noted the child in this phase believes the body can heal itself and interprets this to be due to the increased control the child feels over their environment.

The recognition of the psychophysiological stage as the most mature stage may give insight into why both adults and children have difficulty conceptualizing mental health. This stage requires formal thought and it often does not appear in all individuals or cultures for all content areas even in the adult population (Ausubel et al. 1970; Flavell, 1963). A study done by Renner and Stafford (1976) found 73% of grade ten students, 60% of grade twelve students and 50% of college students had not reached formal operations. Bibace & Walsh (1979, 1980) found the older children in their study stating psychological causes of illness would revert back to biological cures when pressed for further explanation. Psychological causes appear to be understood earlier than psychological cures (Bibace & Walsh, 1979).

Bibace & Walsh (1979) emphasize that with increasing cognitive development there is an increase in ones locus of control. Their work found that control over what the individual believes to be the causes of illness increases with increasing age. This notion of vulnerability and ability to

control if one will become ill, has implication for the health education of children. Since level of control does not increase simultaneously with perceived vulnerability, there is a danger that increasing vulnerability will create high levels of anxiety and feelings of helplessness. Gochman (1982), found vulnerability increased until about age twelve; but it did not lead to preventive health behaviours. Currently the research supports the link between cognitive development, sense of control, and feelings of vulnerability (Bibace & Walsh, 1979, 1980; Gochman, 1982). Increasing perceived vulnerability in younger children, while they feel they have no control over their environment, may only serve to create unnecessary and unproductive anxiety. Therefore when planning health education programs it is important to understand how the children perceive their own vulnerability and control over their health or ability to prevent illness, so that we may teach these concepts when the children are ready to understand them.

An important finding of the research on cognitive development and illness concepts was the change from an external to an internal dimension in children's definition of health and illness as well as their ability to judge whether they are healthy or ill (Bibace & Walsh, 1980; Kalnins & Love, 1982). When trying to understand children's concept of health or illness an understanding of how they perceive their body and its functioning is useful. Crider (1981) has done extensive work on the perceptions children have of their anatomy and physiology. She identified a four level sequence of

conceptual development for internal anatomy and physiology (figure 4).

Figure 4 Crider's Stages of Children's Perception of Anatomy and Physiology (1981)

Stage 1 (2-4 Years) - Undifferentiated;

Stage 2 (5-8 Years) - Differentiated distinctions made, each organ is assigned a single function;

Stage 3 (9-12 Years) - Structurally connected - movement of substances to and from organs;

Stage 4 (13 plus) - Metabolic- integrated systemic to cellular level.

Gellart (1978) found that most children's ideas about their anatomy and physiology (probably as well as adults) remains vague, false or non-existent. Gellart (1978) noted that the heart was the most known of all the body parts, children as young as four knew approximately where it was located and what its function was. Children's knowledge of their body increases with age and development (Gellart, 1978; Crider, 1981).

Brodie (1974) studied how 408 healthy and ill children between grades one and five conceptualize illness. She found, healthy children did not see illness as a punishment for misbehaviour as did the sick child. However, they did feel that they had to be good for the illness to go away (Brodie, 1974).

Myers and Vando (Micklaide, 1986) suggest that future research on children's conceptions of health and illness consider the experience and affectivity of the child. Children's concept of illness is gained through thought, observation, fantasy, experience and explanation (Blos, 1978,

Pidgeon, 1985). Therefore, these factors need to be considered when identifying their conceptualization of health.

Health Research

Only a few studies have focused on children's understanding of health. Since good health is regarded as a normal and a desirable state in adults and children, we ordinarily assign less importance to this than to other concepts (Rashkis, 1965).

Rashkis (1965) was one of the first to look at children's thinking on health. She was interested in the meaning of health, and its correlates, such as social and personal responsibility and the attitude of others toward health and health prevalence. She studied 54 children between the ages of four and nine years using a play based interview format (Rashkis, 1965; Blos, 1978; Gochman, 1985). She found that even the youngest child in the group had a verbal familiarity with health as a positive state, but it was the older children that equated health with a positive pleasant state (Rashkis, 1965). However, below the age of seven they only described health as the absence of illness.

Out of all the activities listed for keeping a person well, proper eating was the most important (Rashkis, 1965). Green (1986) also found eating to

be the most important health protective behaviour expressed by children.

Rashkis (1965) also found a significant difference in response to the question; "Can others keep you well"? The children named the physician more often than any other person, but only at grade three was the frequency of response significantly different.

Green (1986) studied children's perceived causes of both health and illness in children from grades one to four. She interviewed the children using a forced choice questionnaire with five categories of health and illness causes. Results were consistent with Rashkis, self control and care being the most important factor for keeping one healthy, with help from others seen as secondary (Green, 1986). However, the forced choice format of the questionnaire may have influenced the responses the children would have given if allowed to answer naturally or spontaneously.

Bibace & Wash (1979, 1980) and Gochman (1971) noted that it is at about grade three or eight years of age that children develop a coherent set of beliefs and concrete thought. So, although children at grade three or eight years of age are able to separate themselves from their environment, they are still dependant on adults to keep them well and protect them. This may account for the increased frequency of responses by the children (Rashkis, 1965), to see the physician as the most important person for making them well. Rashkis did not consider the developmental level of the children when analyzing their responses, therefore it is difficult to interpret

her information from a developmental perspective.

Natapoff (1978, 1982) interviewed 245 children using a semi-structured interview format to learn their conception of health and how it was influenced by age. She found that sixty seven percent of the children included being able to do desired activities in connection with the word health itself or feeling healthy or both (Natapoff, 1978). Sex differences, were found between cleanliness and having a strong body, with girls citing the category cleanliness more often than boys and the boys citing a strong body. This may be a reflection of the socialization process for girls and boys. That is girls are socialized to remain "clean" and "pretty" while it is more important for boys to be "strong" and in good physical condition. Feeling good was the only category, showing a difference related to socio economic status, with children from working class families choosing this category more frequently than other groups (Natapoff, 1978, 1982). Although overall socio-economic status was not associated with the responses. Age seemed to be the one significant variable. As the age of the children increased comments became more complex and the number of categories increased. There also was a time factor, health was long term and sickness short term.

Below the age of eight, it was not possible for the children to see themselves as part healthy and part sick (Natapoff, 1978, 1982). The subjectiveness and the phenomenological aspect of health also became

evident when the difference between handicapped children and healthy children's perception of health were explored and found to be similar (Natapoff, 1989). Both groups saw themselves as healthy even when in the abstract they saw someone with a disability as not being healthy (Natapoff, 1989).

The findings of Natapoff (1978, 1989) indicate a developmental trend (similar to illness) in children's concept of health. Health concepts proceed from the specific and concrete to more abstract future orientated interests (Natapoff, 1978). Health and illness were seen as separate concepts, rather than on a continuum (Natapoff, 1978, 1982), indicating medicine and adults have combined the two concepts. Natapoff (1978) suggests that children view health as being able to perform desired activities. While adults view health as enabling them to perform minimum daily activities.

A study conducted by the Connecticut State Board of Education surveyed five thousand children as to their ideas of health. The findings also support the developmental link between children and concepts of health (Blos, 1978). Consistent with Bibace & Walsh who indicate children begin to internalize illness at about age nine, this study found fourth graders showed a developing concern for their bodies and themselves. The study also identified the concern for rules at this age whether it is a game or taking care of your body. It appears from the available data that children see health as arising from the practice of certain rules such as eating right,

exercising, and keeping clean. This accounts for why children of this age often view illness as a consequence of breaking the rules (Blos 1978).

This literature supports the view that children and adults think about health differently, and there is an orderly developmental sequence to the conceptualization of health. Younger children often see health as only the absence of illness. As children become older and more mature, health is viewed as the interaction of mind, body and environment (Kalnins & Love 1982).

Health must be studied as a concept separate from illness to learn more about the sequence of events that come together for children.

METHODOLOGY

Design

This was a qualitative study utilizing a phenomenological approach. A phenomenological approach is an inductive descriptive method of research (Omery, 1983). One of the most important aspects of this approach is for the researcher to explore the phenomenon with no preconceived expectations or categories (Omery, 1983). The primary goal of this study was to understand how children view health and come to a definition or understanding of the concept from their own perspective.

The study utilized a cross sectional design. The cross sectional design was chosen because it is the best design to measure a variable for different age groups at the same time. This method enables the investigator to study differences in behaviour at one age versus another (Klausmeier & Allan, 1978). Nunnally (1973) has suggested two major reasons for using the cross sectional design. The first is to survey behavioral differences in individuals of different ages at a particular time and the second is to approximate the developmental function for a particular behaviour. This study focused primarily on the first, that is, to assess the difference in health descriptions across the ages.

The cross sectional method is not without its problems and Nunnally (1973) identified two major problems that have to be considered. First, age

groups must be comparable and second the measures used at the different age levels must also be compatible. These factors were taken into account in developing the interview questions and selecting the sample of children to be interviewed.

A standard interview guide was developed, so that each child was asked the same basic questions but the wording of the questions were adapted to fit the age of the child. For instance, the younger children were told, "I was writing a story about how children think about health and I needed their help to write it". The older children were told, "I was a Master's student doing research on how young people think about health". Having one interviewer also minimized the effects of incomparable measures. While there was different wording of the questions to reflect the developmental level of the child, the same basic questions were asked. Using a relatively homogeneous group ensured the age groups were comparable.

Interview/Interview Question Development

Hendricks (1988) has suggested three factors that must be considered when selecting and administering an instrument to children. First, it must be developmentally appropriate. Second, young children have a brief attention span, therefore, the instrument must elicit the information reliably and

quickly. Finally individual testing procedures are most suitable for young children.

To address these factors and because the intent of the study was to learn the children's conception of health, a semi structured interview format was used. "The purpose of interviewing, ... is to allow us to enter the other person's perspective (Patton, 1990 p. 109)". Lofland & Lofland (1984) state this type of interview is a guided conversation whose goal is to elicit from the interviewee rich, detailed materials that can be used in qualitative analysis. Piaget (1970) called this type of investigation the clinical method and its reliance is based on its ability to elicit meaningful responses regarding the cognitive process.

Patton (1990) notes that there are essentially three types of interviews, the informal conversation, the general interview guide and the standardized open ended questions. Each type has its own advantages and disadvantages. A combination of the three types of interviews, was done in this study.

Pilot testing revealed the combined method to be the most suitable for maintaining the consistency of the interviews and the flexibility needed to probe children's responses further.

During pilot testing it was found that it was easy for children to get off topic and for the investigator to follow them. The result being some data was not collected on some children or it was collected differently, thus the

reliability of the questions were in doubt. Standardizing the interview questions allowed for systematic and thorough data collection from each respondent. Combining the standardized questions with the interview guide approach allowed the flexibility that was necessary to collect data that were diverse and subjective and also accommodated the different developmental levels of the children.

Using this mixed approach reduced bias. By using standardized open ended questions the variation in how the questions were asked was reduced, at the same time probing the responses allowed more in depth interviews.

This combined method is similar to Piaget's clinical method. The clinical interview method begins with a standard question and then explores the child's reasoning for their answer, following any leads the child gives and questions all terms used by the child (Bibace & Walsh, 1979; Piaget, 1970). The purpose is to elicit responses that reveals the child's reasoning and not just a simple yes or no. Bibace and Walsh (1980) found this method tapped the cognitive processes the child relied upon to answer.

The first pilot test consisted of a convenience sample of five children, two females, and three males. Their ages were 5, 7, 11, 13 and 14 years. The second consisted of six students (from the study school) which met the criteria for the study but had not been selected as part of the sample. Their ages were the same as the first pilot test, with four females

and two males. The results of the pilot studies indicated that children were comfortable answering the questions and had at least a verbal familiarity with the terms (i.e., health). Preliminary analysis indicated, the interview format and the questions elicited the required data. It clarified their meanings, and enabled exploration into their rationale. The final questions were based on the results of the two pilot tests, and were reviewed by three independent persons (Appendix D).

Patton (1990) states there are essentially six types of questions that can be asked of people; experience\behaviour, opinion\belief, knowledge, sensory, feeling and background\demographic questions. Four types of questions were used in this study experience\behaviour, opinion\belief, knowledge and demographic. Experience\behaviour questions were asked to ascertain their determinants of health and their health maintenance behaviours. The opinion\belief questions were aimed at understanding how subjects conceptualized health and what they believed about their own health status. Knowledge questions were aimed at determining subjects understanding of cause and effect. That is, what causes them to be healthy and how does what they do maintain their health. This was particularly important as the children matured, because responses reflected their increasing cognitive development. The only demographic information elicited from the children were their age, grade level and parent's occupation. Parent's occupation was asked to get an indication of the socio-economic

status of the families.

Procedure

Children were interviewed individually in the guidance counsellors office. The guidance office was used because it was a quiet place and did not intimidate the children. Interviewing time for each child took approximately 20 minutes. It was important not to rush the interviews, time was needed to build trust with the children and establish their comfort in responding. At the same time interviews had to be short enough to maintain the child's attention.

All interviews were taped and transcripts typed following the interview. Interviews were completed within two weeks of the starting date.

Subject to subject contamination was not of great concern because the questions were asking for the children's own experience, behaviour, and beliefs and random selection of the children reduced the possibility of children being in the same class. Spacing the interviews by age category further reduced the likelihood cross subject contamination. The children were aware they would be asked questions about health but were not aware of the specific questions.

Sample

Subjects for this study were children attending a large urban school in a middle to upper socio-economic level neighbourhood. Fifty consent forms were sent out, but ten children did not participate. No differences were noted between the children not participating and those who did. Two reasons commonly given for lack of participation were; 1) the parents denied permission without stating a reason and 2) the child indicated to the parent that he/she did not wish to participate. More males than females did not participate (six males and four females).

Forty subjects, 19 males and 21 females ranging in age from five to fourteen were interviewed.

Bibace & Walsh (1990) noted, measures of cognitive development frequently assumed to be independent of specific content, for example the measurement conservation, are in fact content bound, in so far as they measure cognitive development, in relation to space or number. Piaget (1970) noted, age does not always indicate cognitive development, nor does cognitive ability automatically transfer from one content area to another. Piaget (1970) also indicated that, cognitive development is a necessary condition to understanding a content area, but not a sufficient condition. These factors create some difficulty in finding an accurate predictor of cognitive development for various content areas. Age however, has been

found to be a reliable indicator of cognitive development (Bibace & Walsh, 1979, 1990). Accordingly this study used age as the index of cognitive development.

To substantiate the use of age as an indicator of cognitive development, during the second pilot test four additional questions (adapted from Perrin & Gerrity 1981), were asked. The questions assessed cognitive development and responses were reviewed to detect how closely they related to the age levels identified in the literature (Bibace & Walsh, 1980; Piaget, 1969, 1970). Age was found to be reasonably consistent with cognitive development.

The small sample size did not allow for the inclusion of confounding factors such as culture, economic status and other social factors. To eliminate the risk of these confounding variables criteria for participation were developed; the children were to be of a single culture, and successfully progressing in school. A visual assessment of the neighbourhood the school served was done to provide an overview of the type of neighbourhood and its socio-economic level. It was recognized that this type of assessment is not complete, but it did provide a picture, of the type of homes the children would be coming from.

Sample Selection

The criteria for student participation and its rationale were explained to the principal of the school, who in turn explained it to the teachers. Each teacher (at each of the grades) selected six students meeting the criteria (three female and three male). The selection process resulted in a pool of one hundred and thirty eight students all meeting the criteria, (based on the teacher's evaluation of their students). From the one hundred and thirty eight children, ten children from each age category were randomly selected as subjects by the investigator.

The final sample was:

6 - five to six year olds (5 female, 1 male)

9 - seven to eight year olds (4 females, 5 males)

9 - nine to ten year olds (5 females, 4 males)

8 - eleven to twelve year olds (3 females, 5 males)

8 - thirteen to fourteen year olds (4 females, 4 males).

A letter (Appendix A) requesting permission for their child to participate in the study was sent to all the parents of the children selected. The letter stated the nature and purpose of the study, and parents were informed the children would be asked about health, but were not told the specific questions. No child was interviewed without permission of the parent or guardian and verbal consent from the child prior to the interview.

RESULTS

Data Analysis

The interview responses were analyzed using a qualitative inductive approach. The approach was inductive because the research did not have any pre-existing expectations of the data and was attempting to make sense of the situation (Patton, 1990). The goal of this type of analysis is to begin with specific responses and build toward patterns or categories (Patton, 1990).

The interview guide was set up to first gain new information and second to clarify this information. As such, not all questions were analyzed separately for content. Responses to the clarifying questions were combined with their initial question and analyzed together.

The responses to the interview questions were analyzed to answer each of the four research questions. The questions will be addressed separately, but the analysis and the identification of categories were similar for each question. Appendix E shows the breakdown of interview questions and the corresponding research question. Data were also collected to assess where the subjects received their health information and what influence it had on their health concept. These were not categorized but will be discussed.

Category Identification

In an effort to discover the similarities and how the subjects conceptualized health at the various age levels, the responses were identified and then categorized. Guba (Patton, 1990) suggests to develop systematic categories, first, find the recurring regularities in the data and they will become the patterns to be sorted into the categories. Thus, the responses to the children's explanation of health, measure of health, health maintenance, and health with illness were studied to identify the recurring similarities, and reveal a pattern. Once the patterns or types of responses (within each of the above areas) were identified, they were named and given a number, as the next step in the categorization.

The exploratory nature of this study meant there were no previously, defined categories, nor did the categories that began to emerge have a vocabulary or a definition. Patton (1990) called the naming and defining of the categories Analyst-Construed typology. The name given to each category in this study was based on its most prominent characteristic.

Once the categories were identified and named, their boundaries were clearly defined. Definitions will be given as each question is addressed.

The responses were analyzed again, and each statement of the children's responses to the question were given a number that corresponded to the category in which it fit.

Once the responses were numbered, the frequencies of each category were calculated for each of the age groups. Any relationships among the categories to age, gender and developmental level also were identified. Frequencies stated reflect the number of children stating that category of response in their answer to the question compared to the number of children in the sample. Responses of the children often included more than one category. In those cases each category was identified within their statement. The exception to this is healthy with illness, where an integrated response occurred and was identified as a category. The rationale for this category will be explained as health with illness is addressed. The frequency of each category is presented in tables which describe the responses, occurrences and relationship to age and gender.

Meaning of Health

The children were asked two questions to ascertain how they conceptualized health. First, they were asked if they knew what the word meant, and if they did, how they would explain it. Second, they were asked, what they would tell their friend health was. It was interesting that some children were not able to explain what health was but they were able to, describe what they would tell their friend.

Each statement of the children's responses was identified and recorded. The frequency of each statement is shown in Table 1.

Table 1 **Meaning of Health**

Responses	Male %	Female %
Don't know	1 (5.3%)	1 (4.8%)
Helps us breathe	1 (5.3%)	1 (4.8%)
Not sick	4 (21%)	6 (29%)
To help someone		2 (9.5%)
Eat properly (healthy foods)	12 (63%)	13 (62%)
To be strong		1 (4.8%)
To be good		1 (4.5%)
Keeping clean	1 (5.3%)	2 (9.5%)
Keep in shape (exercising)	5 (26%)	7(33%)
Feeling good (physically)		1 (4.8%)
Rosy cheeks		1 (4.8%)
Not letting people touch body parts		1 (4.8%)
Not getting into strange cars		1 (4.8%)
Body functioning	3 (16%)	3 (14.3%)
Taking care of yourself	2 (11%)	1 (4.8%)
Preventing accidents	1 (5.3%)	
Rest	1 (5.3%)	
Responds to stress		1 (4.8%)
Feel happy		1 (4.8%)

Similar responses were identified and grouped together to form categories. Five categories or types of responses were identified and named:

1. **Don't know** - Within this category the children did not understand the word health or if they were familiar with the word could not describe it.

2. **Behavioral** - This category of responses included the performance of health enhancing behaviours or habits (e.g., eating healthy (right), exercising, hygiene, preventing accidents etc).

3. **Not sick** - This category of responses included health being described as not being sick or having no symptoms of illness or disability.

4. **Physiological** - This category included how the body functioned, and its physical condition (e.g. being in good shape\condition, body (working) well, the immune system or feeling good physically). It also includes physical appearance or characteristics, (e.g., looking healthy, and rosy cheeks).

* It should be noted that the difference between being in good shape and keeping in shape is one of context. Being in good shape reflects a total body condition. Whereas keeping in shape, reflects the behaviours done to keep in shape.

occurs consistent with a developmental pattern.

Findings

Even the youngest children had a verbal familiarity with the word health or healthy. Only three children familiar with the word health or healthy were unable to describe it, and these all occurred below the age of eight.

Code 32 - A seven year old girl, when asked if she knew what health was, stated; "No."

Health, was most frequently described as the performance of healthy behaviour. Eighty percent of the children used behaviour to describe health. Health as behaviour was seen in all age groups, but as the children got older a change was found in the way the behaviour was described. The youngest children stated very specific behaviours (e.g., "Eat broccoli"). While the older children described less specific behaviours and often included additional categories to their description of health. The most common behaviour (mentioned by all age groups) was eating with 62.5% of the children describing health as eating right, or good food.

Category four (physiological) became evident at age eight or nine. It was not until age eleven that the children connected the internal physiology with external conditions.

Code 3 - A nine year old girl stated; "Well it means about your body. ... if you are feeling good, ... like all your body parts are working good or something." "If you are unhealthy your body wasn't really working."

Code 19 - A ten year old girl stated; Health means, "eat good foods and you have rosy cheeks. Your organs are working good inside."

Code 37 - A fourteen year old boy stated; " ... the condition of your body. ... all the parts of your body. Just like everything is working together and is in good shape."

The idiosyncratic nature of the concept of health was seen as early as age seven. Eighteen of the children (seventeen were nine and older) used a general statement about being healthy, to describe health. Probing of these general responses revealed, a similar phrase, but its meaning was different with different children.

The term healthy included such things as; being in shape, eating well, not being sick, body functioning well and not under stress.

Code 20 - A ten year old boy described health as ... "if your body is healthy ... nothing wrong with your body."

Code 38 - A ten year old girl described healthy as; "About how healthy you are ... eating right, exercising, don't catch colds that often."

Code 40 - An eleven year old girl stated health is ... "how healthy you are. If you are not sick, ... what kinds of foods you eat."

By the age of thirteen the children's responses became more abstract, but were largely behavioral, or physiological.

Code 4 - A thirteen year old female described health as; " ... when you're healthy. ... when you're living. People that are in good shape and eat well."

Prior to age eleven no child described health affectively, and not until thirteen with any consistency. Even with this, only 15% of the children, described health affectively and when probed, would revert back to a preceding category such as behavioral or physiological.

Responses such as; "Taking care of yourself", initially implied the affective, but when probed, only behaviours were stated, such as, "keeping clean, staying in shape, looking good and eating right". A slight male and female difference was noted with 16% of the boys using the affective to describe health and only 14% of the girls.

Code 12 - One thirteen year old female identified the idiosyncratic nature of health. "It's the way you see yourself as healthy."

The children saw health as necessary as early as age five. As with Natapoff (1978), the children described health as always present. Heady (1984), also found a similar result with a study looking at the health of adults. He found health was taken for granted or not thought about until

one was unhealthy.

Code 2 - A five year old girl stated; "I would tell her that she was healthy. Because I heard it around."

Code 26 - An eight year old female stated; "... health is something you have to have to ... keep your health, you have to have good so you won't feel bad..."

Code 35 - An eleven year old girl stated; "health is something you have to have to keep yourself alive and well."

Category three, not sick, was seen as early as age five. It continued to be a descriptor of health throughout development, but as the children got older the use of not being sick as a descriptor declined.

Consistent with development, one category does not appear before the other, but there was no evidence of assimilation of one category into the next, as the children developed. Instead, the children simply expand their description to include the succeeding category. Thus, while multiple category responses were seen, the categories remained distinct.

Table 4 shows a breakdown of the number of children (by age) using multiple categories to define health.

Children began as early as seven to include more than one category in their description of health. At this age, they tended to combine behaviour with not being sick. Responses remained very concrete with no connection made between the two elements.

Code 5 - A seven year old boy stated; " ... it means to eat healthy foods ... To keep away from sickness."

Table 4 Multiple Descriptors of Health

Age	Number of Children	Percentage	Number of Categories		
			2	3	4
7-8 years	3	33%	2	1	
9-10 years	7	78%		7	
11-12 years	5	63%	1	3	1
13-14 years	7	88%	4	3	

By age eleven, the children were including more than two categories within their description. Behaviour remained the common response for the single categories, and not sick became the thread within the multiple category responses. This was consistent with the not sick category, peaking at age eleven and twelve.

At thirteen, 88% of the children used more than one category to describe health and 43% identified more than two categories in their description. Behaviour, once again, was the common thread, but was now tied to higher level categories (e.g., physiological and affective). While behaviour remained the common thread, health was increasingly given a larger more complex description, encompassing more categories or types

of responses. There were no notable differences between male and female descriptions of health.

The impact of school on the formation of the children's health concept cannot be overlooked. Seventy-two percent of the children reported they learned what health meant from school or teachers. At times, naming the specific grades they learned it in. Two children initially described health as a subject in school.

Code 7 - A twelve year old boy stated; "Reading and people taught me, my parents, ... and teachers. I took it in grade 6, and grade 4, and grade 5, I think I started in grade 1."

Some of the children's descriptions were directly related to what had recently been covered in health class.

Code 38 - "Well it sort of means different body parts and other things like drugs and stuff ... Like teachers talk to you if people offer you drugs or something not to go in the car. ... teacher talks about ... what not to let other people touch... I have been in a lot of schools and this is what I've learned and stuff."

Code 23 - An eight year old boy stated; " ... Learning about your body, that's what we learned in school."

The parents were the second most frequently stated source for learning what health meant. Television had some influence on concept formation, but had a greater influence on behaviour development.

Prior to the age of eight some children did not know how they learned what health was, indicating they just knew it.

Code 11 - A seven year old female stated; " I don't know, I just kinda found it out."

Code 22 - A seven year old male stated; " You figure it out."

Measures of Health Status

To find out how children measure their health status and if personal indicators of health change with development, the children were asked, if they were healthy and if yes, how they knew they were healthy. All the children stated they were healthy.

Table 5 indicates the responses, given by the children to the question of "How do you know you are healthy?" They are not listed in the order they occurred.

The responses were examined again to find the common characteristics, and from these the categories were identified. The same analytical procedure was done as with meaning of health.

Table 5 Frequency of Responses to How do you know you are healthy?

Responses	Male %	Female %
I'm not sick (I don't get sick)	7 (37%)	10 (48%)
I don't feel like being active	1 (5.3%)	
I'm not sore anywhere	1 (5.3%)	
I am strong; I can run fast	1 (5.3%)	1 (4.8%)
The way you act		1 (4.8%)
I'm breathing (I have lungs)		1 (4.8%)
I eat healthy	7 (37%)	11 (52%)
The doctor told me	3 (16%)	1 (4.8%)
I brush my teeth	1 (5.3%)	
I don't cough a lot	1 (5.3%)	1 (4.8%)
My nose isn't all stuffed up		1 (4.8%)
You aren't hurting	1 (5.3%)	
I exercise (I do things)	3 (16%)	4 (19%)
I'm not lazy (I have energy)	2 (11%)	3 (14.3%)
Feel happy\feel good	2 (11%)	
I have rosy cheeks		1 (4.8%)
I don't have to go to the doctor		1 (4.8%)
I'm not overweight	1 (5.3%)	1 (4.8%)
My mother says I am	1 (5.3%)	1 (4.8%)
I go to the doctor\dentist	3 (16%)	4 (19%)
I don't have cancer		1 (4.8%)
I get along with people		1 (4.8%)
I'm not under stress		1 (4.8%)

Five categories of personal indicators or measures of health were found within the children's responses. The categories listed below reflect the developmental sequence.

1. External to themselves - In this category the children had been informed

by an adult person (usually a doctor or their parents) they were healthy. This category also included going to the doctor. Going to the doctor was included because it implied the doctor indicated their health status rather than themselves.

Code 2 - A five year old girl stated; "Cause one time I went to the doctor and he told me I was healthy."

2. Not sick - In this category the children assessed their health status by the absence of illness, or symptoms currently being experienced. This included such things as "I'm not coughing a lot." "My nose isn't stuffed up... " I'm not sick... and I don't get sick often."

3. Behavioral - In this category the children assessed their health status by their participation in healthy behaviours. This included; eating healthy, exercising, brushing teeth, and doing things. This category also included statements indicating not performing a behaviour (e.g., not eating junk food as a measure of health).

Code 26 - An eight year old girl stated; " ... I don't eat too much candy."

Code 30 - A seven year old boy stated; "Cause I eat a lot of eggs and I eat meat and all the good stuff like carrots."

4. Physical assessment\Appearance - In this category the children assessed their health status by making an assessment of their physical ability, or lack of (e.g. being strong, not tired, and lots of energy). It also included an assessment of their appearance such as "looking healthy", rosy cheeks, and not being overweight.

Code 20 - A ten year old male stated; "I can run pretty fast and I'm pretty strong ... "

5. Affective - In this category children assessed their health by the way they felt emotionally or mentally, (e.g., feeling happy). This category also included relationships, that is the ability to get along with people and having friends.

Code 6 - A 9 year old boy stated he knew he was healthy because; " ...if your feeling good then your healthy. Like you are happy about yourself..."

More than one category was found to occur within an age group or developmental level. External behaviour and not being sick all occurred in the youngest children. These were followed by the physical assessment (physiological) at age seven and the affective, which appeared at approximately age nine. The developmental difference, occurred with the way the category was stated; the level at which the child used each category. For example, the children continued (as old as twelve) to measure

health at the external level, but, the number of children using this category decreases and rather than specifically being told they are healthy, there is an implication of health as a result of going to the doctor. Again the children (as they got older) added another category to the preceding one, to more effectively measure health. Appendix F gives examples of the children's responses used to identify each category.

Table 6 depicts the occurrence of the categories in each age group and the percentage for each category of the total sample. Table 7 shows the differences in each category between male and female for the total sample of children.

Table 6 Personal Measures of Health Categories by Age Level

Category	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
External	1	1	3	2	1	8 (20%)
Not Sick	2	2	7	6	5	22 (55%)
Behaviour	2	8	4	3	6	23 (58%)
Physical Assessment\ Appearance		1	2	4	3	10 (25%)
Affective			3		1	4 (10%)

Table 7 **Personal Measures of Health Categories by Male and Female**

Category	Male	Female
1. External to themselves	2 (11%)	6 (29%)
2. Not Sick	9 (47%)	13 (62%)
3. Behavioral	11 (58%)	12 (57%)
4. Physical Assessment/appearance	6 (32%)	4 (19%)
5. Affective	2 (11%)	2 (9%)

Findings

The categories of health measures build on one another. Responses indicated each category remained a separate measure of health but, as the child got older the number of measures used to determine health increased. For example, the youngest children saw themselves as healthy on the basis of performing one category (e.g., behaviour, not sick or external). The oldest children saw themselves as healthy on the basis of more than one behaviour, and the assessment of one or more of another measure.

Code 28 - A five year old girl stated; "If I don't cough loud like I used to."

Code 27 - A 9 year old girl stated; "I don't get sick and I eat lots of vegetables and I don't have to go to the doctor lots of times."

Code 37 - A fourteen year old male stated; "I don't get sick often ... I participate in sports... And take care of my body like physically and I'm not having any diseases or anything,"

Until the age of seven behavioural measures of health status were very specific.

Code 29 - A five year old boy stated; "I brush my teeth, go to the dentist..."

Code 31 - A five year old girl stated: "Because I eat real food."

Beginning about age seven, the behaviours became less specific and increased (e.g., eating and exercising). At this time behaviour is often combined with another assessment (e.g., not sick to determine health).

Not performing, a behaviour or not doing something, became a measure of health at age eight. Children stated they knew they were healthy because they didn't perform a behaviour or lacked a physical attribute (e.g., eating junk food or too much candy, and not being lazy).

Code 26 - An eight year old girl stated; "I don't get sick, and I don't eat too much candy."

Doctors and medicine were an important measure of health.

Seventy -five percent of the children indicated, not sick or external was how they knew they were healthy. A male female difference was noted with the external category, with a greater percentage of the girls stating this as a measure of health than the boys (29% and 11% respectively). By far, not

being sick was the most predominant with 55% of the children indicating this category and 10% stating the doctor told them. Not being sick as a measure of health was evident throughout development. The younger children used external or not sick as the only measure. The older children usually stated this in conjunction with another measure (e.g., behaviour or physical assessment).

Code 2 - A five year old female stated; "Cause one time I went to the doctor and he told me I was healthy."

Code 11 - A 7 year old girl stated; "... when you're healthy you can tell because you don't have a stuffed up nose."

Code 6 - A 9 year old boy stated he knew he was healthy because; "I go to the doctor and he tells me ... "

Code 19 - A 10 year old girl noted; "... I don't have cancer or anything."

Code 4 - A 13 year old girl stated; " I don't have anything wrong with me. Go to the doctor. I don't take pills or anything."

Physical assessment, first appeared at age eight. Now the children assessed their health not only by their participation in healthy behaviours, but a physical assessment was made of their ability to practice the behaviour, or the absence of something preventing the healthy behaviour. In addition, some children made an assessment of their physical appearance.

Again a slight male female difference was noted (although it is difficult to assess the significance due to the small numbers). Males tended to state physical attributes, earlier and more often (32%) than females (19%) (e.g., not lazy, run fast and strong). Girls, used more appearance attributes (e.g., rosy cheeks, and not overweight). Further research is needed to see if males use physical assessment to measure health more frequently than females and if the attributes assigned to the assessment are different.

Code 20 - A 9 year old boy stated he knew he was healthy because; "I can run pretty fast, and I'm strong and my teeth don't have cavities ... "

Code 9 - An eleven year old girl stated; "I have rosy cheeks, I don't get tired, when I run ... "

A male, female difference also was noted with the affective category. The boys indicated how they felt emotionally or mentally was a measure of their health status earlier than the girls (age nine, and thirteen respectively). More research is needed to establish whether in fact boys do use the affective earlier than girls.

Code 33 - A 9 year old boy stated, he knew he was healthy because; "Right now I'm feeling "veery" very good. I feel happy and I'm a fun loving kid."

Code 12 - A 13 year old girl stated, she was healthy because; "I'm not under a lot of stress and I get along with people ... "

The ability to practice healthy behaviours was the most important determinant of health, throughout development. Fifty-eight percent of the children stated they were healthy because they practised healthy behaviours. Of the health behaviours performed, eating healthy food was the most frequently reported. Forty-five percent of the children indicated they were healthy because they ate healthy food and 35% indicated they were healthy because they exercised. The older children usually indicated the practice of more than one behaviour and were less specific.

Code 31 - A five year old girl stated; "Because I eat real food."

Code 24 - A seven year old girl stated she knew she was healthy because; "I eat well and stuff. I exercise and stuff."

Code 19 - A ten year old girl stated; "I eat good stuff. I take care of myself. Comb my hair everyday, wash my face, brush my teeth, take baths and stuff."

Code 4 - A 13 year old girl stated she was healthy because; "I exercise, I don't eat that much junk ... "

As with the descriptions of health, the children used more categories to measure health as they got older. Prior to the age of seven only one category was used to measure health. Table 8 shows the number of children in each age group using multiple categories to measure their health.

Table 8 Multiple Measures of Health

Age	Number of Children	Percentage	Number of Categories Used 2 3
7-8 Years	3	33%	3
9-10 Years	7	78%	4 3
11-12 Years	6	75%	5 1
13-14 Years	6	75%	4 2

Responses were examined to explore whether children defined and measured health in the same way (using similar categories of responses). Findings indicated that no child below the age of eight used more than one category to define or measure health, and single category responses persisted throughout development. After the age of twelve no child used a single category to both describe and measure health. Table 9 depicts the number of children using the same category of response to both describe and measure health.

Twenty-eight percent of the children used only a single category to describe and to measure health, but of this, 55% used a similar category for both their description and measurement.

Code 28 - A five year old girl stated; Healthy means, "that your not sick." She knew she was healthy, "If I'm not coughing like I used to."

Table 9 **The Number of Children using the same category to describe and measure health.**

Category	Number of Children %
Behaviour	20 (50%)
Not Sick	12 (30%)
Physiological /Appearance	5 (12.5%)
Affective	2 (5%)

Code 30 - A seven year old boy stated; "It means good for your body ... if you eat good stuff ... and milk, your teeth will be healthy..."

He sated he knew he was healthy; "Cause I eat a lot of eggs and I eat meat ... the good stuff like carrots."

One five year old girl noted that health means; "... you breathe." and her measure of health was "I have lungs."

The children using multiple categories were more difficult to assess. While the number of children using multiple categories is approximately same after age eight, only a small percentage of the children used all the same categories to both describe and measure health (12.5%). Other children using multiple categories may have one or more categories the same but the other categories used to either describe or measure health were different from each other. Table 9 reflects both, the children with all the same categories and those with only one or more matching.

Behaviour and not sick were the categories most frequently used in both their description and measurement. Fifty percent of the children stating behaviour and 30% using not sick as a descriptor of health also used it to measure their health status.

While 12.5% of the children used the physiological\physical in both their description and measurement, a difference in the type of response given (in the physiological category) between measurement and description was noted. Only a physical assessment was made when measuring health, there was no evidence of the physiological as was in their description of health.

Code 21 - A ten year old boy stated health means; " ... the organs of your body ... how you take care of them." He stated he knew he was healthy ... you don't get tired fast."

Code 7 - A twelve year old boy stated health means; ... how my body functions ... if I get a virus or something my body fights it to keep me healthy." He stated he knew he was healthy; "Because ... I don't feel tired. I don't feel like not being active."

Health Maintenance

The children were asked two questions to determine how they maintained their health, and what they felt was necessary to stay healthy.

First they were asked, "What do you do to stay healthy? Second, they were asked "What would you tell your best friend were the most important things to do to stay healthy?"

The categories, were identified using a similar analysis as meaning and measure of health. All responses were categorized.

Altman (1985) in a study of 100 children, identified five categories of responses to "What can you do to stay healthy?" These categories were: 1. eat properly; 2. exercise; 3. engage in proper hygiene; 4. get enough sleep; 5. and visit a doctor periodically.

Altman's five categories were supported in this study, plus two additional categories (not stated by Altman); 6. weight control; and 7. stress. The responses included in each category are shown in Appendix G. Only one child at the youngest age group did not know what they did to stay healthy.

Table 10 indicates the frequency of each response given by all the children. Table 11 indicates the number of responses in the seven categories at every age level and the total.

Table 10 Health Maintenance Response

Responses	Male	Female
Doctor gives you needles (Take Medicine)	2 (10.5%)	2 (9.5%)
Eat Healthy	17 (89.4%)	20 (95.2%)
Exercise	12 (63.2%)	12 (57.1%)
Brush Your Teeth	2 (10.5%)	
Go to the Doctor\Dentist	3 (15.7%)	3 (14.3%)
Keep Clean		1 (4.8%)
Get proper rest	2 (10.5%)	1 (4.8%)
Watch your weight	1 (5.3%)	2 (9.5%)
Not uptight (Handle stress)		1 (4.8%)
Get fresh air	1 (5.3%)	
Don't know		1 (4.8%)

Table 11 Categories of Health Maintenance by Age level

Category	5-6 years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Eat Healthy	4	9	8	8	8	37 (92.5%)
Exercise	1	2	5	8	8	24 (60%)
Hygiene		1	1	1		3 (7.5%)
Rest			2	1		3 (7.5%)
Doctor\Dentist	3	2	2	2		9 (22.5%)
Weight Control			2		1	3 (7.5%)
Stress\Coping					1	1 (2.5%)

Health maintenance practices, also appear to have a developmental trend, although it is not as clear as the concept or measures of health. Many of the practices or behaviours occur at the same time. Responses in the younger children reflect the rules they have been taught without understanding cause and effect.

Eating healthy, exercising and visiting the doctor all occur at about the same time, beginning with the youngest child and continue throughout development. Hygiene does not become a health maintenance practice until the age of seven or eight.

As with their conceptualizing of health, the children, use more than one category of response for maintaining health. As one ten year old boy stated; "There's not one thing, there's a number of things, because there is more than one part of your body."

By the age of ten all the children stated more than one category to maintain their health.

Findings

Eating healthy foods was the primary health maintenance practice with 92.5% of the children stating eating well kept them healthy. This was the most consistent health behaviour at all age levels.

Code 28 - A five year old girl stated; "At bedtime I always have some milk and a vitamin."

Code 15 - A fourteen year old male stated; "Exercise, eat right ... I have my three meals a day ... I get most of my proper nutrition."

Exercise was the second most common health maintenance behaviour with 60% of the children stating, participation in sports or exercise kept them healthy. Exercise was the only category found to have a male and female difference with more males indicating exercise as a means of health maintenance. Between seven and eight years of age no female stated exercise as a health maintenance practice. The number of children reporting exercise as a health maintenance practice increased with age. All children, after the age of eleven, stated, exercise or sports maintained their health. When asked how exercise or eating right kept them healthy, 22.5% of the children stated it maintained their weight or kept them from getting fat. All of the children who stated, weight was important to staying healthy, noted you could not be healthy if you were overweight. The association of weight with health began as early as age nine. No difference was found between male and female respondents, both citing weight about equal.

Code 3 - A nine year old girl stated; "Eat right, get a normal amount of sleep and exercise." Further stating that eating the wrong foods would make you fat.

Code 7 - A twelve year old boy stated; "I've run the marathon twice... I eat healthy snacks ... I try to go to bed on time so that I don't get sick ... "

Code 17 - A nine year old girl stated; "You won't get fat." when asked how exercise kept her healthy.

Code 20 - A ten year old boy stated; "It sort of gives you muscles and if you have any fat it takes it off cause if you have too much fat you can have a heart attack" when asked how exercise kept him healthy.

Code 34 - A twelve year old boy stated; "You won't get fat cause then you can't run and play sports." When asked how "not eating bad food" kept him healthy.

Code 4 - A thirteen year old girl stated; "Take most sports ... I eat good. I kind of watch my weight."

Visiting the doctor was important to health maintenance with just over half of the children stating that going to the doctor\dentist or taking medicine kept them healthy. Visiting the doctor, became less significant as the children got older. From thirteen years of age and up, no child indicated this category for health maintenance.

Code 2 - A five year old girl stated when asked what she did to stay healthy: " ... eat vegetables and you drink medicine so you won't get sick."

Code 22 - A seven year old boy stated; "Stay eating good food... don't eat too much junk. Once a year go to the dentist twice."

Code 19 - A ten year old girl stated; "I go to the doctor once or twice a year. If I'm sick I take medicine and have shots and stuff."

Psychological health maintenance practices were not stated until age thirteen and the only psychological factor stated was stress and the ability of a person to handle their stress. There was no indication of an understanding of one's ability to control or limit their stress.

Code 12 - A thirteen year old girl stated; "Exercise, and eating right. You can't get uptight about everything."

Following the identification of children's health maintenance practices, children were asked; How their stated health practices kept them healthy? Much work has been done in the area of children's perception of cause and effect of illness. One purpose of this study was to see how children perceive cause and effect of health.

Causes of health are stated in terms of the benefits or consequences of practising or not practising healthy behaviour. The older children state broad general statements, with the emphasis on the benefits rather than consequences.

Two types of responses were noted in the youngest children. In the first type of response they didn't know how their stated behaviours kept them healthy, but accepted that they did. The second response indicated a

recognition of some characteristic of the behaviour, but still no understanding of cause.

Code 2 - A five year old girl stated; (Vegetables) "Because they have vitamins and they are healthy for you."

Code 1 - A five year old girl stated; (broccoli; running) "I don't know. It just does."

Around age seven cause was stated in terms of the consequences or benefits of not practising or practising a behaviour. Emphasis at this age was on the consequence of not practising a behaviour. Descriptions remained vague and there was a repetition of the rules they had been taught.

Code 23 - An eight year old boy stated; "Pizza has lots of vegetables and meat. They are one of the five food groups. (Exercise) Makes sure you're not lazy and makes you fit. Cause like then you might start having problems with your body."

Code 26 - An eight year old girl stated; "Well if you don't eat well you will get sick and its not good to be sick."

By the age of nine children associated the practice of healthy behaviours with their effect on the body and ultimately one's health. Prevention of illness became the relationship of the behaviours to health. The emphasis however continued to be with the consequences of not performing a health behaviour.

Code 19 - A ten year old girl stated; (eating healthy) "Well it nourishes your organs, so they work properly." Taking care of yourself - "When you have a cut ... you clean it out so it doesn't get infected."

Code 38 - A ten year old girl stated; (eating properly) "If you eat too much sugar it can affect your blood. Sort of make your blood system not work properly."

It was not until thirteen that healthy behaviours were identified with feelings or the psychological effects were recognized. At this age the children identified a process or cycle to healthy behaviour, that was not evident in the younger children. They also now began to recognize the benefits of practising healthy behaviours.

Code 18 - A thirteen year old girl stated; "Exercise keeps you fit... Keeps you feeling healthy ... " When asked what she meant by feeling healthy stated; "You feel good about yourself. ... You don't feel self conscious ... then its the way you go about it, everyone can tell you are healthy and ... you do things that make you feel good."

Code 12 - A thirteen year old girl, when asked how handling stress kept her healthy stated; " ... its not only your physical but other people around you start to notice and they don't want to be friendly with you ... you will get tired ... start to lose it. Like break out in tears because you are so upset. ... that's not really healthy."

Code 37 - A fourteen year old boy stated; "Well I eat so I can have

Code 14 - A fourteen year old boy stated; "My Parents, brothers and sisters."

Ten percent of the children were not aware of any specific place or person that taught them what to do to stay healthy. Television has some influence on health behaviour as early as age seven. Children, stating they learned health behaviour from television were often able to recite a line from a television commercial or program. Other sources of information stated by the children included books, and the doctor. Sources other than the parents or school did not appear until age seven.

Code 18 - A 13 year old girl stated; " Parents and watching T.V. like how they always have stuff for smoking and stuff. ... All the drinking and driving commercials. ... Well it teaches me, what they do to you and stuff. ... Like Doogie Howser and stuff. They always have things like high cholesterol and stuff."

Code 10 - A 10 year old boy stated; "I don't know, I just learned them."

Code 30 - A 7 year old boy stated; "I just learned it myself. Like on T.V. Milk does a body good."

The influence of school on children's health concept and behaviour was further explored by asking the children if they took health in school and if so, what they had learned. Table 13 indicates the topics learned in school health (as stated by the children). No comparison was made with what the

children stated they learned and what was actually being taught at each grade level.

All children older than six indicated they took health in school. Seven and one half percent of the children were unable to recall any health information learned in school.

Code 39 - An eight year old girl stated; "We haven't learned much, we have only done two pages."

Code 32 - A seven year old girl stated; "To eat good. I forget the rest."

Table 13 Health Topics Learned in School by Age Level

	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Exercise	2		1	1		4 (10%)
Eat Healthy		4	3	4	5	16 (40%)
Dental		1	1	5		7 (17.5%)
Body Functions		2	2	2	1	7 (17.5%)
Environment\Safety	1					1 (2.5%)
First Aid			1	1	7	9 (22.5%)
Physical Well Being			1	1		2 (5%)
Emotional Well being			1			1 (2.5%)
Don't Know (Remember)		2	1			3 (7.5%)
Feelings			2			2 (5%)
Don't do Health					1	1 (5%)

1. Safety includes personal, (e.g., not talking to strangers, not taking candy from strangers and not getting into strangers cars etc).
2. Physical well being - While the children stated they learned this in health,

they did not know what it meant.

3. Emotional Well being - While the children stated they learned this in health, they did not know what it meant.

Code 16 - An eleven year old boy stated; "We take physical well being." When asked what this meant he stated; "We are just in the middle of it so we haven't finished it yet."

Code 3 - A nine year old girl stated; "Learned emotional well being." When asked what that meant she stated; "I forget, it was a long time ago."

4. Environmental includes - cleaning up after eating, and picking up the garbage.

Healthy with Illness\Disability

De Leeuw (1989) describes health as a resource for everyday life, not the object of living; it is a positive concept emphasizing social and personal resources as well as physical capacities. While this study did not set out with a predetermined definition of health, it did see health as more than the absence of disease. With this in mind it was felt that one could be healthy despite an illness or disability. Natapoff (1989) found that both able bodied and disabled children saw themselves as healthy, reflecting the broader definition of health and its idiosyncratic nature. She also found that children

by the age of eight, felt you could be part healthy and unhealthy at the same time (Natapoff 1978).

This study attempted to explore when or if children see health in this broader perspective and when one could be healthy and unhealthy at the same time.

In the first pilot test the children were asked directly if they could be healthy and unhealthy at the same time. This first test found that the children did not understand the question. So, for the second pilot test, the children were asked if someone could be healthy with specific illnesses (e.g. a cold, toothache and asthma). The cold, toothache and asthma were chosen because they were common enough for the children to have had some experience (either directly or indirectly) with them.

During the second pilot test it was found that the children isolated the affected body part (tooth) from the rest of their body and then determined health status. It was felt this needed to be explored further. As such, in this study the children were asked if someone could be healthy with the same common illnesses, as the pilot test, as well as an additional disability (a broken bone). This was added to further explore the isolating of the affected body part.

The study sample was asked if one could be healthy with a cold, toothache, broken leg/arm and asthma, followed by probing of their answer to reveal if they believed one could be healthy and unhealthy at the same

time.

For most children (up to the age of seven) one could not be healthy with an illness. However, even as early as age six distinctions were made based on the type of illness or disability (e.g., as a cold compared with a broken arm, and the ability of the individual involved). The number of children stating one could not be healthy with an illness showed a slight increase over the number that stated one could be healthy. As the children got older the number stating you could be healthy with an illness increased. Table 14 indicates the number of children in each age category stating one could not be healthy with the illness being discussed. Table 15 indicates the number of children stating one could be healthy with each illness.

Table 14 **The Number of Children Stating Unhealthy with Illness**

Illness	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Cold	6	7	6	7	4	30 (75%)
Toothache	4	6	4	1	*1	16 (40%)
Broken Bone	3	3 *1	3 *2	1	*2	15 (38%)
Asthma	*6	2 *6	4 *2	3 *1	2	26 (65%)
Total	19 (79%)	25 (69%)	20 (56%)	13 (41%)	9 (28%)	87 (54%)

* Children who did not know if you could be healthy with the illness being discussed. Except asthma where the children did not know the disease.

Table 15

Number of Children stating Healthy with Illness

Illness	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Cold	0	2	3	1	4	10 (25%)
Toothache	2	3	5	7	7	24 (60%)
Broken Bone	3	5	4	7	6	25 (62.5%)
Asthma	0	1	3	4	6	14 (35%)
Total	5 (21%)	11 (31%)	18 (50%)	19 (59%)	23 (72%)	73 (47%)

Health with illness was a difficult quality to assess as a yes or no response. Many of the children felt that it was really a yes and no response. Some children isolated the part to indicate the rest of the body remained healthy and for others health status was dependant on the cause they attributed to the illness. In both cases some children indicated yes and no. Children who stated a person would be sort of healthy, were classified as a yes response. Also those children who separated the affected part indicating it would be unhealthy but the rest of the body would remain healthy were also classified as a yes response.

Close examination of their rationale for health or unhealthy status revealed six typical responses or rationales. These same six response were used whether the subject felt one was healthy or unhealthy. Responses progressed from the simple to a more thoughtful response or rationale.

Appendix H gives examples of the type of responses included in each category.

The six types of responses (rationales) identified were:

1. Sickness\Pain - In this response children noted a person was not healthy with an illness because they were sick, presented with symptoms (e.g. coughing, running nose, etc.), took medicine or had pain. This was the simplest response, but was seen in all age groups.

2. Ability to do things\maintain behaviour - In this response children assessed their health status by their ability to continue to do things (e.g. going to school and eating right or exercising). The degree of illness is included with this response.

Code 6 - A 9 year old male stated when asked if someone with a cold is healthy; "Sometimes if its not really serious, if they just have a little snuffle or a little bit of a cough."

3. Isolation - In this response the affected part\organ is isolated from the rest of the body and thus health. Separation, allows the individual to remain healthy despite the illness or disability.

4. Cause - The cause was not physiological; it was the breakage of rules or the failure to perform some health enhancing behaviour. That is, whether

the illness/disability was within the individual's control, to prevent it.

5. Physiological - This response indicated at least a vague understanding of the internal and the external processes responsible for the illness and thus health status.

Experience was important to the physiological response, because while it was seen as early as nine with a broken bone, it was not seen until age eleven with asthma. Three levels of response occur within this category, not all levels occurring within each illness. At the first level the children had knowledge of germs and were concerned about their effect. At the second level they identified that the illness may affect the whole body. There was a vague understanding of the unity of the system. In third level responses children indicated at least a vague understanding of the physiology of the condition.

Code 26 - An eight year old girl stated; "Yeh. Cause you don't get germs in your arm".

Code 3 - A nine year old girl stated; "No. Because something in your arm could have snapped and it could affect your whole body."

Code 6 - A nine year old boy stated, when asked if you could be healthy with a broken arm; "Yeh. ... Cause the arm might not be moveable or anything but it is still healthy, cause like inside the veins are still healthy and stuff and the blood is still flowing through."

6. Integrated - This was the most complicated level of response and reflected an integration of the previous responses. The response indicated some forethought in answering, and the combination of one or more of the above elements to reach a conclusion.

Table 16 shows the number of responses in each category for the illnesses discussed and the age level they occurred.

Table 16 **Response Categories for all
Illness by Age Level**

Category	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Sick	12	8	7	9	4	40 (25%)
Ability to do things	3	11	3	4	5	26 (16.25%)
Isolate part		6	10	9	11	36 (22.5%)
Cause		3	2	5	1	11 (6.8%)
Physiological		2	10	1	3	16 (10%)
Integrated			1	6	7	14 (8.7%)
Don't Know	7	8	3	1	1	20 (12.5%)
No Answer given	1				2	3 (1.9%)

One answer was not categorized.

All responses, except integrated, and isolation were found with each illness and disability discussed but differences such as, when they first appear were found. Integration, was not seen with a broken limb and isolation was not apparent with the cold.

Each illness\disability will be discussed separately, followed with a discussion of their differences and similarities.

Findings**Healthy with A Cold**

Only five of the response categories were present when children were asked if they could be healthy with a cold. No child separated the symptoms of the cold or isolated an affected body part from an unaffected one to determine if one could be healthy with a cold.

The five types of responses found were as follows:

1. Sickness - In this response the children noted a person was not healthy with a cold because they were sick, presented with symptoms (e.g., coughing, running nose, etc.) or took medicine. This was the simplest response. It was seen in all age groups and it was the most frequently given rationale for not being healthy with a cold.

2. Ability to perform activities and healthy behaviours - This became evident at approximately seven and eight years of age. In this response the children assessed a person's health status with a cold by their ability to continue to do things (e.g., going to school and eating right or exercising).

By nine the children included in this assessment the degree of illness and how it affected the person's ability to do activities.

Code 38 - A 10 year old girl stated; "It depends. ... on how badly you have the cold ... "

Code 6 - A 9 year old boy stated; "Sometimes can be if its not really serious, if they just have a little sniffle or a little bit of a cough."

3. Physiological - Three levels were identified in this response. The first was the presence of germs. This rationale occurred at age seven and eight. If a person had a cold, then they had germs in their body and could not be healthy. Another important component of this response is the ability to pass on the germs to other people. The second level was closely followed by the lack of germs at age nine. The children assessed how the cold would affect the whole body.

Code 26 - An eight year old girl stated, "No." when asked if someone with a cold was healthy. Because "They have germs inside of them. Its not good to have germs inside you."

Code 27 - A 9.5 year old girl stated; "No. Because ... you get headaches and the germs can spread to other people."

The third level appeared to be the most complex response. This level reflected process and was also seen about age nine or ten. At level three the child made a direct link between the internal processes and what was physically seen.

Code 20 - A ten year old boy stated; "No. Cause the germs are... they

make the body work overtime ... making your system move different parts ... to try and kill the germs to make enough vaccine to kill it off.

4. Cause (Breaking rules). It also was at eight years of age that cause of the cold became a determinant of health, that is, one was not healthy because they got the cold as a result of not doing something or breaking the rules.

Code 32 - An eight year old girl stated, "No. Because they don't dress right and they got a cold , because it was cold out."

5. Integrated - This was the most complex level of response and reflected an integration of the previous responses.

Code 10 - An eleven year old boy stated; "No. Because if your coughing a lot and your throat gets sore ... if you didn't have to take medicine you would be healthy, but when you have a cold you have to take medicine, but the good thing is you have to stay home from school".

Code 12 - A thirteen year old girl stated; "Depends, if they are sick with a cold. ... some people can't swallow right... and get up and exercise... But if they are doing every thing right, they can still exercise, and eat right, ... only have a sore throat, then yeh, I guess they are."

Not until age eleven did any child identify someone with a cold as

healthy and in total 75% of the children indicated a person with a cold was not healthy.

Table 17 depicts the number of responses in each category.

Table 17 Response Categories with a Cold by Age Level

Category	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Sick\Pain	6	5	3	5	2	21 (52.5%)
Ability		4	3		2	9 (22.5%)
Isolation						
Cause		1				1 (2.5%)
Physiological		1	3	1	2	6 (15%)
Integrated			1	3	4	8 (20%)

Healthy with a Toothache

All six types of responses were identified when the children were asked if a person with a toothache was healthy. Table 18 depicts the number of responses given in each category and the age level it occurred.

1. Sickness\ Pain - This response type included those stating they were not healthy because they were sick, or the tooth hurt. All but one child prior to the age of seven, fit into this response type. The younger children felt that someone was not healthy if they had pain. This response was seen until

age eleven.

Code 29 - A five year old boy stated; "No. Because it hurts too much."

2. Ability to do things - This became evident at approximately seven to eight years of age. In this response the children assessed their health status by their ability to continue to do things (e.g., going to school and eating right or exercising).

Code 23 - An 8 year old boy stated; "Yeh. Cause you can still eat the right kinds of food."

3. Isolation of the affected part - Children by age seven separated the tooth from the rest of the body and health was determined by the amount of the body affected. This separation once identified, continued throughout development. Even the children who stated one was not healthy with a toothache (after age seven), usually were only referring to the tooth.

By the age of 13 all the children stated that someone with a toothache was healthy, but their tooth was not healthy.

Code 11 - A 7 year old girl stated; "Your mouth won't be healthy but the rest of your body will be."

Code 14 - A 14 year old girl stated; "Yeh, I guess everything else is o.k. its just their tooth."

4. **Cause** - The cause of the toothache became important at age seven, and continued to be important until age twelve. Health status was determined by the adherence to, or breakage of rules. There were two levels to this response. Prior to nine, the children assumed, the reason for the toothache had been not performing healthy behaviour (e.g., eating "bad food" or too much sugar). By age ten the children identified more than one probable cause for the toothache, such as eating bad food, or getting a new tooth. Health status continued to be based on the perceived cause of the toothache. Older children noted a toothache as a result of a new tooth would mean both the tooth and body were healthy. However, if the toothache was caused because they did not perform a healthy behaviour (eating too much candy), then only the body was healthy, the tooth was unhealthy.

Code 24 - A 7 year old girl stated, when asked if a person could be healthy with a toothache; "No. Because they ate too much candy and have a toothache."

Code 38 - A ten year old boy stated; "Depends if you have a cavity or if its just a new tooth coming out." ... If your teeth are really clean and you just got a loose tooth then I think you would be healthy... if you got a cavity then I don't think you would be healthy in the mouth."

5. **Physiological** - In this response the children noted the presence of germs causing the toothache thus resulting in a cavity. There was some indication of an understanding of the physiological mechanisms responsible for the injury.

Code 20 - A 10 year old boy stated; "No. Cause the cavity germs are in your teeth and its making a hole in your teeth and while you are worrying about that some other part of your body isn't getting worried about."

6. **Integrated** - This was the most complex response and was not seen prior to age twelve. Closely connected with this response was the isolation of the injured tooth and the cause of the toothache.

Code 25 - An eleven year old boy stated, " Yes. Because if its one side you can still chew on the other ... the toothache is just a hurting tooth ... its not going to affect your whole body."

of thirteen over half of the children saw someone with a broken arm as healthy.

Similar categories of responses (as with a cold and toothache) were identified. Table 19 depicts the age at which each category appeared.

Table 19 Response Categories with a Broken Limb by Age Level

Category	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Sick	2		1	1		4 (10%)
Ability	2	5		3	1	11 (27.5%)
Isolation		2	3	3	5	13 (32.5%)
Cause				1		1 (2.5%)
Physiological		1	3			4 (10%)
Integrated						
Not Answer	1				3	4 (10%)
Don't Know		1	1			2 (5%)
Uncategorized	1					

1. **Sickness - Arm is broken\Hurting** - With this type of response the child stated one was not healthy because the arm or leg was broken or hurting. This rationale was seen as early as age five and continued up to age eleven or twelve.

2. **The ability to do things or perform healthy behaviours** - (e.g., eating, and exercising). This response was noted in the younger children and continued

as the children got older. The older children did not perceive limitations incurred as a result of the broken limb were as great, as the younger children did and were more apt to decide one could be healthy even with their limitations.

Code 39 - An eight year old girl stated; "Yeh, Because your probably still eating properly."

Code 30 - A seven year old boy stated; "No, cause you can't scoop up some stuff ... you can't walk ... you can't go to the mall and buy stuff."

3. Isolation - This appeared to begin at age seven and continued throughout development. By thirteen most of the children isolated the part, recognized its ability to heal and felt that a person would remain healthy, despite the injury. The older children's responses indicated they had isolated the injured part and attained an understanding of the process, this understanding did not appear in the younger children.

Code 11 - A 7 year old girl stated; "Yeh, but your arm won't be."

Code 4 - A 13 year old girl stated; "Yeh, because its just a bone that is broken, like it will heal back into place and you don't really need medication for it. It will heal on its own."

4. Physiological - This response indicated an understanding of the internal and the external processes responsible for the illness and thus health status. Three levels of this response were identified. The first was the concern and recognition of germs. This was the simplest level and occurred at age seven and eight. The children using this response recognized the broken limb did not have germs, or was not caused by germs, therefore they would remain healthy.

The second level closely followed the lack of germs at age nine. The children assessed how the injury would affect the whole body. If the children saw the broken limb as affecting the whole body the person would not remain healthy or vice versa.

Code 3 - A 9 year old girl stated; "No. ... it could effect your whole body. Like you might feel weak and can't move your arm and get a headache or something."

Code 26 - An eight year old stated; "Yeh, cause you don't get lots of germs in your arm."

The third level of response, was the most complex and was seen at about age nine or ten. This third level reflected an understanding of the external and internal processes.

Code 6 - A nine year old boy stated; "Yeh. ... cause like, inside the veins are still healthy and stuff and the blood is still flowing through so its still healthy, even if it can't move."

5. **Cause** - In this response health status was determined by the cause of the illness. That is, whether it was a result of the breakage of rules (e.g., not performing healthy behaviour). This category did not appear before age eleven.

Code 16 - An 11 year old boy stated; "They can be ... it can happen to anybody."

Healthy with Asthma

Thirty-seven and one-half percent of the children did not know what asthma was or if a person could be healthy with the disease. More than with any other illness (in this study) the children's perception of health with asthma was directly related to their experience with the disease.

The children responded to the question based on their own direct or indirect experience. Children who had asthma stated they were healthy, except they used an inhaler or stayed away from their allergies. Children who's experiences were indirect (such as friends or relatives) varied in their assessment dependant upon their perception of the individual they knew who had the asthma.

Prior to the age of nine only the children with asthma indicated you could be healthy with the disease. In one thirteen year old, the importance of perception to health status became apparent. While she noted that she

was healthy with asthma, she stated that in general a person with asthma would not be healthy, "because of all the drugs they take."

Code 11 - A seven year old boy stated; Yeh, cause I'm just allergic to cats and dogs or any kinda of fur so I just have to stay away from those things."

Code 38 - A ten year old girl noted, her sister had asthma and made this response; "My sister no, she doesn't even take her inhalers, well she is suppose to but she refuses."

Again, the responses identified, were similar to that used to assess health status with a cold, toothache and broken limb. However, they tended to occur later in development. As with the other illnesses the types of responses, assessed both the presence, or absence of health with asthma. As the children got older a greater number of children identified an individual with asthma as healthy. Table 20 shows the age breakdown of the response categories.

1. Can't breathe\Sick - This response was noted at age seven and eight and continued throughout development. The children noted within this response the need to take medicine.

2. Isolation - This occurred at age nine. Two types of isolation were mentioned, the first was based on time and the frequency of events surrounding the illness. During this phase there was no indication of where

the disease was located. The second, occurred at approximately age eleven, isolated the body organ affected. The lungs were identified as the affected part and isolated from the rest of the body.

Code 19 - A nine year old girl stated; "Yeh. Well I think you only get asthma in certain seasons, or when your allergic to something ... "

Code 7 - An twelve year old boy stated; " ... it affects the lungs so it is hard to breathe, no I don't think they are healthy."

Table 20 Response Categories with Asthma By Age Level

Category	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	Total %
Sick		2	1	3	2	8 (20%)
Ability				1	2	3 (7.5%)
Isolation		1	3	2	1	7 (17.5%)
Cause					1	1 (2.5%)
Physiological			3		1	4 (10%)
Integrated				2	2	4 (10%)
Don't Know	6	6	2	1		15 (37.5%)

3. Physiological - This response indicated at least a vague understanding of the internal and the external process responsible for the illness and thus health status. Only one level of this response was identified, germs were not stated at any time nor was process distinctly

identified. The only level seen was the illness affected the whole body.

Code 20 - A ten year old boy stated; "Yeh, its just if you go in grain dust and if it gets in your body, you are sneezing and its all dusty inside of you and if there is too much coming ... your sneezing and you are all sick ... "

4. Ability/inability to perform behaviours or do activities - This was not identified by any child until age eleven, much later than with a broken limb or toothache.

Code 25 - An eleven year old boy stated; "Well my friend has asthma and he's really healthy. ... Well like, asthma doesn't come every few seconds, like you can still be healthy because you are eating all the right food groups and exercising, but when you over do it sometimes the asthma attacks."

Code 16 - An eleven year old boy stated; "I'm healthy but when I get an actual attack, no, you just can't do much, quite helpless really."

5. Integrated - This response began about age eleven and continued as the children got older. Responses reflected more complex thought. By thirteen, all four responses were considered in making an assessment as well as the individual's capability. With increasing age a greater number of children saw an individual with asthma as healthy.

Code 12 - A thirteen year old girl stated when asked if there was a difference in not being healthy with a cold and being healthy with asthma; "... like if you have been sick for a week, you are not eating right, then no you are not healthy. But after this is over, yes you will go back to functioning again. But something like asthma, happens all your life ... You are the healthiest you can be, but compared to the person who doesn't have it your not as healthy."

Code 37 - A fourteen year old boy stated; "Asthma is always there you have to work around it."

6. Cause. This response indicated an assessment of the cause of the illness and whether there had been a breakage of rules. Only one child and not until age thirteen assessed health status with this category.

Code 14 - A fourteen year old girl stated; "I guess there is nothing they can do about it ... their as healthy as they can get."

Comparison of the Illness

There does appear to be a developmental link within the six response categories. However, there was some variation dependant upon the

illness\disability and the child's experience. For example, cause was not a significant factor when children were assessing health with asthma, only one child, and not until age thirteen indicated cause in their assessment. But, cause was highly significant with the toothache (20%) occurring as early as age seven. Isolation did not occur as a response at all when assessing whether one could be healthy with a cold.

Isolation, cause and physiology were very closely related, occurring around the same age or developmental level within the same illness.

Another significant difference was not all three levels of physiological response were found in all the illnesses. Germs were not considered in the children's assessment of asthma, and the level three response (process), was only seen in the cold and the broken limb.

The isolation of the affected body organ/part occurred, in three of the illnesses, but there was a time factor present with asthma that was not seen with the others. The illness and health, were isolated in relation to how frequently asthma attacks occurred or when the disease was present.

Code 19 - A nine year old girl stated: "I think you only get asthma in certain seasons, or when you are allergic to something, but meanwhile even though you still have it you are healthy."

The amount of the body affected, the ability to do things, whether the children perceived a person as sick, were the main factors affecting health status with illness or disability. These categories accounted for most of the

differences in health status. Differences were particularly evident when comparing the cold with the other conditions. A cold was seen to affect the whole body, be caused by germs, limit activities, including the performance of health maintenance activities (e.g., eating right, and exercising) and make a person sick. The majority of children effectively isolated the other unhealthy parts (e.g., broken bone, lungs, asthma attacks and toothache) to maintain total health, but this was not done with the cold. As such most of the children at every age level viewed a person with a cold as unhealthy.

Code 9 - An eleven year old stated; " ... your not healthy with a cold because you have germs and stuff all over your body and when you have a broken arm ... your arm is like broken not like because you caught germs in your body."

Code 25 - A 12 year old boy stated; "Yes. The toothache is just hurting the tooth its not like ... affecting your whole body."

Category one (sickness\pain) was the simplest level of response with each illness or disability discussed. The ability to do things occurs consistently as the second category, beginning at age seven or eight in each illness or disability discussed. The only exception was asthma, where it did not occur until age eleven or twelve. The ability to do things and go places was not an important determinant of health status without illness.

Cause of the illness became an important determinant around age eight but gradually decreased as the children got older and was not evident

after the age of eleven. Except with asthma when it was not stated until age thirteen.

Perrin and Gerrity (1981), noted the second category of illness conception was concrete rules. Noting, often children did not have a clear understanding of the rules, they appeared to be reciting. This appeared to be the case with health status and was particularly true when assessing the toothache. The younger children, indicated that a toothache was caused by eating too much sugar. As the children matured they were able to identify another probable cause, until cause was no longer a major factor in determining health.

Code 21 - A ten year old boy stated, when asked if you could be healthy with a toothache; "Not really because that means that you have been eating too much sweets, and that's what gave you the toothache."

The children (by age seven) began to believe you could be healthy and unhealthy at the same time. Depending on the illness and its perceived effects.

Control

Finally children were asked if they could control whether they were healthy or not, and if they could, how they did so.

The children indicated they controlled health by preventing illness. The children's sense of control increased as they got older, and they began to recognize they could prevent and protect themselves against illness.

The youngest children felt they could not control health because one was healthy until they were sick.

Code 28 - A five year old girl stated; "No, it just happens."

Findings of this study indicated control of health became evident at the age of eight. The children now began to state the practice of healthy behaviours would keep them healthy. Responses continued to reflect their uncertainty, as to the amount of control they had.

Code 39 - An eight year old girl stated; "Sort of, ... Because your eating the things you need to keep you healthy."

Code 30 - An eight year old boy stated; "Yeh, try and stay healthy and eat good food ... "

The increasing control of one's health is consistent with the children's ability to reverse and Bibace & Walsh's internalization and contamination stage.

Around seven and eight the children noted that, despite not being able

to control when one will get sick, once sick, they could do things that would help them to get better faster. It was also at this age they believed illness could be avoided by not doing things considered unhealthy (e.g., "eating too much junk food"). By the age of nine illness was seen as preventable, and thus the children saw themselves as having greater control over health.

Code 26 - An eight year old boy stated; "Its kinda hard because you don't know when you are going to get sick ... But sometimes if you don't eat well you will get sick."

Code 5 - A seven year old boy stated; "You can't control it. But you can get it (sickness) under control."

Control of one's health for all children was identified with health enhancing behaviour. Even the youngest child identified behaviour as a means of not getting sick. With the younger children (prior to age eight) the behaviour was specific such as "eating carrots, celery and red peppers." By age eleven there was an understanding that practising health enhancing behaviours not only prevents disease but protects against it. As the children got older health was controlled by reducing the likelihood of illness.

Code 38 - A ten year old girl stated; "Can only try and stay healthy by eating right, getting enough sleep, and exercising. Can't prevent yourself from getting sick."

Code 20 - A ten year old boy stated; "Sometimes you can and sometimes you can't. When you're going to get a cough you never

know when you're going to run into it because germs are invisible... and sometimes there are ways to prevent it."

Choice was very important to children's feelings of control. Choice became evident at age eleven and continued to become more significant as children got older. Children stated it was a person's choice whether they practiced healthy behaviours. By choosing to practice health enhancing behaviour you are controlling whether you will be healthy or not. Once children saw themselves as having the ability to choose, they wanted to exercise that right.

Code 16 - An eleven year old boy stated; "Yeh, you control it because you choose what you eat ... you can either eat all the good stuff or you can eat all the bad stuff. You have the opportunity (unless you are poor or something) ... most people can play a sport ... even if it doesn't take a lot of money."

Code 25 - An eleven year old boy stated; "Yes, you can because if you would eat junk food then you are trying to get yourself unhealthy. But if you eat the basic foods then and exercise then I think you would be healthy."

Code 34 - A twelve year old boy stated; "Sort of. Well like if you don't really eat good food and you really don't exercise sort of that would be sort of stupid because then you would get fat and ugly."

Code 12 - A 13 year old girl stated; "Yeh, I guess you can. ... you can

make yourself up a schedule in your own mind. Like ... I'm not going to eat too much junk food, because its bad for me." You just have to figure out what you can do to keep yourself healthy."

Code 36 - A 14 year old boy stated; "Yeh, you control the amounts you eat, sleep and exercise. So if you really want to be healthy you do them. But if you don't want to be healthy you can be like a couch potato and veg out on potato chips ... "

Some sickness, continued to be seen as inevitable and beyond individual control. However, with increasing age children stated the ability to limit or prevent illness.

Code 11 - A seven year old boy stated; "Sometimes. Like sort of really can't because your never really know if your going to get sick or not."

Code 18 - A thirteen year old girl stated; "Yeh, By staying away from stuff that will make you sick or unhealthy. Like having lots of salt ... can give you hypertension."

Code 37 - A fourteen year old boy stated; "To an extent, like you can't avoid it (sickness) 100% all the time. But if you eat properly and you know, avoid some things you can be healthy as much as possible."

Thus one can be as healthy as possible within their illness.

Code 12 - A thirteen year old girl noted; "Depending on what kind of sickness you have ... If you have asthma, not really, you can limit yourself, so that's controlling it, make sure your taking your medication, so that's controlling it."

Summary of Findings

Patterns or categories of responses were found for the children's meaning of health, how they measure health and whether or not you could be healthy with an illness or disability.

Only three children had not heard of the word health, but they were familiar with the word healthy. Three children familiar with the words health or healthy were unable to describe it.

The idiosyncrasy of health was seen as early as age seven. The children used similar statements to describe health, (e.g., it means your healthy), but the phrases meant different things to different children.

Five major categories of responses were found for the meaning of health; behaviour, not sick, physiological, affective, and don't know. Each category builds on its predecessor in a pattern consistent with development.

Behaviour was the most frequently used category to describe health. Health was most often described as the performance of healthy behaviour,

such as eating right, exercising or taking care of yourself. Within this category, eating was the most frequently stated behaviour. As children got older, behaviours became general, increased and children often used more than one category to describe health.

Not sick was a category that occurred throughout development, from the youngest to the oldest children. Between the ages of nine and twelve this category was the most frequently stated category for describing health.

The physiological category was first stated at age eight and increased in frequency as the children got older. The younger children using this category stated a general statement of how well the body was functioning in their description. The older children (age eleven and up) stated a connection between the internal and external when describing health.

Only 15% of the children used how they felt emotionally or mentally (affective category) to describe health, and the majority of the children were older than twelve.

All children stated they were healthy. Five categories of responses were found when children were asked; "How do you know you are healthy?" The categories were; external to themselves, not sick, behaviour, physical assessment\appearance, and affective. As with their description of health, the categories build on one another in a developmental sequence. However, external, behaviour, and not being sick all occurred at approximately the same time, (age six), followed by the physical at age

seven and affective at age nine.

Behaviour was the most common measure of health status. The children measure their health status not only by their performance of healthy behaviours, but, at age eight began to measure their health on the basis of not performing an unhealthy behaviour (e.g., eating too much candy).

Not sick was the second most commonly used category to measure health status, and as with describing health this response occurred most frequently between the ages of nine and twelve.

Beginning at age eight children measured their health on the basis of their physical ability to perform a behaviour, as well as their physical appearance. A male-female difference was found in the type of responses given within this category. The males tended to state physical attributes (e.g., running, being strong), and the girls used more appearance attributes, (e.g., rosy cheeks, not overweight). However, the total number of children using this category was small making it difficult to assess the significance of this finding.

Children also were asked how they maintained their health? Seven health maintenance categories were identified; eating healthy, exercising, hygiene, rest, doctor\dentist, weight control, and stress\coping.

Eating was the most commonly stated health maintenance practice, followed by exercise. At age eleven exercise was stated as often as eating for maintaining health. Hygiene and rest were not stated by children until

the age of seven, and weight control at the age of nine. Coping with stress was not stated until the age of thirteen and then only by 2.5% of the children.

This study also explored children's understanding of the cause of health. The findings indicated that cause of health was understood in terms of behaviour and began to be seen around age seven. Prior to age seven children took for granted that their health behaviours kept them healthy, or they recognized a characteristic of the health practice but did not understand how they kept them healthy.

At age nine cause of health was the prevention of illness. Health maintenance practices maintained health because they prevented illness. The children now recognized the effect their health maintenance practices had on their body. By the age of thirteen, a cyclical process to health maintenance practices and their ability to maintain or cause health was noted. That is you perform a health behaviour, (e.g eating right) then you feel and look better and that makes you want to continue to perform the health behaviour, so you stay healthy.

Another aspect of health this study explored was children's perception of health when illness or disability was present. Children were asked if they could be healthy with a cold, broken limb, toothache or asthma.

Until the age of seven if you were ill or had a disease you could not be healthy. Health and illness remain separate concepts. As the children

got older they began to perceive that a person could be healthy with illness depending on the illness, the amount of the body affected and its limitation on their activities.

Six categories of responses were found for each of the illnesses discussed; 1. Sickness\pain, 2. Ability, 3. Isolation, 4. Cause, 5. Physiological, 6. Integrated. One category again, did not come before its predecessor, but the sequence varied depending on the illness\disability. Not all categories appeared at the same age level or carried the same significance for each illness\disability. For example, isolation was the most frequently used category with a toothache (40%), but was not used at all when determining health with a cold. Isolation, used to determine health with asthma, had a time factor present that was not present in the others. The isolation was based on the amount and frequency of the events surrounding the illness (e.g., asthma attacks, seasons etc). With a toothache or broken limb; category two, ability to do things, occurred as early as six, but was not stated when discussing asthma until age eleven. Cause was a frequent response when determining health with a toothache (20%), but was the least used with any of the other illness\disabilities discussed.

The final area explored with this study was children's perception of their control over their health. Control was seen to increase as children got older, and was not evident prior to age eight.

Control of health was illness prevention. The level of control appeared to increase as children got older and with the increase in control they felt able to prevent or protect themselves against illness. Control of health was stated in terms of behaviour, either performing or not performing healthy behaviour. At age eleven the children stated performing healthy behaviours not only prevented, illness but also could protect against illness. Thus by performing healthy behaviours they had control over their health. It was not until age eleven that children stated they had a choice about the performance of healthy behaviour. But once choice had been established it became very important to their sense of control. Often indicating if one chooses to do unhealthy things they will be unhealthy. As children got older, choice and control became more interrelated, with the oldest children choice was control.

The results of this study indicated children do conceptualize health developmentally. Each category identified built on the other, in a developmental sequence.

Children appeared to learn what health meant from school, but learned their health behaviours from parents. Although parents and school were the primary influence for children's description of health and their health maintenance practices, the level of influence each had appeared to fluctuate with the developmental level or age of the children. For example, until the age of nine parents are stated as the primary source for learning health

maintenance practices. Between nine and twelve years parents and school become about equal, and at thirteen the parents once again are stated as the primary source for learning health maintenance practices.

This study has just begun to explore how children conceptualize health. In the discussion that follows, the investigator will explore the significance of these findings.

Discussion

This study explored how children conceptualize health. It has examined how they measure it, define it, and maintain it. In addition, it has focused on whether children perceive that one can be healthy even with an illness or disability. While the small sample size makes it difficult to generalize the findings of this study to all children, it does give some insight into how children think about health.

As has already been stated (in the conceptual framework), Piaget (1970) identified four development stages of children's cognitive growth. This study explored how health was conceptualized in three of Piaget's stages of cognitive development; Pre-operational, Concrete operational and Formal operations.

In the discussion that follows the investigator will give an indication of how the children at each of the developmental levels thought about health. Also the similarities between children's conception of health and their conception of illness will be examined.

Consistent with other research on children's conceptualization of health (Natapoff, 1978), children's concept of health changes as they grow and develop. Health, though idiosyncratic, was seen as a positive necessary condition enabling children to do things. While categories of responses were found, how the children used the categories or combined them if using

multiple categories varied depending on their experience and frame of reference (cognitive level).

Most of the children in this study, remained at the behavioral level. The practice of healthy behaviour was the most common and consistent category for describing health regardless of age.

Developmental Characteristics

The youngest children described health very specifically. When using behaviour to describe health, the behaviour is very clear, (e.g., "Eat broccoli"). Health was simple and there was no hesitation on its definition. Children at this age level used only one category of response, to describe, measure or maintain health. The type of responses most often used at this level was an end state or specific event, (e.g., not being sick). Behaviours reflected the rules they have been taught. The children at this age level measured health by their adherence to the rules, not being sick or someone telling them. At this age you are healthy until you are sick.

There was no understanding of cause. The children stated they did not know how their health maintenance practices kept them healthy. Bibace & Walsh (1979, 1990) found pre-operational children perceived the cause of illness to be magic or some unknown force. There was no evidence of this

with health. The children simply accepted that their health maintenance practices kept them healthy. The older children (within this level), recognized a characteristic of the practice (e.g., vegetables have vitamins), but again there was no understanding of cause and responses reflected the rules or information given to them.

This youngest group of children and their responses appeared to correlate with the pre-operational level identified by Piaget. Their responses reflected the egocentrism characteristically found with this age level and their inability to see two events simultaneously, thus one was either healthy or sick but they could not be both. Cause of health was not understood, because children at age level only see beginning and end states thus one is healthy until one is sick. There was no thought given to cause or how this occurs they simply accepted (because they had been told and were healthy) that their health behaviours kept them healthy.

The eight to eleven year age group recognized health as affecting the whole body, but the association was vague. Descriptions and measurements were based on what they could observe and feel. This appeared to correlate with Piaget's concrete operation stage. Reflecting the children's ability to decentre and think on a broader level. However they continued to remain content bound. There was still a strong indication of rules they had been taught.

Code 20 - A ten year old boy stated; "... if your body is healthy with

the right kinds of foods and there's nothing wrong with your body then that's health."

The older children in this age group appeared to be in transition when discussing their conception of health, moving away from a very specific, concrete phenomenon to a more abstract concept. At age eleven health became more difficult for the children to explain or describe, while they knew what health meant it was hard to explain.

Code 35 - An eleven year old girl stated; "Taking care of your body. Keeping yourself healthy. I'm trying to think how to explain it, its hard to explain. I know what it means but I really can't explain it."

Just prior to this transition, it was found that children used very general statements to describe health, often including the word health or healthy in their description.

Not being sick was the most common descriptor of health between ages nine and twelve. Describing health as the absence of illness may reflect the school health curriculum's emphasis on disease, or it may be a general statement to describe a concept now becoming more abstract to them. As the children got older, the use of this category declined.

The findings of this study suggested it was between the ages of eight and eleven when children's conception of health began to broaden. The children began to use more than one category to describe, measure or maintain health. The number of children using multiple categories increased

as the age of the children increased. However, the combination was not always the same.

Personal measures of health at this age level reflected the growing awareness of health's connection to the whole body. Children began to measure their health status by their behaviour, the absence of illness, and a physical assessment of their body. They also assessed their ability to perform a health behaviour.

Evidence of children's ability to reverse was characterized in their personal measures of health which began to include the non-performance of some behaviours as a measure of their health (e.g., not eating junk food means they are healthy).

Cause was understood as the negative or positive effects of the health maintenance practice. Emphasis during this age level was on the negative effects resulting from not performing a health behaviour or participating in a practice seen as unhealthy (e.g., "if you eat too much candy you will get sick"). Consistent with children's conceptualization of illness (Bibace & Walsh 1980) the children in this study also began to internalize the cause of health about age nine. They now understood what effect a health practice had on their body and in the prevention of illness. Explanations, however continued to remain vague. With their understanding of the connection between internal and external events, they indicated more understanding of health maintenance through illness prevention and

recognized the bodies ability to protect itself against illness.

Code 7 - An eleven year old boy stated: "How I feel, how my body functions. I guess my diet would be involved in health, sicknesses.

Well if I get a virus or something my body fights to keep me healthy."

Children's rationale for healthy with illness was closely associated with the stages of illness concept, (e.g., physiology appeared about age nine consistent with Bibace & Walsh's (1980) stages of contamination and internalization).

For the oldest group of children, health became more abstract and less specific. The recognition of a cyclical process reflected this age groups ability to draw conclusions and to see two events simultaneously. An indication of formal thinking. This was also seen in the children's ability to look at the capabilities of an individual with an illness\disability and assess them as healthy within those capabilities.

Children moved away from health as only the absence of illness, or physical functioning to how they felt emotionally or psychologically. Personal measures of health now included their psychological state. Psychological health maintenance also became evident during this age level. The children recognized the importance of their psychological state in the prevention and protection against illness.

Stress was the only psychological health maintenance practice noted and there was no indication of limiting or controlling the amount of stress.

Health was maintained as a result of handling the stress one is confronted with. More research is needed to determine when psychological health maintenance becomes significant and to identify other psychological health maintenance practices.

Natapoff (1978) and Perrin & Gerrity (1981) noted health and illness concepts generally lag behind other areas of cognitive development. This lag in development may account for the small number of children using the affective category in their description of health. The affective category occurred earlier when measuring health than when the children were describing health. Suggesting that although the children did not recognize it within their definition of health until later, it was nevertheless an important indicator of health.

Other research done in the area of illness concept (e.g., Bibace & Walsh, 1980; Perrin & Gerrity, 1981), also found the use of the affective or psychological did not appear until later in development.

Bibace & Walsh (1980) found some college students responded to questions about illness similar to a seven year old child. Recognizing the affective category requires abstract thought which is not always present even in adults. Renner & Stafford (1976) found fifty percent of college students did not think at a formal level. Things such as friends, social support systems, self esteem, and stress have all been linked to affecting health. The findings of this study suggested that most children as old as

fourteen were still unaware of the role the affective or psychological elements play in their health. Further study is needed to examine the affective category, when and how it becomes a significant element in the defining, measuring and maintaining of health. Understanding how this part of the health concept is formed, will give further insight into adult conceptualizations of health as well as children's.

Although it can be argued that the school teaches about the emotional and psychological elements within their health curriculum, the children who stated they learned this in school could not remember what it meant or what they had learned.

Implications For Health Education

The emphasis by the children on behaviour and especially eating corresponded with what the children stated they learned in school. Eating was the number one topic as stated by the children and correlated with their conception of health. At age thirteen eating and first aid were the only aspects of health the children could remember taking in school.

Other topics learned in school were also found to be directly related to how the children defined health. For example, the children stated they learned (in school) how the body works, its anatomy and physiology as early as age eight. This study found physiological elements began to occur within

their definition at around the same age. Half of the children who described health as behaviour also measured health in terms of behaviour. Not as obvious a relationship existed with health measurement and maintenance (except when discussing eating).

One of the most interesting findings of this study (although not surprising) was the integral part illness played in health. Almost every aspect of health was tied (in some way) to the absence of illness.

Control over one's health reflected an inevitability to illness, one was healthy until one was sick. As the children got older and began to feel more control over their own lives, they began to feel they could reduce their likelihood of illness but never eliminate it. Once children felt they had a choice illness became the result of unhealthy choices. Indications of this finding pointed toward early victim blaming, especially when the children were discussing what they believed to be a preventable illness (e.g., toothache). Control of health appeared to parallel control of illness as outlined by Bibace & Walsh (1980).

Health education's preoccupation with illness and the emphasis on consequences may reflect society's pathogenic or medical view of health. Another view of health is "salutogenesis" (Antonovsky, 1979). A salutogenic approach would teach children what to do to maintain wellness as opposed to what not to do to prevent illness. Education of health maintenance practices needs to focus on the benefits, so they are done first to enhance

one's quality of life and second to prevent and protect against disease.

Only one child stated not smoking, alcohol or drug use as a measure of health and no child included not performing these behaviours as health maintenance.

Doctors and the medical profession appeared to have a strong influence on health maintenance and measuring health status. While the older children did not consider going to the doctor as health maintenance, they continued to see going to the doctor or health professional as a measure of their health status. Younger children, measured their health directly by what the doctor or another significant adult, told them.

The female-male difference noted in children's definition of health (Not Sick) and with their measures of health (physical category) needs to be explored further. Information is needed to understand more about the nature of the differences and factors that may influence the development of such differences (e.g., a differences in socialization between males and females as to what health is and the use of medical services). Natapoff (1978) noted a similar difference between males and females. As health education programs are planned, educators should be aware of whether or not such differences exist, what they are and the effects they have on behaviour and health beliefs.

Children at all age levels felt that to be healthy you must perform certain behaviours, (e.g., eating properly, and exercising). This was best

exemplified by a thirteen year old girl who stated. " You are healthy if you eat right, exercise right and not under ... pressure."

Findings of this study appear to support the shift found by Natapoff (1989) from health as an enabling concept to one of physical fitness. Every child after the age of eleven, stated exercise or sports as a health maintenance practice and over twenty percent of the children stated exercise within their definition of health.

Consistent with Natapoff's (1978) findings that children after the age of eight believe one can be part healthy and unhealthy, findings of this study also revealed that children after the age of seven believed one could be part healthy and unhealthy (as measured by their responses to remaining healthy with an illness\disability). Being healthy with an illness\disability was dependant on the child's age and the illness\disability in question. A developmental sequence similar to illness was found in two areas of health. First, while more children felt you could not be healthy with an illness\disability, the number of children stating you could be healthy with illness increased with age. The second developmental trend found was, their rationale for determining health status (healthy or unhealthy) became more complex as the children got older. For example, the physiological category was seen only in the older children and no child below the age of nine reflected an integrated rationale.

Of note, children stated the same types of responses (rationales)

whether they felt one was healthy or unhealthy. The only exception to this was category one sickness\pain where all the children indicated a person who was sick, could not be healthy. The other rationales or responses appeared to suggest that while the individual may have an illness or disability they were not sick and therefore could still be healthy.

Use of the similar responses for both healthy and unhealthy indicated again the idiosyncratic nature of health. The child's understanding of health with an illness\disability was determined by cognitive development and children's perception or experience with the illness.

The relationship between perception of the illness and health status was best exemplified when the children were asked about asthma. Children who themselves had asthma indicated they were healthy, yet in general, a person with asthma was not healthy. As children got older and their ability for abstract thinking increased, they were able to look beyond the illness to assess the capabilities of the individual and more likely to state the person was healthy. A reflection of formal thought. Natapoff (1989) also found perception important. She (Natapoff, 1989) found when looking at the difference between able bodied children and disabled children, the disabled children saw themselves as healthy but in general someone with the same condition was not healthy.

Arieti (1967) and Pidgeon (1985) outline two stages of concept development, first the necessary elements to the concept are identified and

described. Second the relationships between the elements are established. The categories found for the meaning of health and the measurement of health, are consistent with Arieti's (1967) concept development, and might be more appropriately called elements. They are the elements of a health concept and what is required for health. As such they become its descriptors and form the basis of the concept.

The findings of this study indicated for the majority of children the elements remained distinct. However, as the children got older the elements became more complex and more elements were needed to describe the concept. This study did not look at the second stage of concept development, that is when and how the children recognized the relationships between the elements initially described.

Recognition of when, and if, relationships between the elements are understood, will be important to future research. It would be valuable to ascertain at what age the relationship between the elements are identified and their interactive characteristics become apparent. Health as seen in this study was a collection of the elements.

The identification of these elements and their subsequent relationships has implications for health education. Results of this study indicated the children were taught the elements of a health concept. The next step would be to identify the relationships between the elements and how children begin to understand them along the developmental continuum. Piaget (as

interpreted by Flavell 1963) noted adults will only have adult thought in those areas in which they have been socialized. Therefore if our goal is a health concept based on wellness, and not disease, children will have to be socialized to wellness.

The school in this study was the primary source for learning a definition of health. Children describe health in terms of what they had learned in school. Therefore, for children, to view health as a resource for living rather than only the absence of disease (a goal of health education), it is necessary to look more closely at what the health curriculum is teaching, how it is being taught and how it is being interpreted by the children. As with other content areas it will be necessary for health education to help children bring the elements together and assist them in the identification and building of relationships between the elements.

Movement toward this type of education in the area of health will require re-education of the educators. They too will need to move away from a disease based concept of health to a wellness concept.

The impact of school on children's health behaviour must also be explored further. Educators must understand the role school's play in forming children's beliefs and health behaviours if health education is to be effective.

School was the most influential factor in forming the children's concept of health, but the parents were the most influential factor in the

development of health behaviour. This finding was consistent with Deilman (1982) who found that children's health behaviours are influenced by a variety of parental characteristics, but that the child's health beliefs are scarcely influenced by parental characteristics. Findings of this study suggested children's health beliefs are greatly influenced by what they learn in school. Thus eating, physiology and disease prevention learned in school became the basis for children's health concept. The effect children's health concept has on their behaviour was not explored in this study. It would be valuable to learn if one's health concept influences behaviour and if so how. If a relationship does exist educators could use the information when developing health education programs for children.

A change was found in when the influence of the school or the parents occurs. Parents were the primary source for learning health practices prior to the age of nine. From nine through to age twelve, the school became more influential. The parents were once again the primary source for learning health behaviour after age twelve.

Changes such as these need to be understood further if children's health beliefs and behaviours are to be incorporated in a healthy lifestyle. Knowledge of such influences on behaviour and definitions will provide information as to when school health education can have the greatest impact and when parents are the most influential. Health education programs can then target (more effectively) at the children and their primary

learning source during that period of development.

Television has become a primary source of information and entertainment, occupying a greater and greater proportion of children's time. We are entering a generation that has been raised on television from a very early age. Health education to date has often felt that television was ineffective at behaviour change, thus not seen as a reliable medium for health education. Winett, King & Altman (1990) have argued that television can be an effective medium for health education and behaviour change. They cite its failure largely due to too low a dosage and duration. They stated that the exposure is most often not long enough or intense enough to effect change.

Evidence of this study suggested that television, influenced both the children's health concept and health behaviour, with a greater impact on health behaviour than health concept. Although the number of children citing T.V. as their source of information was small, it is important to look at its affects a little more closely. The findings appear to suggest that television may be an effective health promotion tool, that to date has been left untapped. However, further research must be done in the area to see how the children learn from television and what type of information they obtain and retain. This will allow health education to use a systematic approach based on analysis and research to create an effective health education campaign, as suggested by Winett et al. (1990).

This study used a homogeneous group. Future research needs to substantiate these categories of health with a larger more diverse group of children. The influence of such things as socio-economic status and culture on the development and understanding of health needs to be addressed; because health is idiosyncratic with social and cultural implications.

Cognitive development must be taken into consideration when designing health programs. Successful intervention strategies depend on designing programs that adapt and respond to the child's continual growth and development (Micklaide, 1986).

This study was only the first step toward the understanding of children's development as it relates to health. The next logical step (after substantiation of the information in this study) would be to use this information and what is already known about how children conceptualize health and illness to build an effective health education curriculum. Utilizing a constructivist framework would facilitate this process. A constructivist model reflects the construction of knowledge from existing cognitive structures and the emergence of new cognitive structures (Brooks, 1987). Thus the curriculum is built on the foundation of children's conceptualization of health as opposed to information adults feel the children need to know.

The transition to a constructivist approach to health education would not be easy. Constructivist teaching is the hardest kind of teaching ever invented (Kamii, 1982). It requires teachers to understand how the child is

thinking and feeling to raise the occasional question or make a tactful suggestion (Kamii, 1982). To accomplish this with health, the teacher must first understand health as a whole concept and then must understand how the child thinks about health. Only then will he\she be able to provide an environment that builds on the existing knowledge of the child know what questions to raise, and when.

Active participation in health requires much more than information about how to prevent disease. Understanding how children conceptualize health is the first step towards building programs and educational methods that will produce active participants.

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APPENDIX A
LETTER TO PARENTS

Dawn-Marie Turner
University of Manitoba
Department of Math and Natural Sciences
Winnipeg, Manitoba

Date

Dear Parent:

I am writing to inform you of a research study that is being conducted at _____ . The title of the project is "Children's Definition of Health ". The study is being conducted by myself, a Master's of Education student at the University of Manitoba.

The purpose of the study is to explore children's thinking about health.

Each child participating in the study will be interviewed by me. Questions will be asked regarding what they think about health and how they know when they are healthy. The interviews will be conducted at the at the school. The children will be interviewed separately, with each interview taking approximately 20 minutes.

Interviews will be recorded (audio only). The recording will be transcribed and following this erased. The children's name will not be recorded. Only their age and gender will be recorded to assist with classification of the answers. All information will be anonymous.

Your child's participation is completely voluntary. To have your child participate, please sign the attached consent and return to the school principal in the envelope enclosed.

If you have any questions about the study or your child's participation please contact the investigator at _____ or Dr. Dexter Harvey at _____ .

Yours truly,

Dawn-Marie Turner

APPENDIX B
CONSENT FORM

I _____ consent to have my child _____
participate in the study entitled "Children's Perception of Health".

My child's participation will involve an interview of approximately 20 minutes. The questions will be related only to the child's conception of health.

All information will be kept confidential and the children will only be identified by a code number.

I will be provided with a summary of the study upon its completion if I request it.

SIGNATURE _____

DATE _____

APPENDIX C
INTERVIEW GUIDE

Face Sheet

Date of interview:

Sex:

Age:

Grade:

Mother's occupation:

Father's occupation:

Code Number:

APPENDIX D

Interview Guide

CODE NUMBER _____

1. Have you ever heard the word health?

a) Do you know what health means? Have them explain.

Explore what the child means by key words (e.g., doing things, good stuff).

b) How do you know this? (How did you learn your meaning?)

2. Are you are healthy?

3. How do you know you are healthy?

(What kinds of things tell you that you are healthy?)

Explore answer look for key words (e.g., active, go to school).

4. What do you do to stay healthy? (e.g., eat certain foods, exercise, listen to your parents).

a) Where did you learn to do these things to stay healthy?

b) How does _____ keep you healthy? (Casual relationship)

5. Is someone with a cold healthy? With a toothache? Asthma? with a broken bone?

a) Why? (explore their rationale for their response. Note any differences, e.g. healthy with a toothache but not with a cold.)

6. If you were going to tell your friend what health was, what would you tell them?

a) What would you tell them are the most important things they should do to stay healthy?

7. Can you control whether you are healthy or not? Explain i.e. can you do things that will keep you healthy?

8. Do you take health in school?

a) Can you tell me what you learned?

APPENDIX E

Research Questions

How do children conceptualize health?

How do they (children) know when they are healthy?
What do they (children) do to stay healthy?

Do they define health and illness differently?
Can you be healthy and unhealthy at the same time?

How does their conception of health change with development?

Interview Questions

Do you know what health means?
Explain it to me?
How do you know this?
What would you tell your best friend health was?

Are you healthy? How do you know you are healthy (individual indicators of health)?
What do you do to stay healthy (health maintenance)?
How does _____ keep you healthy?
What would you tell your best friend are the most important things to do to stay healthy?

Is someone with a cold; toothache; broken limb; asthma healthy?
Can you explain the difference (Why they are healthy or not healthy?)

All interview questions will be addressed to summarize changes that has occurred with growth and development.

APPENDIX F

Breakdown of responses included in Categories of Measures of Health

1. Out side themselves - the doctor told me
 - my mother says I am
 - go to the dentist
 - appointments with the doctor
 - go to the doctor, for regular check ups

2. Not sick - not sick
 - nose isn't all stuffed up
 - don't have to go to the doctor
 - don't cough loud
 - don't get sick
 - if your stomach doesn't hurt
 - nothing is wrong inside of me
 - not sore anywhere or anything
 - not hacking up phylum

3. Behavioral - eat healthy
 - brush my teeth
 - exercise
 - do a lot of things outside
 - ride my bike
 - do lots of activities (you are active)

4. Physical Assessment\Appearance - not lazy
 - have rosy cheeks
 - not overweight
 - can run pretty fast
 - strong
 - not losing your energy
 - don't feel like not being active
 - not run down
 - not tired

5. Affective - feel happy
 - just the way you act
 - feeling good
 - fun loving kid
 - not under a lot of stress

APPENDIX G

Health Maintenance Categories

Five categories of responses were found to describe how the children maintain their health.

1. **Eating Healthy** - This category included all the responses indicating eating healthy food, right food, or well to maintains health. Also included in this category are the statements reflecting what not to eat to prevent illness, and the responses indicating that eating of certain foods, (e.g., candy) causes illness.
2. **Exercise** - This category included all the responses indicating exercise or sports as a health maintenance practice.
3. **Hygiene** - This category included all the responses indicating hygiene practices important to health maintenance, e.g., brushing teeth, combing hair, keeping clean, washing cuts and generally taking care of yourself.
4. **Get enough rest** - This category included all the responses that indicated proper sleep or rest as a health maintenance practice. It also included those statements indicating that without proper rest illness would occur.
5. **Visiting a Doctor** - This category included all the responses that indicated visiting the doctor or dentist as a health maintenance practice. It also included, those statements indicating taking medicine or doing as the doctor or dentist tells you when one does become ill.
6. **Weight control** - This category included responses that indicated maintaining proper weight or losing weight (if overweight) important to health maintenance. Also included were statements indicating that a person that was overweight was not healthy.
7. **Stress Control** - This category included responses that indicated handling and limiting stress so one does not become uptight.

APPENDIX H

Breakdown of some of the responses included in each category of health with illness.

1. Sickness\pain\injury - cause they are sick

- coughing a lot
- you get a headache
- have a disease
- it hurts
- have a cavity
- can't breathe
- one of your bones is broken

2. Ability to do

Things\behaviour - still eating good things

- cause they don't eat good
- have to stay home from school
- your not suppose to go a lot of places
- depends on how badly\not serious
- can't play sports
- depends on how they look after themselves

3. Isolation of body part - your mouth is unhealthy

- you only get asthma in certain seasons
- body is healthy only in lungs
- just your arm or leg is broken

4. Cause - they don't dress right

- you ate too much candy
- depends if its a cavity
- there is nothing they can do about it

5. Physiological - they have germs in them

- something in their body makes them sick
- germs can spread to other people
- body is infected
- inside veins are still healthy
- her lungs are closing
- grain dust gets in your body and its all dusty inside of you

6. Integrated - Indicated an integration of the above categories and some hypothesis about the condition and health. "Same as a cold but worse its mostly just the lungs."