Alteration in Growth and Development: A Nursing Diagnosis Validation Study

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ALTERATION IN GROWTH AND DEVELOPMENT:
A NURSING DIAGNOSIS VALIDATION STUDY

By
Cynthia Peltier Covia

A THESIS

Submitted to
Grand Valley State College
Kirkhof School of Nursing
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE IN NURSING

1985
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To Ken and Kellee,

Thank you.
ALTERATION IN GROWTH AND DEVELOPMENT:
A NURSING DIAGNOSIS VALIDATION STUDY

ABSTRACT

A professional profile questionnaire and a case study questionnaire depicting a child with delayed development was mailed to 200 nurses of the Michigan Nurses Association Division of Maternal and Child Health. Of the 60 respondents, 27 (45.8%) indicated a diagnosis in the category of altered development as primary diagnosis for the child and 50 (83.3%) indicated a diagnosis in this category as either primary or secondary diagnosis for the child.

Expertise scores based on level of education attained, years of experience in maternal-child health and in nursing, and experience with children were found to be significantly related to diagnosis of altered development as either a primary or secondary diagnosis, but not to identification of over 75% of the cues which had been validated with content validity experts. Additionally, nurses with greater amounts of experience in nursing diagnosis were more likely to diagnose a developmental alteration.
ACKNOWLEDGEMENTS

Many individuals were of essential assistance in the planning, execution, and report of this research. The first group of individuals who were of assistance were my committee members, Dr. Donna Larson, Dr. Mary Horan, and Dr. Faite Mack. They not only offered suggestions and critique, but also encouragement in this effort, and I thank them all.

Secondly, those colleagues who served as content validity experts are to be recognized: Joyce French, R.N., M.S.N., Martha McGrail, R.N., B.S.N., M.A., Amelia Schechinger, R.N., M.S.N., and Carolyn Vieweg, R.N., M.S.N., P.N.P. The contributions of these people to development of my instruments were of great value, and again, I offer my thanks. I would also like to thank my classmate, Joyce Derrhammer, R.N., M.S.N., for her assistance in coding, and for her collaboration on our first paper, in 1983.

Instrumental in the development of my ideas for the methodology used in this research was the presentation given by Dr. Richard Fehring, of Marquette University, Milwaukee, Wisconsin, at the First Conference of the Midwest Regional Conference on Nursing Diagnosis, in September of 1983. I thank Dr. Fehring for allowing me access to his unpublished paper, so that I could more fully develop my ideas.

- vi -
Finally, I thank the Kirkhof School of Nursing M.S.N. Class of 1985, my family, and my friends, for all their encouragement and love in the past five years.
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CHAPTER I

INTRODUCTION

The concept of nursing diagnosis has been described in the literature since the 1950s, when Abdellah first defined this term (Kim, 1984). The definition has been debated by several authors since then, but its true refinement has occurred since 1973, when the First National Conference on Classification of Nursing Diagnosis was convened in St. Louis, Missouri (Gordon, 1978, 1980). With the work of the Task Force of the National Group for Classification of Nursing Diagnoses, and its descendent organization, the North American Nursing Diagnosis Association (NANDA), the tasks of identification, validation, and classification of diagnoses have progressed. The priorities in nursing diagnosis research which have been identified by the leaders in this movement are: (1) identification of diagnostic labels, and (2) validation of these labels (Barnard, 1982; Gordon & Sweeney, 1979; Perry, 1982; Tanner & Hughes, 1984).

During investigative work, the list of diagnoses accepted for clinical testing has evolved. The current list was accepted at the Fifth National Conference (1982) and it remained unchanged at the Sixth National Conference in 1984. What has become increasingly evident to those who use nursing diagnostic nomenclature in the nursing care of psychiatric and pediatric populations, however, is that the current list is inadequate for the unique
characteristics of these clients (Kritek, 1984).

Reflective of this is the work which has occurred simul­
taneously and independently in several areas of the United States
in defining the labels which are most pertinent to nursing care in
pediatric populations. Although in the work of Aspinall,
Jambruno, and Phoenix (1977) a case study of a boy felt to be
exhibiting a developmental delay was presented, and in 1982,
Lunney proposed altered growth and development as a nursing
diagnosis to be considered by NANDA, it was not until 1983 that a
formal definition of a nursing diagnosis classification for this
type of patient response was attempted. Coviak and Derhammer
(1983), in an unpublished paper submitted for fulfillment of
requirements for a graduate course in the nursing care of
children, defined actual alteration in growth and development as
"a primary or secondary failure of the client to meet expected
growth and development norms of his/her age group" (Coviak &
Derhammer, 1983, p.3). Primary failure included those instances
in which the client never accomplished the task or norm.
Secondary failure was defined to describe those instances in which
regression to earlier levels of growth and development had
occurred. (Coviak & Derhammer, 1983, p.3).

Defining characteristics were also proposed for the nursing
diagnosis of alteration in growth and development by Coviak and
Derhammer. The characteristics proposed for testing for useful-
ness in describing possible manifestations of this diagnosis were:

---onset of the alteration often beginning in childhood
---delay in, or difficulty performing skills typical of age group: motor, social, language, learning, manipulative
---altered physical growth
---inability to perform self-care activities appropriate to age
---physical, psychological, or emotional dependence on others for life-sustaining or actualizing activities
---alteration may interfere with the accomplishment of more advanced skills
---alteration currently requires, or may require in the future, the skills of numerous health care professionals for resolution if it continues.

(Coviak & Derhammer, 1983, p.10)

Although the conceptual basis for their proposed definition, etiologies, and defining characteristics for this diagnosis was developed from their backgrounds as nurses of children, Coviak and Derhammer did not dispute the possible applicability of the diagnosis to the care of adults. Rather, they urged development of the diagnosis by nurses concerned with the care of adults for use in the more mature age groups. Thus, although the initial defining characteristics they proposed for testing of the
diagnosis included a statement that the alteration may often occur beginning in childhood, it was also recognized that this phenomenon could be evident in an adult client.

Simultaneously and independently from these authors, Schechinger, also a nurse of children, has defined "deviations in developmental pathways" with a similar conceptual basis as Covia and Derhammer's definition of altered growth and development (1984, personal communication). The work reported by Oldaker (1984) at the Sixth National Conference and the paper by Bumbalo and Siemon (1983) lend support to the accuracy of conceptualizing the existence of altered developmental states in children which are of concern to nursing. These papers describe developmental nursing diagnoses which are specific to a particular age group (Oldaker, 1984), and to the mental health needs of children (Bumbalo & Siemon, 1983). Recently, Burns and Thompson (1984) reported on a classification system being developed for the use of pediatric nurse practitioners in an ambulatory setting. This system included a diagnosis of developmental lag as a subdiagnosis of the psychosocial domain. This paper did not, however, include the definitions of the diagnosis they use.

The report of Kritek (1982) at the Fifth National Conference on the work of the group on taxonomies described the development of a taxonomy with four levels of nursing diagnoses. This report lends further insight into where the diagnosis of alteration in
growth and development might fit. A nurse theorist group working in conjunction with clinical nurse specialists of NANDA has proposed a framework for nursing diagnosis, using the patterns of unitary persons. The patterns (exchanging, communicating, relating, valuing, choosing, moving, perceiving, knowing, and feeling) were used to sort the "accepted" list of diagnoses horizontally into nine taxonomic trees. These trees were then ordered vertically by the level of abstraction of the diagnostic concept, with Level I being the most abstract level and Level IV being the most concrete level. (The organization of the taxonomy is illustrated by an example, which may be seen in Figure 1.) The diagnosis of alteration in growth and development has a probable fit in the taxonomy at the most abstract levels, either I or II. Those specific diagnoses described by Bumbalo and Siemon (1983) and by Oldaker (1984) would then fall at Level III or Level IV.

As validation studies are necessary in establishing the accuracy of the definition and defining characteristics for a new nursing diagnosis, the feasibility of adopting the diagnosis of alteration in growth and development has not yet been established. The purpose of this investigation, therefore, was to determine if the acceptance of the diagnosis of altered growth and development could be validated and if agreement with a group of the defining characteristics proposed by Coviak and Derhammer (1983) could be elicited from other nurses.
FIGURE 1:
Levels of the NANDA Taxonomy:
An Example

Pattern of unitary persons

EXCHANGING

ALTERATIONS IN ELIMINATION

Level I

Bowel

Urinary

Level II

Level III

Constipation

Diarrhea

Incontinence

[???

Incontinence
(identified, but
not on "accepted"
list)

CHAPTER II

CONCEPTUAL FRAMEWORK

Orem's theory of self-care, as expanded upon by Eichelberger, Kaufman, Rundahl and Schwartz (1980), Facteau (1980), and Joseph (1980) provides a useful means of viewing the need for a nursing diagnostic label of alteration in growth and development. Orem (1980, p.6) states her belief that in modern society, adults are "expected to be self reliant and responsible for themselves and for the well-being of their dependents". She continues, noting that in most social groups persons who are "helpless" or "handicapped" are helped to regain as many of their former capabilities as possible. As was noted by Coviak and Derhammer (1983), the effects of altered growth and development may, over periods of time, continue and further interfere with the attainment of more advanced skills. Orem alludes to this idea when she describes self-care requisites. She states: "Human development, from the initial period of intrauterine life to the fullness of adult maturation, requires the formation and the maintenance of conditions that promote known developmental processes at each period of the life cycle." (Orem, 1980, p.37) This assumption, which provides the basis for her position that there are developmental requisites for self-care, lends support for the further assumption that abilities for self-care in adulthood are supported
through promotion of normal growth and development in childhood. Nurses determine the current and changing values of patients' continuous self-care requisites, and formulate the courses of action necessary for using selected processes or technologies that will meet identified self-care requisites.

(Orem, 1980, p.30)

Children, however, have self-care abilities of their own. Although Orem defines self-care for children in terms of the parents' abilities to care for the child independently (Joseph, 1980; Orem, 1980), she does note that "the individual's abilities to engage in self-care or dependent care are conditioned by age, developmental state, life experience, sociocultural orientation, health and available resources" (Orem, 1980, p.27). Eichelberger, et al. (1980) and Facteau (1980) described some of the capacities for self-care that the growing child has at different levels of development. These range from the ability of the infant to bring the hands to the mouth for self-feeding, to the abilities of the adolescent to choose appropriate dietary intake for growth and maturation. For growth in complexity of this one aspect of self-care (feeding), a vast number of developmental processes interacted through the child's lifetime. If, at any point, these processes are interrupted, the self-care abilities of the child are interrupted. As nurses take the responsibility to assist the
client in self-care, it is important for them to also take the responsibility for diagnosing alteration in growth and development when the alteration becomes evident. By intervening to end the developmental alteration, the client's capacity for self-care is increased not only at the time of the initial alteration, but also in adult life.
CHAPTER III

LITERATURE REVIEW

As this investigation was a validation study of a proposed nursing diagnosis, a consideration of the work preceeding this study is limited. A review of the methodological aspects of other validation studies is appropriate.

Diagnostic Validation Methodologies.

Avant (1979) and Gordon and Sweeney (1979) have addressed the issue of developing ways to identify and validate nursing diagnoses. Avant (1979) used a seven step process adapted from Feinstein's model (Feinstein, 1967, as quoted by Avant, 1979) of medical diagnosis to describe the diagnosis of maternal attachment and to identify its defining characteristics. Her methodology included a literature review, followed by clinical observation of the literature descriptions for validation. Gordon and Sweeney (1979) defined three models for validation: the retrospective identification model, the clinical model, and the nurse-validation model. The retrospective model is an inductive method for identifying diagnoses and defining characteristics. Nurses recall the health problems they have treated in the past, and the cumulative data are used to identify the diagnosis. This method is similar to the "group empiricism" method used by the participants of the National Conferences. The clinical model uses
direct observation of patient behaviors to identify diagnoses. Finally, the nurse-validation model entails tabulating which of the defining characteristics previously identified for a diagnosis are present when a diagnosis is made. Defining characteristics with a high frequency of occurrence are then considered to be the "critical" defining characteristics.

Due to the belief that the "group empiricism" method used to develop the majority of nursing diagnoses can be subject to individual biases (Tanner & Hughes, 1984), a number of validation studies using methods similar to those defined by Gordon and Sweeney have been performed. McKeehan and Gordon (1980) used a retrospective chart review to gain data on the types of diagnoses nurses had identified for a sample of obstetrical and gynecologic patients. Nicoletti, Rietz, and Gordon (1980) expanded the chart review of McKeehan and Gordon to identify defining characteristics of the altered parenting diagnosis. This method was also used by Balistrieri and Jiricka (1982) in validation of the role disturbance diagnosis and by Silver and her associates in examination of the diagnoses identified clinically in an urban hospital (Silver, Halfmann, McShane, Hunt, & Nowak, 1982). Balistrieri and Jiricka employed this model by asking clinical specialists to retrospectively identify signs and symptoms of the role disturbance diagnosis, and Silver, et al. used retrospective chart review.
The clinical model was used by Castles (1978) to determine the degree of interrater agreement in nursing diagnosis when more than one nurse observed a patient at approximately the same time. Unfortunately, there was little agreement in the sample of nurses studied, so no validation of any diagnoses could be assumed by her results. Clinical validation methods were also used by Miller (1982) in developing and validating the diagnosis of powerlessness, by Kim and associates in identifying and validating several nursing diagnoses pertinent to the practice of cardiovascular nursing (Kim, Amoroso-Seritella, Gulanick, Moyer, Parsons, Scherbel, Stafford, Suhayda, & Yocum, 1982), and in the third phase of Balistrieri and Jiricka's study (1982).

Variations of the nurse-validation model have been used in several recent study designs. Balistrieri and Jiricka (1982) provided the list of signs and symptoms developed by their first group of clinical specialists to a second group of clinical specialists, and asked them to give a diagnostic label to the list of signs and symptoms. McLane, McShane and Sliefert (1982) used this method to develop a tool for assessing constipation, which was later used for clinical validation of the diagnosis. The diagnoses of ineffective individual coping (Vincent, 1984) and of urinary retention (Voith & Smith, 1984) were studied for their defining characteristics by means of mailed and distributed questionnaires. In their methodologies, described by Fehring
(1983), "expert" nurses are asked to rate a list of previously identified defining characteristics in their usual frequency of occurrence in actual clinical situations. Through this method, nurse-validation is accomplished with some of the characteristics of the Delphi technique. A consensus opinion of critical defining characteristics can be obtained.

Methodologies Using Case Study Instruments.

An integral part of the methodology of the present study was the use of a case study questionnaire as an instrument. Case studies have been used most frequently in the literature on nursing diagnosis as a means of illustrating the concept in theoretical papers (Aspinall, et al., 1977; Guzetta & Dossey, 1983; Hausman, 1980; Hickey, 1984; Newman, 1984; Purushotham, 1981; Yoder, 1984) and as a method of increasing the skills of nurses in diagnosis (Carstens, 1982; Davis, 1984; Gordon & Sweeney, 1979; Kim, Amoroso, et al., 1980; Kim, Amoroso-Seritella, et al., 1982; Kim, Suhayda, Waters & Yocum, 1978; Meade & Kim, 1982; McKeehan & Gordon, 1982). They have also been frequently used in studies of the diagnostic process and of diagnostic abilities (Aspinall, 1976; Cianfrani, 1982; Dincher & Stidger, 1976; Gordon, 1980; Grier, 1976; Matthews & Gaul, 1979; Tanner, 1978).
In the literature, few nursing diagnosis validation studies employ this type of instrument, and none of them in the same way it was used for the reported investigation. At the Fifth National Conference, Hubalik and Kim (1982) reported research in which a case study of a patient with a medical diagnosis of congestive heart failure was used for descriptive research to determine which nursing diagnoses would be associated with this condition. In their report of that research, Hubalik and Kim do not specify which nursing diagnoses in particular were felt to be portrayed; instead, they utilized the responses of clinical nurse specialists and clinical nursing instructors to develop a list of the diagnoses depicted in the case study. Aspinall (1976) also used a case study in her research on diagnostic abilities of staff nurses. She presented a study of a patient who suddenly became confused, and asked the respondents to identify the patient's possible problems. Aspinall, and Hubalik and Kim did not, however, ask survey respondents to identify the signs and symptoms leading them to the diagnoses they derived. Validation of defining characteristics by respondents was not a focus of these studies.

In Clunn's study (1982), which had three phases, a group of nurses were asked to develop case vignettes which depicted persons who showed a potential for violence. These case studies were analyzed, slightly modified, and then were presented to a group of
nurse experts, and to a group of staff nurses. The nurses were asked to rate the individuals depicted in the situations for their potential for violence. They also were asked to identify from the study the five most important cues used for making their ratings. Thus, in Clunn's study, the diagnosis was known to the subjects; it became the task of the respondents to identify which cues were most significant in the situation they were to classify.

The investigation described in this report was a preliminary investigation for proposing the adoption of a new diagnostic label. A case study was utilized for a combination of purposes. As in the studies of Hubalik and Kim (1982) and of Aspinall (1976), respondents in this investigation were asked to state their nursing diagnoses for a depicted client. As in the study of Clunn (1982), they were also asked to identify cues which led them to the diagnosis they made.
CHAPTER IV

RESEARCH QUESTIONS

The following questions were investigated during this study:

1. Do nurses recognize and diagnose the signs and symptoms of altered growth and development? (Will there be agreement between the diagnoses identified by nurses in this study and the primary diagnosis identified by the researcher for a client portrayed in a case study?)

2. Do nurses with a greater degree of expertise show a higher degree of accuracy in making this diagnosis (from a case study) than those with lesser amounts of expertise?

3. Will the signs and symptoms identified by participants in the investigation (from a case study) agree with those defining characteristics identified by previous authors? (Coviak & Derhammer, 1983.)

4. What will be the most frequent signs and symptoms identified? (What will be the "critical" defining characteristics identified in this situation?)

5. What will be the average number of signs and symptoms of the diagnosis that nurses who accurately identify altered growth and development indicate as most important for making the diagnosis?
6. Do nurses who identify more than 75% of the signs and symptoms of altered growth and development depicted in the case study diagnose the alteration more often than nurses who identify fewer signs and symptoms?

7. How will the number of signs and symptoms identified by nurses vary with the level of expertise of the nurse?

8. How will the level of experience with nursing diagnosis affect agreement in the diagnosis of altered growth and development?

Research Hypotheses

As this study was a validation study, eliciting agreement on the manifestations of altered growth and development through use of a case study, many of the research questions identified did not reflect a relationship between variables in which the value of one (the dependent variable) was dependent on the other variable(s) (independent variables) for the results attained. Thus, it was not possible to derive hypotheses for those questions in which the degree of agreement between nurses' responses and the proposed diagnosis and defining characteristics were addressed (questions 1, 3, 4, 5) since there was no cause and effect relationship implied.
Research hypothesis for question 2:  Accuracy in making the diagnosis of altered growth and development from the case study will be significantly greater ($p<.05$) in nurses with greater amounts of expertise than in nurses with lesser amounts of expertise.

Research hypothesis for question 6:  Nurses who identify 75% or more of the signs and symptoms of altered growth and development displayed in the case study will diagnose altered growth and development significantly more often ($p<.05$) than nurses who do not identify at least 75% of the signs and symptoms of the diagnosis presented in the case study.

Research hypothesis for question 7:  Nurses with greater amounts of expertise will identify 75% of the signs and symptoms of altered growth and development exhibited in the client of the case study significantly more frequently ($p<.05$) than will nurses with lesser amounts of expertise.

Research hypothesis for question 8:  Nurses with greater amounts of experience in nursing diagnosis will identify altered growth and development as primary diagnosis for the case study client significantly more frequently than nurses with less experience in nursing diagnosis ($p<.05$).
The null hypotheses which were tested through use of the Chi Square Test are listed below.

Null hypothesis for question 2: There will be no significant difference in accuracy of diagnosis of altered growth and development from the case study in nurses with greater amounts of expertise than in nurses with lesser amounts of expertise (p<.05 for rejection).

Null hypothesis for question 6: Nurses who identify 75% or more of the signs and symptoms of altered growth and development displayed in the case study will not diagnose altered growth and development significantly more often than nurses who do not identify at least 75% of the signs and symptoms in the case study (p<.05 for rejection).

Null hypothesis for question 7: Nurses with greater amounts of expertise will not identify 75% of the signs and symptoms of altered growth and development exhibited in the case study client more frequently than nurses with lesser amounts of expertise (p<.05 for rejection).

Null hypothesis for question 8: Nurses with greater amounts of experience in nursing diagnosis will not diagnose altered growth and development from the case study more frequently than nurses with less experience in nursing diagnosis. (p<.05 for rejection).
DEFINITIONS

For the purposes of this study, the primary dependent variable was accuracy in diagnosing altered growth and development from the case study questionnaire as the primary nursing diagnosis for the client depicted. Independent variables which were seen as influencing accuracy in making this diagnosis were: (1) level of education in nursing, (2) level of education in related fields, (3) experience with nursing diagnosis, (4) the number of signs and symptoms from the case study the respondent identified, (5) experience in nursing of children, (6) the number of children the respondent has of his/her own, (7) amounts of experience the respondent had with children outside of his/her nursing practice, and (8) the nursing specialty in which the respondent practiced.

Additionally, for the purposes of this study, the following definitions were adopted.

A nursing diagnosis was defined as a response to a health condition, or a health problem which is identifiable by nursing assessment and amenable to nursing intervention.

The nursing diagnosis of "alteration in growth and development" was defined as "a primary or secondary failure of the client to meet expected growth and development norms of his/her age group" (Coviak & Derhammer, 1983). A primary failure was accepted to be a case in which the norms have never been met, and secondary
failure constitutes a case in which the client has regressed to an earlier level of development. For the purposes of this study "developmental lag" or "developmental delay" were terms also accepted as referring to altered growth and development, but usually describing a primary failure to meet developmental norms.

Defining characteristics were considered to be the signs and symptoms evident in the client which assist the nurse to identify the presence of the health problem or client response to the health problem.

A "critical" defining characteristic for this study was defined as a sign or symptom identified by 75% or more of the respondents as one which led them to make the diagnosis of altered growth and development, developmental lag, or developmental delay. This definition of "critical" defining characteristic differed from the definition which is common in the literature in that in this study it referred to a sign or symptom which was frequently identified by the nurse respondents as pertinent to the diagnosis of altered growth and development in the depicted client. In common usage, it refers to signs and symptoms that predict with high probability that a diagnostic label should be used for a client problem (Gordon, 1982, p. 139). "Critical" defining characteristics, in the common usage, are determined by their presence in large numbers of individuals with a particular health problem or response. To delineate a defining characteristic as
"critical" in the common usage, further research would have to show that many other clients encountered by nurses in clinical practice who have altered growth and development do manifest that particular sign or symptom of the diagnosis.

Upon data analysis, signs and symptoms (characteristics) exhibited by the client in the case study were matched with the defining characteristics of altered growth and development as proposed by Coviak and Derhammer (1983). This matching was done by polling content validity experts prior to the study to determine their agreement with the researcher and other experts of the accuracy of the characteristics in depicting the concepts represented by the defining characteristics proposed by those authors. (see Appendix D).

The defining characteristics proposed by Coviak and Derhammer (1983) represented in the case study were:

--onset of the alteration in childhood
--delay in performing motor, language and manipulative skills typical of age
--altered physical growth
--inability to perform self-care activities appropriate to age.

The expertise of nurses was elicited through use of a profile questionnaire. In the conceptualization of expertise for the process of diagnosis of a developmental alteration, it was assumed
that the nurses would require (1) experience in the care of children, (2) educational preparation which would help them in differentiating normal behaviors of children from abnormal behaviors and (3) experience in making nursing judgements which could include observation for pathology as well as for healthful responses of the client or family. Thus, to test the hypotheses in which expertise was an independent variable, an expertise scoring system was devised. The components of the scoring system were: (1) level of education attained, (2) field of highest level of education attained, (3) number of years of experience in maternal or child nursing, (4) years of experience in nursing outside of maternal-child health field, and (5) experience with children outside of nursing (own children, or supervision of children in other capacities, such as scout leader, Sunday school teacher, babysitter, etc.). It was assumed that nurses who practiced within the field of nursing of children would have greater amounts of experience in supervision and observation of children than the nurses in other specialty groups, so this group was considered to be, as a whole, more expert in the ability to diagnose altered development. Thus, when expertise scores were totaled and rankings of expertise devised, the nurses who practiced in nursing of children were placed in one group and nurses in other specialties in another. Expertise rankings were then based on the mean expertise score for the respective nursing
specialty groups (as will be described in the results section of this report).

The expertise scores were assigned based on the following schema.

Basic score.

The level of basic preparation in nursing was given a score of 1 to 5. Diploma or associate degree-prepared nurses without any further education were given 2 points. Nurses who held a bachelor's degree in nursing were given a basic score of 5. Nurses who had their original education at the diploma or associate degree level who had completed bachelor's degrees in a field other than nursing were given additional points to add to the basic education score. A nurse who held a degree in a field related to nursing, such as psychology or cultural anthropology was given 2 points. A nurse who held a degree in a non-clinical field, such as health administration or education was given 1 additional point. If the nurse had completed some education toward a bachelor's degree in nursing, or toward certification as a nurse practitioner, but had not completed a degree, he/she was given 1 point. If the work toward a degree that was not completed was in a field unrelated to nursing, such as journalism, they were given 1/2 point. Primary to the assignment of the basic scores was the assumption that the liberal arts requirements of most bachelor degree programs (even those outside of nursing), would
increase the knowledge of child development and psychology to approximate the knowledge of those fields that the associate degree or diploma nurse attained through experience. Thus, nurses who had pursued higher education were given a score that reflected higher expertise than the associate degree and diploma nurse. Education also comprised a more major portion of the expertise score than other components because of research by previous investigators which indicated that increased levels of education may increase skill in the diagnostic process (Aspinall, 1976; Matthews & Gaul, 1979).

**Addition of education scores to basic score.**

Nurses who had attained education beyond the bachelor's degree level were assigned additional points in the following manner:

- Master's degree in nursing: 4 additional points.
- Master of Arts, Master of Science, Master of Education:
  - 2 additional points for non-clinical degrees (administration, education).
  - 3 additional points for degrees related to nursing (public health, psychology, cultural anthropology).
- Graduate work at the master's level, uncompleted:
  - 1 additional point if toward master's in nursing.
  - 1/2 additional point if toward other master's degrees.
- Doctoral degree in nursing: 4 additional points.
Doctoral degree in other fields:
   2 additional points for non-clinical degrees.
   3 additional points for degrees related to nursing.

Doctoral work, uncompleted: scored as for uncompleted master's degree work.

(Note: respondents who had completed education at the doctoral level were given points in addition to the points they earned from education at the master's degree level. The maximum possible score for education alone was 13.)

Addition of experience scores to education score.

Nurses who had indicated they had experience with children outside of nursing as parents or in some other capacity were given 1 point in addition to education and nursing experience scores. Nursing experience scores were based primarily on years of experience in maternal-child nursing, but also on experience in nursing outside of maternal-child health, as it was assumed that nurses gained experience in observing and making clinical judgements in all fields of nursing. The Professional Profile Questionnaire asked the respondent to identify years of experience in nursing within five year ranges (1-5 years, 6-10 years, 11-15 years, etc.). Scores were assigned for each five year range above the minimum of one year of experience in nursing or maternal child nursing. Respondents were assigned 1/2 point for each five years experience in maternal-child nursing, and 1/4 point for each five years
experience in nursing outside of maternal child health, in addition to their education and child care experience scores. Thus, for example, a nurse who checked the 11-15 year experience category for years of experience in nursing, who had also checked the 5-10 year experience category for experience in maternal-child health would attain a total of 1.25 points for experience. He or she would have gained a total of 1 point for years of experience in maternal-child health, and an additional 1/4 point for the additional time in nursing outside of maternal-child health.

A final illustration of the expertise scoring plan will be discussed. A respondent to the questionnaire could have given the following data:

Basic level of education: diploma in nursing.
Currently holds a bachelor's degree in nursing.
Master's degree in public health, completed.
Doctoral work in education, begun, but not completed.
11-15 years experience in maternal-child health.
11-15 years experience in nursing.
Has no children of own.
Has been a Sunday school teacher.

The score for this respondent would total 11. Because he/she held a bachelor's degree in nursing, a basic education score of 5 would be awarded, even though the first nursing education was at the diploma level. Three points would be added to the 5 for master's
work, and 0.5 for the doctoral study, for a total education score of 8.5. The respondent would be awarded 1.5 points for experience in nursing, since they did not move up to the next 5 year category through experience outside of maternal-child health. Finally, the respondent would be given 1 point for having some experience with children outside of nursing. Thus, the expertise score totalled 11 points.

Finally, hypotheses which identify experience in nursing diagnosis as a variable were also tested through use of groupings. In this case, years of experience using nursing diagnosis was the level of measurement for the experience of the nurses. The groups were established by determining the setting in which the nurse used nursing diagnosis. These groups were:

1. Nurses who never used nursing diagnosis in practice or during their education
2. Nurses who used nursing diagnosis in practice only
3. Nurses who used nursing diagnosis in their nursing education only
4. Nurses who used nursing diagnosis in their nursing practice and in their education.

In groups 2 and 3, it was planned to include nurses who had more than 3 years of experience using nursing diagnosis in the groups with greater amounts of expertise in nursing diagnosis and those with fewer years of experience in nursing diagnosis in the
group with less nursing diagnosis expertise. A small response rate from nurses in these two groups prevented division of the groups. In group 4, however, at least 4 years of use were required for placing a nurse in the more experienced group, and, additionally, at least two of these years had to be in nursing practice unrelated to the formal educational process in nursing (to avoid placing nurses in their first year of practice after graduation from nursing school in this group).
CHAPTER V

METHODOLOGY

Design:

This investigation was descriptive in nature. The design of this study for validation of the nursing diagnosis of alteration in growth and development and the defining characteristics of the diagnosis which were proposed by Coviak and Derhammer (1983) was derived from the methodologies proposed by Gordon and Sweeney (1979) and by Fehring (1983). In this investigation, a case study of a child exhibiting some of the signs and symptoms of altered growth and development as defined by Coviak and Derhammer (1983) was mailed to nurses who practice in the area of maternal child health to determine if they would make the diagnosis of altered growth and development. They were then asked to identify, from the case study, the signs and symptoms the child exhibited which led to the diagnoses they identified. Thus, the study used a methodology derived from both the retrospective identification and the nurse-validation models of Gordon and Sweeney (1979).

Fehring's work on diagnostic standardization (1983) discussed the difficulties of obtaining geographic representation of nurses for adequate diagnostic validation studies. His methodology suggested the use of mailed questionnaires as a means of eliciting data for calculation of interrater agreement ratios indicating the
degree of validity of defining characteristics. Through these questionnaires, geographic representation of nurses could be obtained, and a larger number of nursing experts could be polled for their judgement of the merit of the diagnosis and its defining characteristics. Although this study did not use questionnaires which would allow the calculation of ratios in the manner described by Fehring (1983), it did, however, use that author's suggestions in that a professional organization was used in the sampling of participants and questionnaires were mailed to allow greater geographic representation than would be allowable if only local clinical settings had been used.

This research was conducted as a two-step investigation. A pilot study was performed in which questionnaires were mailed to 25 randomly-selected nurses from the Maternal and Child Health Division of the Michigan Nurses Association. The pilot study was conducted over a four week period, for the purpose of testing the research instruments. A formal study using a larger sample of nurses (200), and slightly revised questionnaires was conducted following the pilot study, with data collection occurring over a six week period.

Sample:

A computer-generated random number list was used to randomly select 200 nurses from a mailing list of nurses who were members
of the Division of Maternal and Child Health of the Michigan Nurses' Association (approval of this Association for use of the mailing list was obtained; the letter requesting this use and a copy of the mailing list agreement are included in Appendix A). At the time of the investigation, the Michigan Nurses' Association was reported to have over 7,000 members, (data obtained from A. Darling, Office Manager of the Michigan Nurses' Association, May, 1984); the mailing list which was used for selection of the random sample held 1,774 names of nurses who were in the Division of Maternal and Child Health. The members of the Division of Maternal and Child health comprised the target population. The sample for the formal investigation (200 nurses) was, therefore, somewhat more than one-tenth of the target population. The expected return rate of the questionnaires was approximately 25%, a sample size of approximately 50 nurses. This was expected to meet the minimum number of nurses suggested to be used for a validation study by Fehring (1983). An actual return of 62 questionnaires was obtained. This provided a return rate of 31%.

The nurses of the Division of Maternal and Child Health of the Michigan Nurses Association who comprised the target population, are registered nurses with diplomas, associate degrees, baccalaureate degrees, or advanced education in nursing and/or other related fields. The Division is comprised of nurses who are engaged in or interested in the fields of maternal and child
nursing. The nurses may be in clinical practice or in education in the fields of child nursing, maternity nursing, public health nursing, mental-health nursing, adolescent or women's health, family practice or ambulatory care settings, or in neonatal nursing. Other clinical specialties were represented in the sampling (some of those nurses picked randomly from the mailing list wrote to the investigator to state that they did not feel they could complete the questionnaires since they actually practiced in medical-surgical nursing, while others who practiced in medical-surgical nursing, perioperative nursing, or other specialties completed the questionnaires and had their responses included in the data analysis); however, the actual respondents included primarily those who practiced in the maternal/child nursing groups.

One respondent to the questionnaires was not included in the random sample, but had been given them by a colleague who had been chosen in the random sample, and who, according to the respondent's note, did not know much about nursing diagnosis. The respondent identified herself to the investigator in her note, and, upon checking the Michigan Nurses Association mailing list, it was found that the respondent was listed as a member of the Maternal and Child Health Division. Her responses were, therefore, combined with those of the other respondents. It should be noted, however, that inclusion of this nurse's responses
may introduce bias in the study results, in that she was more knowledgeable about nursing diagnosis than the randomly-chosen nurse. This greater skill in nursing diagnosis is, however, desirable for a nursing diagnosis validation study, since increased accuracy in diagnosis may be possible.

It has been argued that in validation studies "expert" nurses should be consulted as being most qualified as diagnosticians for a clinical entity (Fehring, 1983). Fehring (1983) has proposed that the "expert" lists be obtained from professional societies such as the Midwest Nursing Research Society, from faculties of schools of nursing, or from lists of clinical nurse specialists (1983). The actual experience and expertise of these nurses was elicited in this study through the respondent profile questionnaire (see Appendix B) and is summarized in the results chapter of this report. For the purposes of this study, nurses within the Division of Maternal and Child Health were selected for the target population because of (1) their interest in child health as demonstrated by membership in this organization, and (2) the likelihood of their being familiar with the clinical picture of a child with developmental delays. It was reasoned that if nurses do not currently practice within the field of maternal-child nursing, it would be likely that familiarity with developmental delays has been gained from the publications received through their organization which would describe conferences on the topic,
standards of care for children with these difficulties, and practitioners responsible for exemplary care with children with developmental delays (the "MCH Achiever" awards which are bestowed on certain members of the Division). Other publications from the American Nurses Association, especially those of the Council on Maternal-Child Nursing, would also communicate standards of care for providing care supportive of children's developmental needs. Additionally, it was assumed that they may be familiar with the movement toward a standardized diagnostic taxonomy through professional publications of the Michigan and American Nurses' Associations, which would increase their ability to relate their idea of a nursing diagnosis. Thus, although the population chosen may not be comprised of individuals prepared with a master's degree (i.e., true "experts" as they have been defined in other papers such as Fehring's) it was chosen because of the likelihood of the familiarity of aspects of altered development to nurses at varied levels of education and expertise.

**Instruments:**

A case study was designed for use in this study which was adapted from an actual client history. Names, family background and history, and some of the circumstances of the child's diseases were changed so that only the developmental alterations presented were truly reflective of the original client. (See Appendix C.)
The respondent profile questionnaire was developed to elicit data from the respondents expected to be influential in predicting the success with which they would be able to identify the developmental alteration of the child depicted in the case study. The number of years of experience in maternal and child health nursing, the level of education, the actual area of practice and level of involvement with children outside of their nursing practice, and familiarity with the concept of nursing diagnosis were identified as factors which could influence their ability to identify altered growth and development. These factors were identified through a literature search (Aspinall, 1976; Castles, 1978; Kim, Amoroso, Gulanick, Moyer, Parsons, Scherubel, Stafford, Suhayda, & Yocum, 1980; Kim, Amoroso-Seritella, et al., 1982; Matthews & Gaul, 1979) and through consultation with other nursing colleagues. (See Appendix B.)

In the actual sample that was chosen, 199 nurses had a feminine first name, and one nurse with a masculine first name were included. Since there appeared to be only one male included in the sample and on the entire mailing list, there were only 3-4 male names seen, respondents were not asked to reveal their sex in the profile questionnaire, as it was evident that statistically, no significant relationship could be obtained using sex as an independent variable.
The use of a case study in this investigation combined aspects of the retrospective identification model and of the nurse-validation model proposed by Gordon and Sweeney (1979). As in the retrospective identification model, a group of nurses were provided a group of characteristics depicted in a case study and were asked to identify a diagnostic label. As in the nurse-validation model, there was information requested to lend support to the validation of some of the defining characteristics proposed by Coviak and Derhammer (1983). No list of signs and symptoms was provided. The nurses had to identify the significant data for the diagnosis. Additionally, the possibility of identifying other significant data in the case study which are frequently identified as contributing to the diagnosis could be examined for consideration as other possible defining characteristics.

Validity. Prior to the pilot study, content validity of the case study tool and of the respondent profile questionnaire was obtained from experts in nursing and in child development. Four content validity experts responded to a content validity rating tool (Appendix D). One of the experts was a nursing administrator currently enrolled as a doctoral student in the department of family and child science at a nearby university. Another expert had over ten years experience teaching normal growth and development of children for a diploma nursing program. The last
two experts were coordinators of staff education at a children's hospital in Philadelphia. These last two experts were contacted because of the common interest of one of them in developing a nursing diagnosis related to the developmental needs of children, and because of her participation in NANDA. The expert who was not a member of NANDA had worked with the NANDA member in developing such a diagnosis for their institution. This expert was a pediatric nurse practitioner, and was recommended by the institution's director of staff education (also a NANDA member) as a desirable content validity expert for the purposes of review of the case study (see Appendix E).

The content validity rating tool asked the agreement or disagreement of the experts with the case study signs and symptoms as being accurate in depicting a child with a developmental lag or delay. A certain degree of content validity had already been established through basing the case study on an actual patient whose development was compared to the tasks of the age group as presented in the Denver Developmental Screening Test (Frankenburg, Fandal, Sciarillo, & Burgess, 1981) and in the Washington Guide to Promoting Development in the Young Child (Powell, 1981). The experts were asked in a mailed questionnaire to rate the data cues of the original case study (see Appendix D) in relevancy and accuracy for depicting developmental delay on a scale of 1 (very relevant and accurate) to 4 (not relevant or accurate at all).
The ratings of the cues by the experts are reported in Table 1 (p. 40).

In addition to rating the specific signs and symptoms of the child in the case study for accuracy, the experts were also asked to indicate their agreement or disagreement on whether the specific sign or symptom would lead them to suspect a developmental alteration. Table 2 (pp. 41-42) summarizes the results obtained from the experts in this part of the validity testing.

Further comments which the experts added to the content validity questionnaire revealed the origins of the disagreements on the various cues, and on the statements listed in Table 2. Table 1 reflects the main areas of disagreement of the experts as those cues regarding the child's growth, and the child's grunting and pointing behavior. It was suggested by one of the experts that the cue on the child's growth would be more meaningful if knowledge about the child's place on the growth chart at birth had been known. This suggestion was used for the case study revisions for use in the pilot study. None of the experts added comments to the questionnaires as to why they had rated the third cue (the "pointing and grunting" cue) as less relevant and accurate. Additionally, as can be seen in table 2, there was general agreement that this cue could make the practitioner suspect a language lag; therefore, this cue remained unchanged in the subsequent case study revisions.
### Table 1

**Cue Ratings By Content Validity Experts**

<table>
<thead>
<tr>
<th>Cue</th>
<th>Relevancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Highest</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Frequency of response</strong></td>
<td></td>
</tr>
<tr>
<td>Child had spent parts of each month of his life in hospital.</td>
<td>4</td>
</tr>
<tr>
<td>Child's height and weight were found to be at the 5th percentile on growth charts.</td>
<td>1</td>
</tr>
<tr>
<td>Child grunted and pointed at objects during the interview.</td>
<td>2</td>
</tr>
<tr>
<td>The mother stated he did not say any words at all.</td>
<td>3</td>
</tr>
<tr>
<td>The child could not walk yet.</td>
<td>3</td>
</tr>
<tr>
<td>The child rarely crawled.</td>
<td>3</td>
</tr>
<tr>
<td>The child ate by bottle only.</td>
<td>3</td>
</tr>
<tr>
<td>The child refused to use a cup or spoon to eat.</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 2
Agreement of Experts For Cue Interpretation

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response choice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agree</td>
</tr>
<tr>
<td>The finding that the child's height and weight fell at the 5th percentile is a clinical example of altered physical growth.</td>
<td>1</td>
</tr>
<tr>
<td>The child's history of having spent each month of his life since the age of six months in the hospital could be a factor affecting his development.</td>
<td>4</td>
</tr>
<tr>
<td>Observing a 17 month-old only pointing and grunting at objects during an assessment interview would cause you to suspect a language lag.</td>
<td>4</td>
</tr>
<tr>
<td>Agree</td>
<td>Disagree</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Developmental lags often have their origins in childhood. (one wrote in "early")
As can be seen in Table 2, the experts' opinions differed on whether refusal to use a spoon or cup was a manifestation of a self-care deficit. The origin of at least one dissenting opinion on the matter was reflected in a comment added by one of the experts who disagreed. She commented, "I don't think self-care deficit is the most accurate diagnosis although this child's developmental lags certainly interfere with his ability for self-care." This revealed a conceptual agreement with the work of Coviaik and Derhammer (1983), who also maintained that the developmental lag is the origin of the child's problem, and an interference with self-care a result. As a self-care deficit was seen as a sign of the child's altered growth and development, not as the primary diagnosis, there was no change in the case study related to these cues.

In addition to completing the content validity questionnaire, the experts were asked to make comments on the case study in its entirety, and on the respondent profile. Additional comments on the case study referred primarily to awkward or unclear wording in places. One expert recommended adding some information on the child's play activities and social skills. These comments were utilized in the case study revision done for the pilot study (see Appendix F).

Reliability. In only a few of the research studies in the nursing diagnosis literature which use case studies as the major
instrument is there any discussion of the establishment of the reliability of the instrument (Clunn, 1982; Dincher & Stidger, 1976; Matthews & Gaul, 1979). The conclusion of some of these authors has been that it is difficult to apply the usual reliability tests to written case studies (Dincher & Stidger, 1976; Matthews & Gaul, 1979). Reliability, as it is thought of in common usage, refers to the consistency with which a measuring instrument is accurate in measuring an attribute under study (Lenburg, 1979; Polit & Hungler, 1983, p. 385; Stanley, 1971; Thorndike & Hagen, 1969). In a reliable test, the amount that the test is influenced by transitory factors, rather than the true competence of the person being tested, should be controlled (Lenburg, 1979). If, in the case study situation (which is designed to represent an actual clinical situation), preciseness of stimulation as well as control of the extraneous stimuli which would assist in making the instrument reliable are attempted, the ability of the case study to approximate the realities of the usual clinical situation could be decreased. Consideration of the validity of the instrument in representing reality as a fundamental and essential aspect of considering the utility of an instrument has been discussed by Cattell (1964).

The case study situation, and the design of the investigation presented some difficulties in the application of the usual means for establishment of instrument reliability. The case study situ-
ation does not lend itself to the application of split-half techniques, as the arrangement of data within the study does not allow splitting the cues for equal weight to each "half" of the instrument. Additionally, it was recognized that some of the nurses would use fewer signs and symptoms to arrive at the diagnosis of altered growth and development than others would, so the inequality in what would constitute half of the results made split-half methods unsuitable. Further, repetition of concepts of developmental lag to make the halves "equal" would have led to redundancy in the situation, making the instrument more homogeneous. Cattell (1964) discussed the problems of overemphasizing homogeneity in an instrument, and concluded that homogeneity should be low or high, depending on the purpose of the instrument.

Test-retest methodologies for the purpose of estimating reliability were impractical in the investigation, due to the research design. Loss of subjects for the investigation was considered to be likely on retesting, since the questionnaires were mailed. Those who were willing to participate on one administration may not have been available for subsequent administrations of the questionnaires. Additionally, to increase the response rate, the questionnaires had been designed to be completely anonymous. Correlation of initial responses with subsequent responses for calculation of the retesting reliability
would have necessitated some sort of coding, as would the mailing of the retest. Through the effects of learning from the initial administration of the questionnaire, these methodologies would also have introduced error into the second set of responses (Polit & Hungler, 1983; Stanley, 1971; Thorndike & Hagen, 1969).

Use of the "parallel form" (Stanley, 1971; Thorndike & Hagen, 1969) methodology for establishment of reliability would have presented the problems described by Stanley (1971). On the one hand, if the case study forms would have been unique, they would not have been similar enough to accurately represent reliability in the instruments. On the other hand, by making them too similar, the possibilities of having one case study cue the respondent to the situation in the other case study would have made the the questionnaire more "fakeable". Of the methodologies described thus far, however, the "parallel" case study would have been the most practical for the constraints of this investigation. In addition to reasons previously cited, the decision not to utilize a parallel case was based on the rationale that seeking limited participation (one time) would encourage a higher response rate.

An additional consideration in the use of the case study in the investigation under consideration is the aim of using this instrument. The primary aim is not to measure a trait of the respondents, rather, it is to explore the agreement of a sample of nurses with the diagnostic judgement of another set of nurses.
This exploration is not for the sake of quantifying the respondents' diagnostic ability, but rather, to describe the phenomena represented by the case study situation. In this aspect, the use of the case study in the investigation departs from the aims of establishment or reliability in the classical sense of the term (i.e., to be reliable in measurement). It more closely resembles the aims of qualitative research, as described by the science of sociology (Schatzman & Strauss, 1973).

Gordon and Sweeney (1979) were concerned with the training of nurses to become reliable diagnosticians. They used case study vignettes to test the judgement of the nurse-trainees with that of the experts. They did not report attempts to establish the reliability of the vignette instruments, but they did report agreement ratios of the trainees with each other, the experts with each other, and the trainees with the experts. They emphasized the importance of training all who were to make a diagnostic judgement. Although they did not address instrument reliability in reporting their findings, the concept of establishment of reliability in judgement between raters, that is, in establishing the consistency with which different judges rate the same phenomenon (Armstrong, 1981) can be applied. Given the problems in using other types of reliability testing when a case study instrument is employed (Dincher & Stidger, 1976; Matthews & Gaul, 1979), it seems likely that interrater agreement on the type of
situation depicted in the case study is the most feasible method to apply. As in qualitative methodology, an observation made by one individual about a phenomenon (i.e., the judgement made by the person who developed the case study) is displayed for scrutiny by others. High agreement by these other individuals on what the first individual concluded about the situation would establish reliability of the observation (Schatzman & Strauss, 1973).

Thus, in this investigation, reliability for the case study instrument was not established as in classical reliability theory. Interrater agreement on the diagnosis for the child depicted in the case study was calculated to approximate instrument utility for the sample. Since training of respondents was not possible, agreement on the diagnosis as a total group and in individual groups representing clinical specialties, educational preparation, levels of experience with nursing diagnosis, and levels of experience in the maternal-child health field were considered to judge the merits of the instrument for use in these different respondent groups.

Interrater agreement was calculated for the pilot study sample as a whole. Agreement was calculated for concurrence on the major focus of the diagnostic label, rather than for wording of the label, as was reported by Gordon and Sweeney (1979). For the pilot study sample, six of the seven respondents who made a diagnosis concurred in their citing of some sort of developmental
alteration as being the primary nursing diagnosis for the child depicted. This constituted agreement of 85.7% (or a coefficient of .857).

In the formal study, there was more disagreement in what the primary diagnosis for the child should be, although it appeared that overall, the instrument elicited agreement that the child did display some sort of developmental alteration. A large number of nurses used a medical diagnosis of "failure to thrive" (FTT) as their primary nursing diagnosis. This medical diagnosis describes a child who has retarded growth (usually below the 5th percentile on the growth charts) and who has delayed development, along with evidence of a disruption in the parent-child relationship (Whaley & Wong, 1983, p. 483). Some of the nurses who diagnosed FTT as the primary diagnosis listed developmental alterations as secondary diagnoses, while others listed only FTT as the diagnosis. When FTT was excluded as a primary diagnosis for the child (since it was a medical diagnosis) the agreement was only 40% (coefficient of .40). When the diagnosis of FTT was allowed as a feasible one for representing altered growth and development because of its agreement in focus with the diagnosis of altered growth and development the agreement was 45.8% (coefficient of .458). (In these cases the instances in which the nurse also made a secondary diagnosis of developmental alteration were excluded, as it seemed that when the nurses identified this secondary
diagnosis that they were conceptualizing FTT and developmental alterations as different diagnoses.) Table 3 summarizes interrater agreement ratios for primary diagnosis of developmental alterations in individual groups of nurses by their clinical specialty, educational level, experience with nursing diagnosis, and experience in the maternal-child health field. Ratios calculated for inclusion of the diagnosis of FTT, as well as for exclusion of the diagnosis of FTT are reported.

A further consideration related to reliability of the case study in depicting a child with a developmental delay is in individual judgement of nurses in establishing what they would consider to be the child's primary diagnosis, and which would be secondary diagnoses. Table 3 reflects the respondents' agreement that a developmental alteration should be the primary diagnosis; however, 83.3% of the respondents (coefficient of .833) made a diagnosis in the category of developmental alteration as either a primary or secondary diagnosis when failure to thrive was included as a developmental nursing diagnosis. When it was excluded, the agreement ratio decreased to .70. If judgement about priority of diagnosis is excluded in consideration of the case study reliability, agreement of the nurses increases.

In summary, it was concluded that in the study sample, the case study had value in depicting a child with altered growth and development, but the diagnostic term employed by the respondent
Table 3
Agreement of Nurses With a Developmental Alteration Diagnosis
As Primary Nursing Diagnosis for the Child

<table>
<thead>
<tr>
<th>Specialty/Experience Grouping</th>
<th>Agreement ratio for diagnosis Including FTT</th>
<th>Agreement ratio for diagnosis Excluding FTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical specialty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics/Adolescent</td>
<td>.50</td>
<td>.46</td>
</tr>
<tr>
<td>Obstetrical</td>
<td>.38</td>
<td>.13</td>
</tr>
<tr>
<td>Neonatal ICU</td>
<td>.40</td>
<td>.40</td>
</tr>
<tr>
<td>Newborn Nursery</td>
<td>.33</td>
<td>.33</td>
</tr>
<tr>
<td>Community health</td>
<td>.50</td>
<td>.50</td>
</tr>
<tr>
<td>Ambulatory health</td>
<td>.50</td>
<td>0.00</td>
</tr>
<tr>
<td>Other</td>
<td>.57</td>
<td>.57</td>
</tr>
<tr>
<td>Experience with nursing diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>.14</td>
<td>0.00</td>
</tr>
<tr>
<td>Practice only</td>
<td>.43</td>
<td>.36</td>
</tr>
<tr>
<td>Education only</td>
<td>.50</td>
<td>.50</td>
</tr>
<tr>
<td>Practice and education</td>
<td>.52</td>
<td>.52</td>
</tr>
<tr>
<td>Year(s) of experience in M.C.H.</td>
<td>Including FTT</td>
<td>Excluding FTT</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Less than 1</td>
<td>.80</td>
<td>.40</td>
</tr>
<tr>
<td>1-4 years</td>
<td>.42</td>
<td>.42</td>
</tr>
<tr>
<td>5-10 years</td>
<td>.54</td>
<td>.42</td>
</tr>
<tr>
<td>11-15 years</td>
<td>.25</td>
<td>.25</td>
</tr>
<tr>
<td>16-20 years</td>
<td>.25</td>
<td>.25</td>
</tr>
<tr>
<td>21-25 years</td>
<td>1.00</td>
<td>.67</td>
</tr>
<tr>
<td>26-30 years</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>More than 31 years</td>
<td>----</td>
<td>----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Including FTT</th>
<th>Excluding FTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral degree, Other</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Master's degree, Nursing</td>
<td>.50</td>
<td>.38</td>
</tr>
<tr>
<td>Master's degree, Other</td>
<td>.67</td>
<td>.67</td>
</tr>
<tr>
<td>Baccalaureate degree, Nursing</td>
<td>.53</td>
<td>.53</td>
</tr>
<tr>
<td>Baccalaureate degree, Other</td>
<td>.67</td>
<td>.33</td>
</tr>
<tr>
<td>Associate degree</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>Diploma</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 3 (cont.)
would not necessarily be "altered growth and development". It could not be assumed that the case study would be reliable in causing respondents to diagnose altered development as a primary diagnosis, although its merit in depicting altered development for either a primary or secondary diagnosis for the child was demonstrated. It was also concluded that the tool was not particularly reliable in any one nursing specialty, level of education, level of experience in maternal-child nursing, or level of experience in nursing diagnosis for consistency in diagnosis identified for the child's primary alteration. This lack of consistency in eliciting agreement on the child's primary diagnosis constitutes a limitation of the instrument and of the investigation.

Procedure:

Prior to the commencement of the pilot study, the instruments and procedure for this investigation were reviewed and approved by the Human Research Review Committee of Grand Valley State College. The following procedure was used in the pilot study. Initially, there was a mailing of (1) an informational cover letter, (2) the case study, as it was revised after content validity expert review, (3) the respondent profile, (4) a postcard for requesting study results, and (5) a stamped, addressed return envelope, to 25 nurses randomly selected from the Michigan Nurses Association list
for the pilot study (see Appendix G, F, H, and I to examine these documents). The case study questionnaire and the respondent profile questionnaire were tested to determine from the responses if they were adequately clear to elicit usable data. Questionnaires were coded after return to the researcher to protect respondents' identities. (This coding was done only so that matching of the two questionnaires was still possible if they became separated during data analysis.) The respondents were given two weeks to respond to the questionnaires. Insufficient response was obtained, (five responses, which was less than 25% of the sample) so a postcard mailing was sent to the entire sample to encourage a higher return (an example of the postcard used for this purpose can be seen in Appendix J). The responses for the pilot study totaled nine after the postcard mailing, two of which only included the respondent profile because the respondents were retired and not familiar with nursing diagnosis and did not respond to the case study. As the response rate was over 25%, even after discarding the responses of the retired nurses, the number mailed for the formal study was established at 200 to allow a minimum of 50 responses to be used for final data analysis.

After completion of the pilot study, with minor revisions completed in the instruments, (see Appendix K, and Appendix L) the mailings for the formal study began. A random sample of 200 nurses was selected from the Michigan Nurses Association mailing
list of the Division of Maternal and Child Health using another computer-generated random number list. Two nurses known to be aware of the study purposes were selected by this random method, as well as several nurses of the pilot study sample. These names were discarded from the sample, and additional random numbers generated to select other nurses from the population. During the data collection period, three of the mailings were returned to the investigator as undeliverable. To replace these nurses in the sample, each name was replaced by the name of another nurse which was also chosen randomly from the mailing list.

Again, as in the pilot study, a two week response period was allowed before postcards were sent to the entire random sample of 200 nurses to encourage return of the questionnaires. (The nurses whose names were drawn to replace those whose packets had been returned were also given two weeks from the day the packet had been mailed to them before their reminder postcard was sent.) Data collection for the formal study was concluded six weeks after the original mailings for the formal study were sent.
CHAPTER VI

RESULTS

Data Analysis

As the questionnaires were returned to the investigator, a three-digit code number was assigned to the profile questionnaire and the case study questionnaire for each respondent. Responses for the profile were coded as they appeared on the profile questionnaire. Responses for the case study were reviewed by the investigator. The investigator classified the main diagnoses, alternate diagnoses, and the signs and symptoms identified by the respondents into the appropriate diagnostic categories (major diagnostic categories are shown in Table 12, p. 75). The diagnostic coding was reviewed by a second graduate student in nursing of children to validate the classification done by the investigator.

Signs and symptoms identified from the case study by the respondent were classified as (1) not identified, and developmental alteration diagnosed as the main diagnosis, (2) identified, and developmental alteration was diagnosed as the main diagnosis, (3) identified as the etiology for the main diagnosis, (4) identified, and developmental alteration not diagnosed, and (5) not identified, and developmental alteration not diagnosed.
For testing of the hypotheses, the Chi Square statistic was used when the dependent variables were categorical (e.g., identification of a developmental diagnosis, versus failure to identify a developmental diagnosis). Development of the expertise score allowed the use of Pearson correlational studies for the relationship of expertise to the numbers of defining characteristics identified by the respondent, the number of validated characteristics identified, and the number of signs and symptoms the respondent indicated as most important for making the diagnosis. A two-tailed t-test was used to determine the extent of difference in expertise level between the nurses who practiced in nursing of children and those in other nursing specialties. As this test demonstrated there was a significant difference in the mean expertise scores of the two groups, each individual group mean and standard deviation (SD) was used to determine levels of expertise within the group. Finally, Spearman Rho was used to determine the degree of relationship between the levels of experience in nursing diagnosis, and the numbers of validated signs and symptoms identified.

Demographic and Professional Data for the Respondents

The Professional Profile Questionnaire provided data about the educational background, field of practice, years of experience in nursing and in maternal/child health, and other personal charac-
teristics of the nurse respondents. It was found after the questionnaires were returned that two minor errors in printing of this questionnaire had occurred (see Appendix L). Since it appeared that most respondents had still answered the questions containing error appropriately, the responses are reported. It should be kept in mind, however, that some of the nurses may have interpreted the question incorrectly, and thus, for these questions and for the statistics based on these questions, a source of error is known to have been introduced. Further discussion of how the error is felt to have altered the data follows in the appropriate sections of this report.

The educational backgrounds of the nurse respondents was the first major focus of the profile questionnaire. Data were obtained regarding the level at which the basic nursing education was obtained, the highest level of education attained, and whether the respondent held a baccalaureate degree in nursing when the questionnaire was answered. Table 4 indicates the level of highest education of the respondents.

As can be seen from Table 4, the nurses in the sample appear to have been quite active in the pursuit of higher education, as 12 nurses who originally held a diploma in nursing, 3 nurses who originally held an associate degree in nursing, and 8 nurses who originally held a baccalaureate degree in nursing indicated that they held a higher level of education when they completed the
<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Current level</th>
<th>Basic level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>Diploma</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>11</td>
<td>18.3</td>
</tr>
<tr>
<td>Baccalaureate: Nursing</td>
<td>17</td>
<td>28.3</td>
</tr>
<tr>
<td>Baccalaureate: Other fields</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Master's degree: Nursing</td>
<td>16</td>
<td>26.7</td>
</tr>
<tr>
<td>Master's degree: Other field</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>1.7</td>
</tr>
</tbody>
</table>
questionnaires. In considering nurses at all levels of education, a total of 34 (56.7%) of the nurses indicated that they held at least a bachelor's degree in nursing.

The fields of study of those nurses who had pursued advanced education in fields other than nursing were varied. Those with bachelor's degrees in other fields reported psychology (1 respondent), English (1 respondent), chemistry (1 respondent), and health administration (1 respondent) as areas in which they had received further education, or were pursuing further education at the time they answered the questionnaire. At the post-baccalaureate level one respondent reported completing two years of law school, one had obtained a master's degree in education, and two had obtained master's degrees in public health. The only respondent holding a doctoral degree had completed a master's degree in nursing, and had completed the doctoral degree in education.

The fields of practice of the nurse respondents is summarized in Table 5. Nurses who practiced outside of maternal-child health were represented in the "other" category. These nurses indicated they worked in medical-surgical nursing, operative nursing, or were retired.

In the sample, the majority of nurses (63.3%) had less than 15 years of experience in nursing. Table 6 summarizes the numbers of years of experience in nursing and in maternal-child nursing reported by the respondents. The positions in nursing held by
Table 5
Field of Practice of Respondents

<table>
<thead>
<tr>
<th>Nursing Field</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child/Adolescent health</td>
<td>24</td>
<td>40.0</td>
</tr>
<tr>
<td>Community health</td>
<td>10</td>
<td>16.7</td>
</tr>
<tr>
<td>Maternity Nursing</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>Neonatal ICU</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Newborn Nursery</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Ambulatory care</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>Unreported</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Years of experience</td>
<td>In Nursing</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Less than one</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>1-4 years</td>
<td>12</td>
<td>20.0</td>
</tr>
<tr>
<td>5-10 years</td>
<td>14</td>
<td>23.3</td>
</tr>
<tr>
<td>11-15 years</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>16-20 years</td>
<td>12</td>
<td>20.0</td>
</tr>
<tr>
<td>21-25 years</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>26-30 years</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>More than 31 years</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Not reported</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>3.3</td>
</tr>
</tbody>
</table>
these nurses are shown in Table 7.

Nurses answering "other" for the type of position they held included two self-employed consultants, and a nurse who replied "none". Some of the respondents reported that they held more than one type of position, for instance, head nurse/supervisor and clinical nurse specialist, or school of nursing faculty and staff nurse. In these cases, the position most likely to occupy most of the respondents' work time (e.g. head nurse rather than clinical nurse specialist, faculty member rather than staff nurse) is reported. Three of the respondents who reported that they were faculty reported that they taught at a baccalaureate nursing program, while the fourth taught at an associate degree program. In the total group, 52 (86.7%) reported that they were currently practicing, 6 (10.0%) were temporarily not practicing, and 2 (3.3%) were permanently not practicing or retired.

For the purposes of determining the geographic representation and the type of area in which they practiced, respondents were asked to report the region where they lived (corresponding to the map drawn in on the questionnaire as shown in Appendix L) and the type of area in which they lived and practiced. These data are summarized in Tables 8 and 9. These data were obtained because it had been thought that if altered growth and development were diagnosed less frequently by nurses who lived in certain regions of the state, and medical diagnoses were the types of diagnoses the


<table>
<thead>
<tr>
<th>Type of position</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff nurse</td>
<td>25</td>
<td>41.7</td>
</tr>
<tr>
<td>Clinical nurse specialist</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Community health nurse</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Administrator</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Faculty at nursing school</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Head nurse/Supervisor</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Inservice educator</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Patient educator</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Ambulatory care nurse</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Not reported</td>
<td>2</td>
<td>3.3</td>
</tr>
</tbody>
</table>
Table 8

Type of Area of Residence and Practice

<table>
<thead>
<tr>
<th>Type of area of residence</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>22</td>
<td>36.7</td>
</tr>
<tr>
<td>Suburban</td>
<td>24</td>
<td>40.0</td>
</tr>
<tr>
<td>Rural</td>
<td>13</td>
<td>21.7</td>
</tr>
<tr>
<td>Not reported</td>
<td>1</td>
<td>1.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of area of practice</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>34</td>
<td>56.7</td>
</tr>
<tr>
<td>Suburban</td>
<td>11</td>
<td>18.3</td>
</tr>
<tr>
<td>Rural</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>Not currently practicing</td>
<td>6</td>
<td>10.0</td>
</tr>
</tbody>
</table>
Table 9
Region of Residence of Respondent (Within Michigan)

<table>
<thead>
<tr>
<th>Region number</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>37</td>
<td>61.7</td>
</tr>
<tr>
<td>Two</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Three</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Four</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Five</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Six</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Seven</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>Eight</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Nine</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Lives outside Michigan</td>
<td>1</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Regional map:
nurses from those regions identified, this could indicate a greater need for extension courses from the universities of the state, and for continuing education courses on nursing diagnosis. In the formal study, the data did not indicate that need.

It is to be noted that an overwhelming majority of the nurses who responded to the questionnaires lived in Region One. Some of this bias can be attributed to the fact that even though a random number list was used to choose the names for the mailings, the Michigan Nurses Association mailing list held a large number of names from Region One. The region is the site of several major universities and the largest metropolitan area of Michigan. Therefore, it is likely that the higher population density in combination with the higher numbers of nurses affiliated with the major universities would weight the sample more heavily with nurses from this region. Additionally, it would be expected that nurses in close proximity to major universities would be more involved in and supportive of research, as well as more aware of and involved with the development of nursing diagnosis. Nurses who lived in Region One would, therefore, be more likely to reply to a mailed questionnaire than nurses in other areas.

Data were also collected to determine how much experience beyond their nursing practice the respondent nurses had with children. The questionnaire asked the respondents to report how many children they had. Three of the respondents did not reply (5.0%).
Twenty-nine of the nurses (48.3%) reported they had one child. Fifteen of the respondents (25.0%) had 2-3 children. Eight of the nurses (13.3%) reported having 4 or more children of their own. The nurses were also asked if they had experience with children other than their own, and outside their nursing experience. Again, three of the respondents did not reply (5.0%), 51 (85.0%) of the nurses replied that they had experience, and 6 (10.0%) reported that they had not had any other experience. The types of experience reported outside of nursing were: (1) babysitting (33.3%), (2) experience as a foster parent (6.7%), (3) experience as a Sunday school teacher (20.0%), (4) experience as a Boy/Girl Scout or Campfire leader (16.7%), (5) experience when "floated" to the Pediatrics unit (1.7%), (6) experience as a stepmother to children not her own (3.3%), (7) experience as a special education aide (1.7%), and (8) experience sponsoring a foreign student who was staying in this country (1.7%).

The final data elicited by the Professional Profile Questionnaire related to the respondents' experience with nursing diagnosis. Forty-three (71.7%) of the respondents reported that they were currently using nursing diagnosis in their setting of practice. Thirty-five (58.3%) reported that they had used nursing diagnosis previously in other settings. Additionally, 35 nurses reported they had used nursing diagnosis in their nursing education (58.3%). Table 10 summarizes the numbers of years of
Table 10

Years of Experience With Nursing Diagnosis

<table>
<thead>
<tr>
<th>Years of experience</th>
<th>Practice</th>
<th>Nursing Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>One year</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Two years</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>Three years</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Four years</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>More than 4 years</td>
<td>20</td>
<td>33.3</td>
</tr>
<tr>
<td>Never used</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>Not reported</td>
<td>8</td>
<td>13.3</td>
</tr>
</tbody>
</table>
experience with nursing diagnosis reported by the study respondents.

The question asking the length of time nursing diagnosis was used in practice had an error (see Appendix L). Instead of asking the respondents to refer back to questions 15 and 16, it asked them to refer to questions 11 and 12. No cases were noted in which the error could have caused the respondent to answer the question in an incorrect manner; however, some respondents who could have answered the question did omit it. None of these respondents indicated in any way that they did not understand the question with the error. Three of the respondents did not answer the entire third page of the questionnaire, while one respondent did not answer the previous two questions which asked whether he or she had ever used nursing diagnosis in practice. Thus, these responses probably do not constitute data error.

Nurses were asked to identify at which level of their education they had used nursing diagnosis. This question had a printing error in which the question "If you used nursing diagnosis during your nursing education" was stated as "If you used nursing diagnosis during your cftning education" (see Appendix L) because of an error in printing. One case was found in which the nurse who replied had indicated having experience with nursing diagnosis during her nursing education (all her education had been at the baccalaureate level), yet did not answer the question
regarding the level at which it was used. This nurse circled the misspelled word, and had written in a question mark before the question, without answering. This response is included in the "not reported" category. Two other nurses indicated they had not had experience with nursing diagnosis in their nursing education, yet they indicated a level at which nursing diagnosis had been used. The data for these responses were coded as if the nurse had no experience with nursing diagnosis during his or her education. Table 11 summarizes the data regarding the levels at which the respondents had used nursing diagnosis in their education.

Finally, nurses were asked to identify the experience they had with the various nursing diagnosis lists currently in use. Twenty-nine (48.3%) of the respondents indicated they had used the list from NANDA. Five of these nurses indicated they had used the NANDA list less than one year, nine had used the NANDA list 1-2 years, 11 had used the list 3-4 years, and three indicated that they had used the list for more than 4 years. Other lists that had been used for 1-2 years were those by the University of Toronto (two nurses), the Visiting Nurse Association of Omaha (one nurse), Marjory Gordon (Gordon, 1982) (two nurses), Claire Campbell (Campbell, 1984) (one nurse) and by their individual institutions (three nurses).
Table 11

Levels of Nursing Education At Which Nursing Diagnosis Had Been Used by the Respondents

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>Baccalaureate Degree</td>
<td>12</td>
<td>20.0</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>14</td>
<td>23.3</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Never used in Education</td>
<td>21</td>
<td>35.0</td>
</tr>
<tr>
<td>Not reported</td>
<td>4</td>
<td>6.7</td>
</tr>
</tbody>
</table>
Research Questions and Hypotheses

In this study, although nurses were instructed to identify nursing diagnoses for the child in the case study, it was found that many of the nurses used the medical diagnosis of "failure to thrive" (FTT) as a label for their diagnosis. As was discussed earlier in the methodology section, FTT describes a child with slowed growth and delayed development, and, possibly, a disruption in the parent-child relationship.

Although FTT has been defined as a medical diagnosis, the treatment of the condition (if it is inorganic) has been the responsibility of nursing. If FTT is organic (caused by disease), the management of the disease found to be causing the slowed growth would be medical. In inorganic FTT, however, no disease is found to be the cause of the growth and developmental lags, and nurses are expected to intervene to improve the relationship between the child and parents.

Since nursing is the profession intimately involved in the treatment of the medical diagnosis of inorganic FTT, it is likely that many nurses perceive the diagnosis as legitimate for nursing as well as for medicine. Other nurses, however, might object to the adoption of a medical diagnosis in a nursing diagnostic taxonomy. For analysis of the results of this study, therefore, statistical tests were performed with FTT included in the category of developmental nursing diagnoses (FTT-IN), and also with FTT
excluded from the category of developmental diagnoses (FTT-EX), since it is a recognized medical diagnosis. As was discussed in the methodology section, cases in which the respondent diagnosed FTT as a primary diagnosis for the child, and also identified a developmental lag as a secondary diagnosis were not added to the FTT-IN group, since it was possible those nurses felt FTT and developmental lags were distinct entities.

Research question one. The first research question asked whether there was agreement between the diagnoses identified by the nurses in the study and the primary diagnosis identified by the researcher. Table 12 lists the frequency at which the major diagnostic categories were identified by the nurses in the study sample as primary diagnoses, while Table 13 lists the frequencies of identification of major diagnostic categories for secondary diagnoses, or as etiologies of other diagnoses.

As can be seen from Table 12, the single most frequently identified diagnostic category for the child in the case study was failure to thrive, followed by developmental lag, alteration in growth and development and alteration in nutrition. Grouping the three developmental diagnoses (excluding failure to thrive), the broad category of developmental alterations becomes the category most frequently identified, with 24 (40%) of the nurses using a diagnostic label within this category for the major nursing diag-
Table 12

Frequencies of Identification of Diagnostic Categories

<table>
<thead>
<tr>
<th>Diagnostic category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to thrive</td>
<td>18</td>
<td>30.0</td>
</tr>
<tr>
<td>Developmental lag/delay</td>
<td>13</td>
<td>21.7</td>
</tr>
<tr>
<td>Altered growth and development</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>Alteration in nutrition</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>Altered parenting</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Alteration in one aspect of growth and development (e.g., motor, language, fine motor, etc.)</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Ineffective coping</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Altered family processes</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Self-care deficit (lack of independence)</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Medical diagnosis other than Failure to thrive</td>
<td>1</td>
<td>1.7</td>
</tr>
</tbody>
</table>
Table 13

Frequencies of Identification of Secondary Diagnoses

<table>
<thead>
<tr>
<th>Category</th>
<th>As Etiology</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental lag</td>
<td></td>
<td>15</td>
<td>25.0</td>
</tr>
<tr>
<td>Altered nutrition</td>
<td></td>
<td>15</td>
<td>25.0</td>
</tr>
<tr>
<td>Altered family process</td>
<td>1</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>25.0</td>
</tr>
<tr>
<td>Altered parenting</td>
<td>2</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>23.3</td>
</tr>
<tr>
<td>Alteration in one aspect of growth &amp; development</td>
<td></td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>Altered bowel elim.</td>
<td></td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>Knowledge deficit</td>
<td>1</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Ineffective coping</td>
<td></td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Failure to thrive</td>
<td></td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Altered attachment</td>
<td>1</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Emotional upset</td>
<td></td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Medical diagnosis, not FTT</td>
<td>1</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>5.0</td>
</tr>
<tr>
<td>Table 13 (cont.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>-----------</td>
<td>---------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>Altered growth &amp; development</td>
<td>1</td>
<td>1.7</td>
<td>1</td>
</tr>
<tr>
<td>Self-care deficit</td>
<td>1</td>
<td>1.7</td>
<td>1</td>
</tr>
<tr>
<td>Anxiety of child related to repeated hospitalizations</td>
<td>1</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>&quot;Adequate and available support system&quot;</td>
<td>1</td>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>
nosis for the child. When the failure to thrive diagnosis is included in the developmental nursing diagnostic category, the total number of nurses who used a diagnosis in this category is 42 (70%). This total decreases to 27 (45.8%) when the group of nurses who diagnosed failure to thrive as the major diagnosis but also diagnosed a developmental alteration or lag are excluded.

A second analysis of the results revealed an additional aspect for consideration. Many of the nurses did not identify a developmental alteration as the major diagnosis; however, 50 of the 60 respondents (83.3%) did identify either a developmental lag or alteration or failure to thrive (or both) as either the major diagnosis for the child, or as a secondary diagnosis. (If failure to thrive is excluded from the developmental nursing diagnosis category, the frequency of identification of altered developmental status as either a primary or secondary diagnosis is 42, or 70%.) In those cases in which the respondent identified a different diagnosis than developmental alteration for the major diagnosis, another appropriate diagnosis such as alteration in nutrition or alteration in family processes was usually identified as the major diagnosis. Thus, it can be seen that a majority of the nurses recognized the developmental alteration the child displayed, but they differed in judgement as to which diagnosis had higher priority for the child.
Fehring (1983) suggested that an acceptable level of agreement on diagnoses would be 60%. This level of agreement is surpassed when all cases in which altered growth and development was diagnosed either as the major diagnosis for the child, or as an alternate diagnosis, were considered (even when failure to thrive was excluded from this category). Thus, the results indicated an overall agreement that the child displayed a developmental alteration (70% for FTT-EX group, and 83.3% for the FTT-IN group). Agreement varied, however, as to whether a developmental alteration should be the primary diagnosis or a secondary one. There was also disagreement in the phrasing of the diagnostic label.

Research question 2. The second research question dealt with the degree of accuracy in making the diagnosis of altered growth and development as it varied with the level of expertise of the nurse. The research hypothesis speculated that accuracy in making the diagnosis of altered growth and development would be significantly greater ($p < .05$) in nurses with greater expertise than in nurses with less expertise. To determine the relationship between expertise and the accuracy of the nurse in diagnosing the child as displaying a developmental alteration, the Chi Square statistic was utilized.

Determination of expertise level. Respondents were given an expertise score, as described earlier in this paper. Then, the
mean score and standard deviation for the entire group of respondents was used to determine four groups which reflected level of expertise. The group with highest expertise was composed of respondents whose expertise score fell at a level greater than +1 standard deviation (SD) from the mean. The respondents whose score was between +1 SD and the mean were assigned to the second level of expertise. The third level of expertise was between -1 SD and the mean, and the lowest level of expertise was comprised of scores greater than -1 SD from the mean. The expertise groupings allowed use of the Chi Square statistic for the hypothesis testing.

A two-tailed t-test revealed a significant difference \( p < .025 \) in the mean expertise score of the respondents who practiced in nursing of children, and that of the respondents who practiced in other nursing specialty fields. Thus, to test expertise levels within these two major groups, each individual group mean and standard deviation were used to delineate the four levels of expertise within each group in the same manner as had been done for the entire group of respondents. The group who practiced in the field of nursing of children had four different levels of expertise which had been determined from the group's mean score, and the group of nurses who practiced in other fields had four levels of expertise determined from that group's mean score.
Statistical testing. The initial statistical analysis was done for the primary diagnosis the respondents identified. When levels of expertise for the entire group, for the group of nurses who practiced in nursing of children, and for the nurses in the other nursing specialties represented in the sample were tested, none of the Chi Square statistics reached significance, although in the FTT-EX analysis alpha levels tended to be closer to significance than in the the FTT-IN analysis.

Analysis was also completed for the cases in which altered growth and development was identified as either the primary or the secondary diagnosis for the child. Tables 14-16 illustrate the results of these analyses.

To examine the roles of the various components of the expertise scores in determination of the primary diagnosis identified by the respondents, Chi Square testing was done to determine if level of highest education, maternal-child health field of practice, years of experience in maternal-child health, or experience with children outside of nursing showed significant relationships with diagnosis of altered development when considered individually. When the FTT-IN analysis was completed, years of experience in maternal-child health was the only variable to show a significant relationship to diagnosis of altered development ($p < .048$) when considered alone (see Table 17). When the FTT-EX analysis was concluded, significant differences in accuracy
Table 14
Results of Chi Square Analysis of Relationship of Expertise to Diagnosis of Altered Growth and Development

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Chi Square</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FTT-IN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All respondents</td>
<td>11.15</td>
<td>.0109&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Child/adolescent health</td>
<td>4.19</td>
<td>.2416</td>
</tr>
<tr>
<td>Other nursing specialties</td>
<td>3.44</td>
<td>.3293</td>
</tr>
<tr>
<td><strong>FTT-EX</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All respondents</td>
<td>10.42</td>
<td>.0153&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Child/adolescent health</td>
<td>6.82</td>
<td>.0778&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Other nursing specialties</td>
<td>1.32</td>
<td>.7240</td>
</tr>
</tbody>
</table>

Note: df = 3, for all analyses in this table.

<sup>a</sup>See Table 15
<sup>b</sup>See Table 16
<sup>c</sup>See Table 16
Table 15
Contingency Table of Chi Square Test of Expertise Level of All Respondents in Relation to Diagnosis of Altered Growth and Development

<table>
<thead>
<tr>
<th>Expertise Rank</th>
<th>Diagnosis of Altered Growth/ Development, FTT-IN Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did diagnose</td>
</tr>
<tr>
<td>Lowest</td>
<td>9</td>
</tr>
<tr>
<td>Low-Moderate</td>
<td>17</td>
</tr>
<tr>
<td>Moderate-High</td>
<td>8</td>
</tr>
<tr>
<td>Highest</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
</tr>
</tbody>
</table>

Note: Chi Square = 11.15, df = 3, p < .0109, N = 60
Table 16

Contingency Tables of Chi Square Tests of Expertise Levels in Relation to Diagnosis of Altered Growth and Development, for FTT-EX Analyses

<table>
<thead>
<tr>
<th>Expertise Rank</th>
<th>Diagnosis of Altered Growth/ Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did diagnose</td>
</tr>
<tr>
<td>All respondents (N = 60)(^a)</td>
<td></td>
</tr>
<tr>
<td>Lowest</td>
<td>7</td>
</tr>
<tr>
<td>Low-Moderate</td>
<td>13</td>
</tr>
<tr>
<td>Moderate-High</td>
<td>7</td>
</tr>
<tr>
<td>Highest</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>42</td>
</tr>
<tr>
<td>Child/Adolescent health specialty (n = 24)(^b)</td>
<td></td>
</tr>
<tr>
<td>Lowest</td>
<td>3</td>
</tr>
<tr>
<td>Low-Moderate</td>
<td>4</td>
</tr>
<tr>
<td>Moderate-High</td>
<td>7</td>
</tr>
<tr>
<td>Highest</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19</td>
</tr>
</tbody>
</table>

\(^a\) Chi Square = 10.42, df = 3, \(p < .0153, N = 60\).

\(^b\) Chi Square = 6.82, df = 3, \(p < .0778, n = 24\).
Table 17
Contingency Table of Years of Maternal-Child Health Nursing Experience in Relation to Diagnosis of Altered Growth and Development, for FTT-IN Analysis

<table>
<thead>
<tr>
<th>Years of experience</th>
<th>Diagnosis of Altered Growth/Development</th>
<th>Did diagnose</th>
<th>Did not diagnose</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td></td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>1-4</td>
<td></td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>5-10</td>
<td></td>
<td>13</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>11-15</td>
<td></td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>16-20</td>
<td></td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21-25</td>
<td></td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>26-30</td>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>26</strong></td>
<td><strong>33</strong></td>
<td><strong>59</strong></td>
</tr>
</tbody>
</table>

*Note: Chi Square = 14.17, df = 7, p < .0483, n = 59.*
of diagnosis of a developmental alteration as primary diagnosis were not achieved for any of the dimensions comprising the expertise score.

Tables 18 and 19 illustrate the results obtained when cases in which developmental alteration was diagnosed as either a primary or as a secondary diagnosis are considered. Education and field of practice seemed to influence the differences in diagnosis for the respondent group as a whole, when developmental alteration was considered as either a primary or secondary diagnosis.

Effects of nursing diagnosis experience in combination with expertise scores in diagnostic choice. As will be discussed further in relation to research question 8, it was found that when FTT was excluded as a developmental nursing diagnosis: (1) current use of nursing diagnosis in the respondent's institution \( (p < .009) \), (2) years of use of nursing diagnosis in practice \( (p < .017) \), and (3) years of use of nursing diagnosis in the respondent's nursing education \( (p < .04) \) demonstrated significant relationships to diagnosis of a developmental alteration. Table 20 further illustrates how the major groups of nursing diagnosis experience levels were tested for diagnostic choice with FTT excluded. As can be seen, Chi Square testing failed to demonstrate a significant difference in diagnostic choice \( (p < .0595) \), although this result did approach significance. When FTT was included in the developmental diagnosis group, these levels of
Table 18

Contingency Tables of Relation of Level of Education to Diagnosis of Altered Growth and Development as Either Primary or Secondary Diagnosis

<table>
<thead>
<tr>
<th>Highest education attained</th>
<th>FTT-IN Analysis(^a)</th>
<th>FTT-EX Analysis(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did diagnose</td>
<td>Did not</td>
</tr>
<tr>
<td>Diploma</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>B.S., Nursing</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Baccalaureate, other field</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>M.S., Nursing</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Master's degree, other field</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: \(N = 60\) and \(df = 6\) for both analyses.

\(^a\) Chi Square = 21.55, \(p < .0015\).

\(^b\) Chi Square = 16.49, \(p < .0114\).
Table 19
Contingency Tables of Relation of Nursing Specialty to Diagnosis of Altered Growth and Development as Either Primary or Secondary Diagnosis

<table>
<thead>
<tr>
<th>Nursing specialty area</th>
<th>FTT-IN Analysis&lt;sup&gt;a&lt;/sup&gt;</th>
<th>FTT-EX Analysis&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did diagnose</td>
<td>Did not</td>
</tr>
<tr>
<td>Child/Adolescent health</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>Community health</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Neonatal ICU</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Maternity</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Newborn Nursery</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Ambulatory care</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: N = 59 and df = 6 for both analyses.
<sup>a</sup>Chi Square = 17.56, p < .007.
<sup>b</sup>Chi Square = 20.74, p < .002.
Table 20

Contingency Table of Relation of Nursing Diagnosis Experience Level to Diagnosis of Altered Growth and Development, FTT-EX Analysis

<table>
<thead>
<tr>
<th>Nursing diagnosis experience level</th>
<th>Did diagnose</th>
<th>Did not diagnose</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>No experience</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Practice only</td>
<td>5</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Education only</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Education &amp; practice</td>
<td>18</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>32</td>
<td>56</td>
</tr>
</tbody>
</table>

Note: n = 56, Chi Square = 7.42, df = 3, p < .0595.
nursing diagnosis experience did not show a significant relationship ($p < .3501$).

Further testing of the expertise groupings was done, controlling for the nursing diagnosis experience group of the respondents. The expertise groups created by the total sample of respondents, the nursing of children specialty group, and the other nursing specialty groups were tested by subdividing these groups into the levels of nursing diagnosis experience. As in earlier analyses, results were obtained for FTT-IN analysis, and for FTT-EX analysis. The only significant Chi Square was obtained for the group of nurses with no nursing diagnosis experience, for the FTT-IN analysis. Interestingly, the only nurse to diagnose a developmental diagnosis (FTT) in this group was the nurse in the lowest expertise group. Considering the number of empty cells in the contingency table (3 of 6) and the low number of respondents in this category ($n = 7$), the significant result ($p < .0302$) is of questionable utility in interpreting the results.

In summary, the null hypothesis for research question 2 was retained when considering the primary diagnosis identified by the respondent nurses. In the total group, in the group of nurses who practiced in the nursing of children, in the group of nurses who practiced other nursing specialties, and in the group of nurses with experience in nursing diagnosis in both their nursing education and in their practice, there was no significant relationship
between level of expertise and diagnosis of a developmental alteration for the primary diagnosis. Additionally, the nurses who practiced in nursing of children did not identify alteration in growth and development significantly more often than nurses in other specialties.

When analyzing cases in which the developmental alteration was identified as either the primary or secondary diagnosis, it was found that in the group as a whole, nurses with higher levels of expertise were more likely to diagnose altered growth and development than other nursing diagnoses in cases in which FTT was included as a developmental diagnosis, and also when it was excluded. This relationship was not demonstrated within the group of child and adolescent nurses, or for the other nursing specialty groups represented.

Research questions 3 and 4. These research questions asked whether there would be agreement in the signs and symptoms identified by the nurses from the case study with defining characteristics proposed by Covia and Derhammer (1983), and which of the signs and symptoms would be most frequently identified by nurses who diagnosed altered growth and development (signs and symptoms identified by 75% of the nurses would be designated as "critical" defining characteristics). Table 21 reveals these results.

As can be seen in Table 21, the sign most frequently identified by those who diagnosed altered growth and development, devel-
Table 21
Signs and Symptoms Identified by Respondents

<table>
<thead>
<tr>
<th>Sign/Symptom</th>
<th>Etiology</th>
<th>Primary diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Altered growth/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Height &amp; weight 5th percentile</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>Child pointed and grunted</td>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>Child couldn't walk</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Child rarely crawled</td>
<td>35</td>
<td>9</td>
</tr>
<tr>
<td>Refused spoon/cup</td>
<td>33</td>
<td>10</td>
</tr>
<tr>
<td>Ate by bottle only</td>
<td>28</td>
<td>8</td>
</tr>
<tr>
<td>Child spoke no words</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>&quot;Repeated hospitalizations&quot;</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Medical history</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>Paternal absences</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>from the home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shy with nurse</td>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>

- 92 -
<table>
<thead>
<tr>
<th></th>
<th>Altered G/D</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altered bowel elim.</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Mother roomed-in</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Altered nutrition</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Play with father</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Self-care deficit,</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Motor/physical lag&quot;</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>&quot;Manipulation skill</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>deficit&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Language lag&quot;</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other cues</td>
<td>32</td>
<td>9</td>
</tr>
</tbody>
</table>
opmental lag, or FTT as the major diagnosis was the child's height and weight at the 5th percentile (38 respondents, or 63.3%). This was followed by the child's inability to walk and the child rarely crawling (35 respondents each, 58.3%), and then by the "pointing and grunting" cue (34 respondents, or 56.7%). An interesting note is that the cue on the child's height and weight, and the cue in which he was observed to "point and grunt" at objects were cues which had been rated as lower in relevancy than other cues by the content validity experts. It is possible that the increased citing of this cue by the study respondents is what led to the finding that FTT was the most frequently identified diagnosis for this group, since this cue is parallel to the definition of FTT in the medical literature.

Table 22 summarizes results obtained when the respondents who identified altered growth and development as a secondary diagnosis are included in the group who accurately identified the condition. Even when the respondents who listed the signs they used and stated something like "has motor lag" or "behind in language" are included with the appropriate case study cues, none of the cues were identified by more than 75% of the respondents (75% having been chosen as the "critical" level for this investigation because of this level being seen as showing "fairly high" agreement in the study by Gordon and Sweeney, 1979). None of the cues can be designated as "critical" defining characteristics, as they were
Table 22
Frequency of Identification of Most Commonly Identified Cues
When FTT was Allowed as a Secondary Nursing Diagnosis

<table>
<thead>
<tr>
<th>Sign/symptom</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height and weight at fifth percentile</td>
<td>44</td>
<td>73.3</td>
</tr>
<tr>
<td>Child unable to walk</td>
<td>40</td>
<td>66.7</td>
</tr>
<tr>
<td>Child rarely crawled</td>
<td>40</td>
<td>66.7</td>
</tr>
<tr>
<td>Child &quot;pointed and grunted&quot;</td>
<td>39</td>
<td>65.0</td>
</tr>
<tr>
<td>Child refused spoon/ cup.</td>
<td>39</td>
<td>65.0</td>
</tr>
</tbody>
</table>
defined for this study. They can, however, be compared to the suggestions of Fehring (1983) for determining if a characteristic has utility in making a nursing diagnosis. Again, his guidelines stating that 60% agreement should be the minimum level allowed can be utilized. The signs and symptoms from the case study that were identified by over 60% of the nurses who identified altered growth and development, developmental lag, or FTT as either the major or as a secondary diagnosis for the child in the case study are indicated in Table 22. These represent the defining characteristic categories of Coviak and Derhammer (1983) of (1) altered physical growth, (2) delay in performing motor skills of age, (3) delay in performing language skills of age, (4) delay in performing manipulative skills of age, and (5) inability to perform self-care activities appropriate to age.

Research question 5. This research question was concerned with determining the average number of signs and symptoms of altered growth and development which would be indicated as most important for making the diagnosis by nurses who accurately identified the alteration. The analysis for this question was complicated by the fact that many of the respondents did not asterisk or star the signs and symptoms they thought were most important for the diagnosis. Thus, over all cases, the range of starred data cues was from 0 to 11.
As in other analyses, the mean number of starred cues was determined for the cases in which the primary diagnosis was in the categories of altered development excluding FTT, and again, including FTT. Table 23 summarizes these results. As can be seen from the table, in the FTT-IN analyses the mean number of cues starred were higher than in the FTT-EX analyses. It should be remembered that many nurses did not asterisk any of the cues they identified. It is difficult to determine, therefore, if means decreased because increased numbers of nurses who starred no cues were included in these groups or if nurses in the FTT-IN groups were actually more able to identify important cues for making the diagnosis. The large standard deviations noted suggest that the first interpretation is the appropriate one for this situation.

**Research question 6.** This question asked whether nurses who identified more than 75% of the signs and symptoms of altered growth and development depicted in the case study would diagnose the alteration more often than nurses who identified fewer signs and symptoms. The research hypothesis predicted that nurses who did identify 75% of the signs and symptoms would identify the diagnosis significantly more often \((p < .05)\) than the other nurses. For testing of this hypothesis, only the seven signs and symptoms which had been validated with content validity experts were counted as signs of altered growth and development. To identify over 75% of the signs and symptoms, the respondents had to
<table>
<thead>
<tr>
<th>Analysis</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Altered growth and development as primary diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTT-IN</td>
<td>3.78</td>
<td>3.26</td>
</tr>
<tr>
<td>FTT-EX</td>
<td>3.38</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>Altered growth and development as either primary/secondary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTT-IN</td>
<td>3.06</td>
<td>3.05</td>
</tr>
<tr>
<td>FTT-EX</td>
<td>2.81</td>
<td>3.21</td>
</tr>
</tbody>
</table>
identify six or seven of these validated signs or symptoms. Tables 24 and 25 summarize the results obtained when these analyses were completed.

The results obtained in the statistical testing for this question indicated that the null hypothesis should be rejected for those who diagnosed altered development as the primary nursing diagnosis for the child and did not choose FTT as their diagnostic term, but not necessarily when altered development was diagnosed as an alternate nursing diagnosis. When FTT was excluded as a developmental nursing diagnosis, nurses who identified 75% or more of the validated signs and symptoms did identify alteration in growth and development as a primary diagnosis for the child significantly more frequently than those who did not identify 75%.

Research question 7. The research hypothesis for question seven predicted that nurses with greater amounts of expertise would identify 75% of the signs and symptoms of altered growth and development in the case study significantly more frequently (p < .05) than nurses with less expertise. For the testing of this hypothesis, the expertise groupings were delineated as for testing of research hypothesis two. There was no significant difference in identification of 75% of the validated characteristics in the expertise groupings for the entire group of respondents, for the nursing of children specialty, or for the other specialties.
Table 24

Relationships of Identification of 75% of Validated Cues to Diagnosis of Altered Growth and Development

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Chi Square</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altered growth and development as primary diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTT-IN</td>
<td>2.80</td>
<td>.094</td>
</tr>
<tr>
<td>FTT-EX</td>
<td>4.30</td>
<td>.038a</td>
</tr>
<tr>
<td>Altered growth and development as either primary/secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTT-IN</td>
<td>2.29</td>
<td>.130</td>
</tr>
<tr>
<td>FTT-EX</td>
<td>.93</td>
<td>.330</td>
</tr>
</tbody>
</table>

Note: df = 1 for all analyses.

^See Table 25
Table 25
Contingency Table of Relationship of Identification of 75% of Validated Cues to Diagnosis of Altered Growth and Development

<table>
<thead>
<tr>
<th></th>
<th>Did diagnose</th>
<th>Did not diagnose</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identified 75% of cues</td>
<td>18</td>
<td>16</td>
<td>34</td>
</tr>
<tr>
<td>Did not identify 75% of cues</td>
<td>6</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>36</td>
<td>60</td>
</tr>
</tbody>
</table>

Note: N = 60, Chi Square = 4.3, df = 1, p < .038.
This question was also investigated through the use of the Pearson $r$ correlation coefficient. Table 26 summarizes the correlation coefficients obtained.

To examine whether levels of experience in nursing diagnosis made a difference in the identification of 75% of the validated characteristics, the nurses in the major nursing diagnosis experience groups (nurses with no experience, nurses with experience in practice only, nurses with experience in education only, and nurses with experience in education and in practice) were tested with the Chi Square test. This Chi Square result did not reach significance ($p < .089$), but it did show a trend toward significance. To further study the relationship between experience with nursing diagnosis and identification of greater numbers of validated characteristics of the diagnosis from the case study, the Spearman $r$ was used. Spearman's $r$ was .2822 for the relationship of the two variables, which indicates a low, but definite correlation (Sprinthall, 1982). The $r$ was also significant ($p < .018$). It is possible that the $r$ became significant because of a sample size large enough to allow this coefficient sufficient degrees of freedom in the statistical calculations (Sprinthall, 1982).

In summary, the null hypothesis for research question 7 was retained. No significant difference was found in identification of 75% of the signs and symptoms of altered growth and development.
Table 26
Pearson r Correlations of Expertise Scores to Identified Cues

<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
<th>p</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of starred signs/symptoms</td>
<td>.238</td>
<td>.070</td>
<td>Low, small relationship</td>
</tr>
<tr>
<td>No. of signs/symptoms identified</td>
<td>.014</td>
<td>.917</td>
<td>Negligible relationship</td>
</tr>
<tr>
<td>No. of validated signs/symptoms</td>
<td>.024</td>
<td>.855</td>
<td>Negligible relationship</td>
</tr>
</tbody>
</table>

*Sprinthall, 1982 was the resource used to interpret r.*
in those with greater expertise than in those with less expertise. Incidental investigation of the relationship of experience with nursing diagnosis to the identification of increased numbers of signs and symptoms of altered growth and development revealed that there was a slight but significant relationship between these two variables.

**Research question 8.** The research hypothesis for question eight speculated that nurses with greater amounts of experience in the use of nursing diagnosis would identify altered growth and development as the primary diagnosis for the case study client significantly more frequently ($p < .05$) than nurses with less experience in nursing diagnosis. For the testing of this hypothesis, the major groupings of experience in nursing diagnosis were (1) no experience in using nursing diagnosis, (2) experience in use of nursing diagnosis in practice only, (3) experience in own nursing education only, and (4) experience in both practice and in own nursing education. Tables 27 and 28 reveal the results of Chi Square testing using these levels of experience in nursing diagnosis. Due to the low number of nurses in the experience groupings, only the group with experience in both education and in practice could be sub-divided into groups with four or more years of experience, and less than four years of experience for Chi Square testing of differences in diagnosis of altered growth and development. When the respondent group which had diagnosis experience in
Table 27

Contingency Table of Relation of Nursing Diagnosis Experience Level to Diagnosis of Altered Growth and Development, FTT-EX Analysis

<table>
<thead>
<tr>
<th>Nursing diagnosis experience level</th>
<th>Did diagnose</th>
<th>Did not diagnose</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>No experience</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Practice only</td>
<td>5</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Education only</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Education &amp; practice</td>
<td>18</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>32</td>
<td>56</td>
</tr>
</tbody>
</table>

Note: n = 56, Chi Square = 7.42, df = 3, p < 0.0595.

\(^a\) FTT-IN analysis did not reveal a significant Chi Square result.
Table 28

Nursing Diagnosis Experience Variables with Significant Relationships to Diagnosis of Altered Growth and Development, FTT-EX Analyses

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi Square</th>
<th>p</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used nursing diagnosis in practice institution</td>
<td>6.78</td>
<td>.009</td>
<td>1</td>
</tr>
<tr>
<td>Years of use of nursing diagnosis in practice</td>
<td>15.46</td>
<td>.017</td>
<td>6</td>
</tr>
<tr>
<td>Years of use of nursing diagnosis in education</td>
<td>11.55</td>
<td>.040</td>
<td>5</td>
</tr>
</tbody>
</table>

FTT-IN analyses did not reveal a significant Chi Square result.
both education and in practice was divided into two sub-groups (those with four or more years of nursing diagnosis experience and those with less than four years of experience), the Chi Square result was not significant for either the FTT-IN analysis, or for the FTT-EX analysis ($p<1.00$ in both cases).

In summary, for research question 8, the null hypothesis was retained. It was found, however, that although the difference was not significant, nurses who had no nursing diagnosis experience, or experience with nursing diagnosis in practice only tended to diagnose altered growth and development and other similar developmental diagnoses less frequently than those with experience in both education and in practice.
CHAPTER VII

DISCUSSION

This investigation was limited by a lack of agreement by respondents that a developmental alteration was the primary diagnosis for the child in the case study, by two minor errors in printing of a questionnaire which may have introduced error into some of the data, by insufficient numbers of master's and doctoral degree prepared nurses in the sample for true validation of the diagnosis by recognized nursing experts, and by limited geographic representation of the respondents. There are, nevertheless, several implications from this study. The first implication is that, given the wide range of education, maternal-child health specialty, and experience in the field of child health of the nurses in the sample for this investigation, it cannot be said that in this study the nursing diagnosis of altered growth and development was validated by "experts". It can be seen, however, that developmental alteration was a phenomenon that was familiar to these nurses, at various levels of expertise. What was evident was a lack of terminology consistent and unique to nursing science for expression of the client health problem they observed in the case study.

It was evident from the variety of terms utilized by the respondents of the study that observations of Gordon and Sweeney (1979) were applicable. Those authors discussed how the types of
responses, terminology, and diagnostic agreement will vary more widely when open-ended questionnaires are administered without a list of possible diagnostic labels than they would be if a list were provided. Although the disagreement of the respondents on the priority diagnosis for the child in the case study was evident, a wide variety of diagnostic labels and terms were used by the nurses in this study to reflect a common theme; that is, they recognized a client response in which a failure to meet developmental tasks was evident. Moreover, they were not likely to use diagnostic labels which separated the various areas of developmental alteration into the discrete manifestations of this phenomena, such as impaired communication, but rather, to use one label which brought together all the manifestations.

Many of the nurses in this sample used terminology known to them, i.e., the language of medicine for developmental and physical growth lags. "Failure to thrive" (FTT), as defined in medical literature, is a condition in which an infant or child fails to gain weight or loses weight for no apparent reason (Barbaro & McKay, 1979). Most instances are found to result from psychosocial causes such as emotional deprivation or environmental disruptions. In most cases, retarded development accompanies the weight loss (Barbaro & McKay, 1979). Failure to thrive is usually classified as organic or inorganic. Organic FTT is usually the manifestation of diseases such as cystic fibrosis, heart or lung
diseases, digestive disorders such as malabsorption syndromes (Barbaro & McKay, 1979) and other acute and chronic diseases. Inorganic FTT is a condition in which no medical reason for the growth and developmental failure can be determined. In these instances, it is assumed that the parent-child relationship is faulty. If inorganic FTT is diagnosed, treatment is non-medical. Therapy falls within nursing's realm; teaching, role-modeling of nurturative behaviors, therapeutic play, and other techniques are employed to foster the parent-child relationship, and to help the child practice skills to make progress in meeting developmental tasks.

It is difficult to classify inorganic FTT as either a nursing diagnosis, or a collaborative problem as described by Carpenito (1983, 1985) due to the fact that nurses can identify inorganic failure to thrive through assessment of growth and of attainment of developmental tasks, and will be the primary health care providers. Despite this role for the nurse, he/she may be dependent on the physician only to order the diagnostic tests which will rule out organic causes of the failure to thrive. Certainly, inorganic FTT could be primarily managed by a nurse, but to be sure there was no organic cause for the weight loss and developmental lag, it would be prudent to consult a physician who could order tests to rule out disease. Thus, clear delineation of inorganic FTT as a nursing diagnosis with some collaborative aspects, or as a colla-
borative problem which becomes a nursing diagnosis after the etiology of the problem is determined is difficult, and should be a topic of further research.

In the investigation, most nurses who identified FTT as their primary diagnosis also identified developmental lag as an additional nursing diagnosis. This suggests they perceive each diagnosis as unique. Perhaps FTT is thought of as a nursing diagnosis for decreased physical growth for age, while developmental lags as other phenomena. Further research will also be necessary to distinguish the two phenomena for nursing.

It has been proposed that for a diagnosis to be validated, its characteristics should withstand testing to determine if they occur as a cluster, rather than merely showing evidence that they refer to a clinical entity (Fehring, 1983). This also assumes that nurses who validate have the expertise to do so (Fehring, 1983). In this investigation, some possible characteristics for a diagnosis of alteration in growth and development were identified, and nurses demonstrated they recognized these characteristics as part of the phenomenon.

The sample of this investigation did not include a sufficient number of nurses prepared at the master's and doctoral degree level to validate a developmental nursing diagnosis. It was found, however, that in this study, nurses with varying expertise scores (which included highest level of education as a component)
were significantly more likely to diagnose altered growth and
development if the prioritization of diagnoses was ignored. This
finding can be compared to those of Aspinall (1976), who found a
significant difference in the mean number of nursing diagnoses
identified between baccalaureate degree prepared nurses and
associate degree prepared nurses, and between baccalaureate degree
prepared nurses and diploma school graduates. Matthews and Gaul
(1979) had also found a significant difference in the diagnostic
ability of graduate students versus undergraduate students. In
the current study the role of education in increasing diagnostic
accuracy was not as easily evident.

The small number of master's prepared and doctoral prepared
nurses in the sample limited the validation aspects of the
research, but the existence of the clinical entity was supported
by its recognition by a majority of the nurses in the study.
Several studies which did not use exclusively master's prepared
nurses did use data to describe and develop nursing diagnoses.
The nursing diagnosis list developed by the University of Toronto
(Jones, 1978, 1980), and the one developed by the Visiting Nurse
Association of Omaha (Martin, 1980) were developed by analysis of
client encounters of nurses at various levels of expertise. Nicoletti, Rietz, and Gordon (1980) studied the parenting diagnosis
through retrospective chart review of data provided by staff
nurses with varying amounts of experience and education. Thus,
although the diagnosis of altered growth and development was not necessarily "validated", its existence appeared to be verified by the respondents to the questionnaires.

Of interest is the fact that the nurses in the study did not diagnose self-care deficit for the child, although that is an accepted nursing diagnosis of NANDA. Nurses who made a diagnosis which was classified in that category actually stated the child's problem more as a lack of independence. Nurses appeared to agree that self-care deficit was not the child's nursing diagnosis. Further research may be able to determine if self-care deficit is a useful diagnosis for nursing of children at all, or if it solely exists in this age group as a sign of altered development or other diagnoses.

The investigation may also be of interest to those who study the diagnostic process in nursing, in that findings did not indicate that nurses at higher levels of expertise (i.e., education, experience in nursing, and experience with children) demonstrated an increased ability to identify the pertinent cues for the diagnosis. These findings were similar to those of Matthews and Gaul (1979), who did not find a difference in the number of cues identified by graduate students and undergraduate students in nursing. Further, a significant difference in diagnostic choice of altered growth and development as primary nursing diagnosis (excluding failure to thrive) was shown between
nurses who identified more than 75% of the validated characteristics and those who identified fewer of them. This finding was similar to that of Cianfrani (1982), who reported that there was decreased accuracy in diagnostic choice when low amounts of relevant data were provided to graduate nursing students. The differences found in diagnosis of altered growth and development (excluding FTT) between nurses with less experience in nursing diagnosis, and those with increased experience in nursing diagnosis (which showed a trend toward, but did not reach significance) lends insight into this result. A slight, but significant correlation between the level of experience in nursing diagnosis and the number of validated signs and symptoms identified suggests that with increased nursing diagnosis experience, increased ability to discriminate pertinent data might be obtained, thereby increasing diagnostic accuracy. This topic will require further research, especially since the questionnaire errors may have influenced these results.

In summary, recommendations for further research are as follows.

(1) Implement clinical validation studies to further investigate possible defining characteristics of the nursing diagnosis of alteration in growth and development. Chart review of clients who exhibited developmental alterations can be the first step to broaden the list of possible defining characteristics. Further
clinical investigations can be done later, to determine the agreement of nurse experts on the diagnosis of particular clients with the alteration.

(2) As the list of potential defining characteristics grows, begin validation studies as described by Fehring (1983). Nursing experts in the field of child health can be mailed lists of the characteristics, and be asked to rate their actual existence and prevalence in clinical practice. Calculation of the ratios he describes (diagnostic content validity, or DCV ratios, clinical diagnostic validity, or CDV ratios, and etiological correlation ratings, or ECR ratios) can then be done.

(3) To further refine "alteration in growth and development" as a nursing diagnosis, questionnaire research can be done in which lists of defining characteristics or case study vignettes are provided with a list of possible diagnoses for the condition depicted. After a number of nurses have replied to these questionnaires, the results may help to delineate which defining characteristics distinguish altered growth and development from other nursing diagnoses (e.g., altered nutrition diagnoses and inorganic failure to thrive). It would then be possible to construct decision trees (Aspinall & Tanner, 1981) that would assist novice nursing diagnosticians in making accurate diagnoses.

(4) Determination of the utility of the diagnosis for adults will need to be addressed. This effort will necessarily have to
begin with clear definition of adult developmental tasks. The theories of Erickson (1968) may have utility in this endeavor, as well as the observations made by Sheehy (1976), in her book entitled Passages.

(5) Continued research to delineate the factors which influence accuracy in nursing diagnostic judgement should be completed. Of special concern in these studies should be the roles of educational levels, prior experience in nursing diagnosis, and time of initial introduction and instruction in the diagnostic process in subsequent diagnostic accuracy of nurses.

(6) In nursing diagnosis literature, clear guidelines for interpretation of agreement ratios for diagnostic choice, and for identification of defining characteristics have not been delineated. This study used the agreement ratio proposed by Fehring (1983) as the minimal acceptable level (60%), but also the interpretations of agreement ratios used by Gordon and Sweeney (1979), who suggested that 75% agreement was a fairly high agreement. It is recommended that NANDA prepare formal guidelines for interpreting minimal agreement, good agreement, and high agreement, to assist researchers in examining the value of results in nursing validation studies.
SUMMARY

The sample of nurses in this investigation showed agreement in diagnosing a developmental alteration as either a primary or alternate nursing diagnosis for a child depicted in a case study. As these nurses were members of a state nursing association, and represented many areas of maternal and child health, it is suggested that developmental alterations are phenomena recognized by professional nurses, and perceived to be of nursing concern by them.

Although there was high agreement that the child displayed developmental deviations, the nurses of the sample did not use any single term for these alterations with any consistency. The importance of using a common language for conditions diagnosed and treated by nurses has been advocated by leaders in the nursing diagnosis movement (Carpenito, 1985). As the health promotion concerns of nurses who practice in the specialty of child and adolescent health has not been addressed by the NANDA, the investigator proposes that "alteration in growth and development" or "developmental delay" be adopted as nursing diagnostic terms by the North American Nursing Diagnosis Association, so that more formal validation studies may be undertaken.
REFERENCES


Eichelberger, K.M., Kaufman, D.H., Rundahl, M.E., & Schwartz,


Meade, C.D. & Kim, M.J. (1982). The effect of teaching on documentation of nursing diagnoses. In M.J. Kim,


APPENDICES
APPENDIX A -- MNA MAILING LIST AGREEMENTS

November 8, 1984
6735 Rix, S.E.
Ada, MI 49301
Phone: (616)676-2873

Ms. Ann Darling
Office Manager, Michigan Nurses’
Association
120 Spartan Avenue
East Lansing, MI 48823

Dear Ms. Darling,

I am a student in the graduate program at Grand Valley State College seeking my master's degree in nursing. A partial requirement for degree completion is a research project and thesis. For this research, I have chosen the topic of nursing diagnosis, and I am investigating the feasibility of proposing a diagnosis to the North American Nursing Diagnosis Association for clinical testing. As I am studying altered growth and development as a potential nursing diagnosis, I would like to gather data from nurses engaged in maternal/child health nursing.

For my study population, I would like to use a sample of nurses from the Division of Maternal and Child Health of the Michigan Nurses Association. If it is possible to use a mailing list from the Association for contacting these nurses, I would like to have them respond to two questionnaires which would give me data on the abilities of nurses in this practice group to diagnose developmental lags. Copies of the proposed questionnaires and cover letter/consent form are enclosed for consideration by any committees which would need to approve my use of a mailing list of nurses within the MCH Division. Approval of my thesis proposal has already been given by my thesis committee, and by the School of Nursing at Grand Valley State College. Application for review by the Human Subjects Review Board at Grand Valley State College has been submitted, and approval is expected soon. In the event that MNA does not approve my use of the requested mailing list, a different population will be selected.

Please advise me of the decision of the Association. If further information is required, please contact me by mail or phone at the numbers provided above. I will also await information on cost to me, and of any regulations which I may need to be aware of and adhere to during my research. Your assistance, and the assistance of the Association are greatly appreciated.

Sincerely,

Cynthia Peltier Coviak, R.N.
M.S.-N. Student,
Grand Valley State College,
Allendale, MI

-134-
MAILING LIST AGREEMENT

Cynthia Peltier Coviak, R.N., hereby agrees to purchase from the Michigan Nurses Association, a Michigan Corporation of 120 Spartan Ave., East Lansing, Michigan, 1 set(s) of mailing labels containing approximately 1,675 names representing the Michigan Nurses Association's most current list of members at a price of 44¢ per name. Maternal/Child Health Nurses only.

Purchaser understands that the Michigan Nurses Association makes such list available only for mailings which it determines are of benefit or value to Registered Nurses and agrees that the purchaser will use the labels only for the mailing described below which has been approved by the Michigan Nurses Association and that it will not reproduce or permit the reproduction of the labels or any part thereof.

Purchaser agrees that the labels being purchased will be used for a mailing to the Registered Nurse addresses which has been described to the Michigan Nurses Association representatives in detail and which is described briefly as follows:

(Samples of the enclosures are attached)

Date: 11/19/84

Please send a deposit of 1/2 estimated cost.

AGREEMENT APPROVED
MICHIGAN NURSES ASSOCIATION

BY ____________________________

JSG:ec/9-26-74/
Respondent no.________________

Please respond to the following questions about yourself and return this questionnaire with your case study responses.

At which level did you complete your basic education in nursing?
1. Diploma in nursing.
2. Associate's Degree in nursing.

Do you now hold a baccalaureate degree in nursing?
1. Yes.
2. No.

What is your highest level of education?
1. Diploma in nursing
2. Associate's Degree in nursing.
4. Baccalaureate degree in another field. (Please specify _______)
5. Masters degree in nursing.
6. Masters degree in another field. (Please specify _______)
7. Doctorate. (Please specify field _______. Please also specify field of Master's degree _______.)

In what area of maternal/child health do you practice, serve as administrative staff, or educate nurses or nursing students?
1. Obstetrical nursing.
2. Newborn nursery.
3. Neonatal ICU.
4. Pediatrics or Adolescent nursing.
5. Community health nursing.
6. Ambulatory care nursing.
7. Other. (Please specify__________________)

How many years of experience do you have in nursing? (Including experience as a nursing administrator or educator.)
1. Less than one.
2. 1-4 years.
3. 5-10 years.
4. 11-15 years.
5. 16-20 years.
6. 21-25 years.
7. 26-30 years.
8. More than 31 years.

How many years of experience do you have in maternal/child health nursing? (Including experience as an administrator or educator in this field.)
1. less than one.
2. 1-4 years.
3. 5-10 years.
4. 11-15 years.
5. 16-20 years.
6. 21-25 years.
7. 26-30 years.
8. More than 31 years.

What type of position do you hold?
1. Staff nurse.
2. Head nurse or supervisor.
3. Inservice educator.
4. Faculty at a school of nursing. (Type of Program? ____________)
5. Clinical nurse specialist.
7. School nurse.
8. Community health nurse.
11. Other (Please specify ________________).

How many children do you have of your own?
1. None.
2. 1
3. 2-3
4. 4 or more.

Have you had experience with children other than your own or in nursing?
1. Yes.
2. No.

If yes, please indicate in what capacity. (Examples: as a babysitter, foster parent, Sunday school teacher, Boy or Girl Scout leader, etc.)

Do you use nursing diagnosis in your setting of practice or educational institution?
1. Yes.
2. No.

Have you used it in other service or educational settings?
1. Yes.
2. No.

If yes, (to either question) how long have you used (did you use) nursing diagnosis in your practice/teaching experience?
1. Less than one year.
2. 1 year.
3. 2 years.
4. 3 years.
5. 4 years.
6. More than 4 years.
How long did you use nursing diagnosis during your nursing education?
1. I did not use it during any of my nursing education.
2. 1 year.
3. 2 years.
4. 3 years.
5. 4 years.
6. More than 4 years.

If you used nursing diagnosis during your nursing education, at which level did you use it? (Indicate all that apply.)
1. Diploma level.
2. Associate degree level.
3. Baccalaureate degree level.
4. Masters' degree level.
5. Doctoral degree level.

If you use (used) nursing diagnosis, do (did) you use the list of the North American Nursing Diagnosis Association?
1. Yes.
2. No.

If yes, how many years have you been using (did you use) the list?
1. Less than one.
2. 1-2.
3. 3-4.
4. More than 4 years.

If you have used other lists of nursing diagnoses (such as those of the University of Toronto, or of the Visiting Nurse Association of Omaha, Nebraska) please indicate these here, with an estimation of how long you used them.

THANK YOU! YOUR RESPONSES ARE GREATLY APPRECIATED!
Bryan was a 17 month old boy who was being admitted to our unit for the 10th time this year. He had spent parts of each month of his life since the age of six months in the hospital for various medical reasons, including pneumonia, gastroesophageal reflux, and chronic diarrhea of unknown cause. His mother had completed formal training to be a medical transcriptionist, but had not worked since the birth of Bryan's older sister, three years earlier. Bryan's father was often gone from the home, due to his job as a truck driver, but when his father had visited Bryan on previous admissions, he actively played with the little boy. Bryan's sister stayed with her grandmother when Bryan was in the hospital, since Bryan's mother roomed-in with him. Bryan's mom stated she always cried when Bryan went to the hospital because she left her daughter.

The admitting nurse found that Bryan, at time of admission, was afebrile, had normal vital signs, and was in no apparent distress. His weight and height were found to fall at the 5th percentile on the growth charts. His mother stated that he was being admitted for further diagnostic workup of his diarrhea in anticipation of increasing his dietary allowances. At the time of admission, it had been 24 hours since his last bowel movement, and Bryan's perineal area had no redness or rash. In fact, his mother stated, Bryan had no problems recently with his respiratory status or with excessively frequent stools.

Bryan, during the interview, was noted to point and grunt at things he wanted. When asked, mom stated that Bryan really did not say any words at all. His method of communication was to point and grunt, as he was now. Then, mom stated, his parents and grandparents usually get him what he desires, as he could not walk, and rarely crawls.

Bryan was eating a liquid or clear liquid diet at home by physician order, and took this by bottle only. Usual selections included soy formula, with rice cereal added, jello water, gatorade, or High C. On occasion, he took bananas, plain applesauce, bread, and chicken if his mom spoon-fed him and if his problems with diarrhea allowed. Bryan refused to use a cup or spoon to eat whenever these were offered to him.

Based on this case study, what is your major nursing diagnosis for Bryan? (It is not necessary to use the "accepted" list of the North American Nursing Diagnosis Association.)

Please cite as many pieces of data that you can which led you to make this diagnosis. In recognition that not all of these data were of the same importance in making the diagnosis, please asterisk or star the data you thought were the critical data cues.

If you have made other nursing diagnoses, please note them here.
APPENDIX D -- LETTER TO CONTENT VALIDITY EXPERTS

Dear ____________________,

To fulfill requirements for a thesis for completion of a master's degree in nursing, I am conducting research to determine the ability of nurses in the field of maternal/child health to identify (diagnose) developmental lags in children. The enclosed tools have been developed for data collection in this study. As you have had experience relating to this area, your input as to the adequacy of the case study tool to accurately depict a child with a developmental lag is requested.

Please keep in mind when evaluating the tool that other data have been included in the case study so as to present a more realistic clinical example. The study has been adapted from an actual case, with biographical data changed to protect the privacy of the child and family presented. It is therefore believed to be fairly realistic. What is of special interest to me, however, is your assessment of adequacy and accuracy of data on developmental status, and your input on other data which you feel should be included or deleted. Also, the questionnaire relating to the respondents' experiences, education, and experience with nursing diagnosis is included to inform you of the types of factors I have determined may be contributors to the ability of the respondents to diagnose developmental lags. If you have any further ideas on the types of contributing factors, please also indicate these.

Please write your assessment of these tools on the sheet provided. For the case study, please rate the cue listed for its accuracy in depicting a child with a developmental lag as very relevant (1) to not relevant (4). Please also indicate if you feel the cues reflect an example of the concepts which they are identified with on the response sheet. Add any additional comments at the bottom of the sheet related to adequacy of the number of cues, ambiguity in the presentation of the case, or any other significant points.

For the respondent questionnaire, please comment on clarity of the questions asked as well comprehensiveness of the data which should be obtained. Please be sure to include your name, so I may contact you again if further clarification of your comments is necessary at a later time, and for acknowledgement of your contribution in the final written report. A self-addressed envelope is included for returning the tools to me. Thank you for your assistance.

Sincerely,

Cynthia Peltier Coviak, R.N.
M.S.-N. Student,
Grand Valley State College
CONTENT VALIDITY RATING FORM

Please indicate whether you feel the cues from the case study which are listed below are accurate and relevant in describing a developmental lag in a 17 month old child by rating them from 1-4. (Circle your choice.)

1--Very relevant and accurate
2--Moderately relevant and accurate
3--Somewhat relevant and accurate
4--Not relevant or accurate at all

CUE: RATING:
Child had spent parts of each month of his life since the age of 6 months in hospital. 1 2 3 4
Child's height and weight were found to be at the 5th percentile on growth charts. 1 2 3 4
Child pointed and grunted at objects during the interview. 1 2 3 4
The mother stated he did not say any words at all. 1 2 3 4
The child could not walk yet. 1 2 3 4
The child rarely crawled. 1 2 3 4
The child ate by bottle only. 1 2 3 4
The child refused to use a cup or spoon to eat. 1 2 3 4

Please indicate your agreement or disagreement with the following statements. (Circle your choice.)

AGREE   DISAGREE
The finding that the child's height and weight fell at the 5th percentile is a clinical example of altered physical growth.

AGREE   DISAGREE
The child's history of having spent parts of each month of his life since the age of six months in the hospital could be a factor affecting his development.

AGREE   DISAGREE
Observing a 17 month-old only pointing and grunting at objects during an assessment interview would cause you to suspect a language lag.
Hearing the mother of a 17 month-old report that he did not say any words at all would lead you to suspect he had a language lag.

Finding that a 17 month-old child could not walk yet would lead you to suspect a motor lag.

Finding that a 17 month-old seldom crawled would lead you to suspect a motor lag.

A self-feeding practice of taking foods by bottle only in a 17 month-old could be one sign of a deficit in manipulative skills.

Refusal of a 17 month-old to use a spoon or cup is one example of a self-care deficit for that age group.

Developmental lags often have their origins in childhood.

THANK YOU FOR YOUR ASSISTANCE WITH THIS RESEARCH.
APPENDIX E

LIST OF CONTENT VALIDITY EXPERTS

Joyce French, R.N., M.S.N.
Director, Maternal-Child Health Dept.
Blodgett Memorial Medical Center
East Grand Rapids, MI

Martha McGrail, R.N., B.S.N., M.A.
Coordinator, Nursing of Children
Butterworth Hospital School of Nursing
Grand Rapids, MI

Amelia Schechinger, R.N., M.S.N.
Nursing Education & Development Department
St. Christopher's Hospital for Children
Philadelphia, PA

Carolyn Vieweg, R.N., M.S.N., P.N.P.
Nursing Education & Development Department
St. Christopher's Hospital for Children
Philadelphia, PA
Bryan was a 17 month old boy who was being admitted to our unit for the 10th time this year. Since the age of six months, he had spent parts of each month of his life in the hospital for various medical reasons, including pneumonia, gastroesophageal reflux, and chronic diarrhea of unknown cause. His mother had completed formal training to be a medical transcriptionist, but had not worked since the birth of Bryan's older sister, three years earlier. Bryan's father was often gone from the home, due to his job as a truck driver, but when the father had visited Bryan on previous admissions, he played with the little boy, offering him toys to investigate, and taking him for stroller rides in the hallway. Bryan's sister stayed with her grandmother when Bryan was in the hospital, since Bryan's mother always roomed-in with him. Bryan's mom stated she always left the house crying when Bryan went to the hospital because she had to leave her daughter to be with Bryan.

The admitting nurse found that Bryan, at time of admission, was afebrile, had normal vital signs, and was in no apparent distress. His weight and height, which were at the 75th percentile at birth, were found to fall at the 5th percentile on the growth charts. His mother stated that he was being admitted for further diagnostic workup of his diarrhea in anticipation of increasing his dietary allowances. At the time of admission, it had been 24 hours since his last bowel movement, and Bryan's perineal area had no redness or rash. In fact, his mother stated, Bryan had no problems recently with his respiratory status or with frequent stools.

Bryan, during the interview, was noted to point and grunt at things he wanted. When asked, mom stated that Bryan really did not say any words at all. His method of communication was to point and grunt, as he was now. Then, mom stated, his parents and grandparents usually get him what he desires, as he could not walk, and rarely crawls. During the interview, it was also noted that he would accept toys from the nurse, but quickly turned his face back onto his mother's chest after taking them.

Bryan was eating a liquid or clear liquid diet at home by physician order, and took this by bottle only. Usual selections included soy formula, with rice cereal added, jello water, Gatorade, or Hi C. On occasion, he took bananas, plain applesauce, bread, and chicken if his mom spoon-fed him and if his problems with diarrhea allowed. Bryan refused to use a cup or spoon to eat whenever these were offered to him.

Based on this case study, what is your major nursing diagnosis for Bryan? (It is not necessary to use the "accepted" list of the North American Nursing Diagnosis Association.)

Please cite as many pieces of data that you can which led you to make this diagnosis. In recognition that not all of these data were of the same importance in making the diagnosis, please asterisk or star the data you thought were the critical data cues.

If you have made other nursing diagnoses, please note them here.
Dear MNA member:

As you are a member of the Division of Maternal/Child Health, I am writing to you to ask your assistance in the completion of these questionnaires, relating to a nursing diagnosis to be proposed to the North American Nursing Diagnosis Association. I am a member of this organization, and have found that a number of the areas which maternal/child health nurses deal with have not been addressed when the organization has compiled its lists of diagnoses accepted for clinical testing. In this study, your responses to the case study questionnaire will be used to provide data on the abilities of maternal/child health nurses to diagnose the condition described. I am conducting this research as partial fulfillment of requirements for completion of my master's degree in nursing. This research will be reported in my thesis.

As a participant in this study, you will be asked to complete two forms: one is the case study form, in which you will be asked to identify what you feel is the client's primary problem (nursing diagnosis), the other is a personal profile of your experience, education, experience with nursing diagnosis, etc. You will be asked to answer these forms only once. It is expected that the completion of the two forms together should take no longer than 20 minutes. Your responses will be completely anonymous, in that no number will be assigned for coding of your responses until I receive your completed questionnaires. On completion of your questionnaires, you are asked to seal them in the provided return envelope together, and mail them back to me.

Consent to participate in the study will be assumed by your completion and return of the questionnaires. There will be no costs to you from this study. All costs of mailing are assumed by me. Potential benefits to you as a respondent include contribution to the body of research on nursing diagnoses (which at this time is fairly limited), and, potentially, increased awareness of the process of nursing diagnosis. As a respondent, you may request a copy of the research results be mailed to you on completion of the project. If this is your wish, please return to me the postcard which is included for that purpose in this mailing.

Your participation in this study is greatly appreciated. The information you can provide will be a valuable contribution to our profession. Thank you for your cooperation.

Sincerely,

Cynthia Peltier Coviax, R.N.
M.S.-N. Student,
Grand Valley State College
APPENDIX H -- PROFILE USED IN PILOT STUDY
PROFESSIONAL PROFILE QUESTIONNAIRE

Respondent no.____________________

Please respond to the following questions about yourself by CIRCLING your response and return this questionnaire with your case study responses.

1. At which level did you complete your basic education in nursing?
   1. Diploma in nursing.
   2. Associate's Degree in nursing.

2. Do you now hold a baccalaureate degree in nursing?
   1. Yes.
   2. No.

3. What is your highest level of education?
   1. Diploma in nursing
   2. Associate's Degree in nursing.
   4. Baccalaureate degree in another field. (Please specify ____________) e.g., education, psychology, etc.
   5. Masters degree in nursing.
   6. Masters degree in another field. (Please specify ____________) e.g., education, psychology, etc.
   7. Doctorate. (Please specify field ____________. Please also specify field of Master's degree___________.)

4. In what area of maternal/child health do you practice, serve as administrative staff, or educate nurses or nursing students?
   1. Obstetrical nursing.
   2. Newborn nursery.
   3. Neonatal ICU.
   4. Pediatrics or Adolescent nursing.
   5. Community health nursing.
   6. Ambulatory care nursing.
   7. Other. (Please specify____________________)

5. How many years of experience do you have in nursing? (Including experience as a nursing administrator or educator.)
   1. Less than one.
   2. 1-4 years.
   3. 5-10 years.
   4. 11-15 years.
   5. 16-20 years.
   6. 21-25 years.
   7. 26-30 years.
   8. More than 31 years.
6. How many years of experience do you have in maternal/child health nursing? (Including experience as an administrator or educator in this field.)
   1. less than one.
   2. 1-4 years.
   3. 5-10 years.
   4. 11-15 years.
   5. 16-20 years.
   6. 21-25 years.
   7. 26-30 years.
   8. More than 31 years.

7. What type of position do you hold?
   1. Staff nurse.
   2. Head nurse or supervisor.
   3. Inservice educator.
   4. Faculty at a school of nursing. (Type of Program?__________)
   5. Clinical nurse specialist.
   7. School nurse.
   8. Community health nurse.
   11. Other (Please specify ____________).

8. How many children do you have of your own?
   1. None.
   2. 1
   3. 2-3
   4. 4 or more.

9. Have you had experience with children other than your own or in nursing?
   1. Yes.
   2. No.

10. If yes, please indicate in what capacity. (Examples: as a baby-sitter, foster parent, Sunday school teacher, Boy or Girl Scout leader, etc.) ________________________________.

11. Do you use nursing diagnosis in your setting of practice or educational institution?
    1. Yes.
    2. No.

12. Have you used it in other service or educational settings?
    1. Yes.
    2. No.
13. If yes, (to either #11 or #12) how long have you used (did you use) nursing diagnosis in your practice/teaching experience?
   1. Less than one year.
   2. 1 year.
   3. 2 years.
   4. 3 years.
   5. 4 years.
   6. More than 4 years.

14. How long did you use nursing diagnosis during your nursing education?
   1. I did not use it during any of my nursing education.
   2. 1 year.
   3. 2 years.
   4. 3 years.
   5. 4 years.
   6. More than 4 years.

15. If you used nursing diagnosis during your nursing education, at which level did you use it? (Indicate all that apply.)
   1. Diploma level.
   2. Associate degree level.
   3. Baccalaureate degree level.
   4. Masters' degree level.
   5. Doctoral degree level.

16. If you use (used) nursing diagnosis, do (did) you use the list of the North American Nursing Diagnosis Association?
   1. Yes.
   2. No.

17. If yes, how many years have you been using (did you use) the list?
   1. Less than one.
   2. 1-2.
   3. 3-4.
   4. More than 4 years.

18. If you have used other lists of nursing diagnoses (such as those of the University of Toronto, or of the Visiting Nurse Association of Omaha, Nebraska) please indicate these here, with an estimation of how long you used them.

THANK YOU! YOUR RESPONSES ARE GREATLY APPRECIATED!
Please send to me a copy of the results of the study on nursing diagnosis when they are available.

(Name)

(Address)

(City)    (State)    (Zipcode)
APPENDIX J — REMINDER POSTCARD

Dear M.N.A. member:

A couple weeks ago you should have received a mailing containing two questionnaires asking you to derive a nursing diagnosis for a child in a case study, and to provide some professional data about yourself. If you have already returned these questionnaires, I would like to thank you for your prompt response, and your willingness to participate in the research. If you have not returned them at this point, please take a few minutes to do so and return them to me as soon as possible.

Again, thank you for your participation.

Sincerely,

Cynthia P. Coviak, R.N.
Bryan was a 17 month old boy who was being admitted to our unit for the 10th time this year. Since the age of six months, he had spent parts of each month of his life in the hospital for various medical reasons, including pneumonia, gastroesophageal reflux, and chronic diarrhea of unknown cause. His mother had completed formal training to be a medical transcriptionist, but had not worked since the birth of Bryan's older sister, three years earlier. Bryan's father was often gone from the home, due to his job as a truck driver, but when the father had visited Bryan on previous admissions, he played with the little boy, offering him toys to investigate, and taking him for stroller rides in the hallway. Bryan's sister stayed with her grandmother when Bryan was in the hospital, since Bryan's mother always roomed-in with him. Bryan's mom stated she always left the house crying when Bryan went to the hospital because she had to leave her daughter to be with Bryan.

The admitting nurse found that Bryan, at time of admission, was afebrile, had normal vital signs, and was in no apparent distress. His weight and height, which were at the 75th percentile at birth, were found to fall at the 5th percentile on the growth charts. His mother stated that he was being admitted for further diagnostic workup of his diarrhea in anticipation of increasing his dietary allowances. At the time of admission, it had been 24 hours since his last bowel movement, and Bryan's perineal area had no redness or rash. In fact, his mother stated, Bryan had no problems recently with his respiratory status or with frequent stools.

Bryan, during the interview, was noted to point and grunt at things he wanted. When asked, mom stated that Bryan really did not say any words at all. His method of communication was to point and grunt, as he was now. Then, mom stated, his parents and grandparents usually get him what he desires, as he could not walk, and rarely crawls. During the interview, it was also noted that he would accept toys from the nurse, but quickly turned his face back onto his mother's chest after taking them.

Bryan was eating a liquid or clear liquid diet at home by physician order, and took this by bottle only. Usual selections included soy formula, with rice cereal added, jello water, Gatorade, or Hi C. On occasion, he took bananas, plain applesauce, bread, and chicken if his mom spoon-fed him and if his problems with diarrhea allowed. Bryan refused to use a cup or spoon to eat whenever these were offered to him.

Based on this case study, what is your major nursing diagnosis for Bryan? (It is not necessary to use the "accepted" list of the North American Nursing Diagnosis Association.)

Please cite as many pieces of data that you can which led you to make this diagnosis. You may list them here, or underline or highlight them in the case study. Additionally, in recognition that not all of these data were of the same importance in making the diagnosis, please asterisk or star the data you thought were the critical data cues.

If you have made other nursing diagnoses, please note them here.
APPENDIX L -- PROFILE USED IN FORMAL STUDY

PROFESSIONAL PROFILE QUESTIONNAIRE

Respondent no.__________________

Please respond to the following questions about yourself by CIRCLEING your response and return this questionnaire with your case study responses.

1. At which level did you complete your basic education in nursing?
   1. Diploma in nursing.
   2. Associate's Degree in nursing.

2. Do you now hold a baccalaureate degree in nursing?
   1. Yes.
   2. No.

3. What is your highest level of education?
   1. Diploma in nursing
   2. Associate's Degree in nursing.
   4. Baccalaureate degree in another field. (Please specify__________________________
e.g., education, psychology, etc.
   5. Masters degree in nursing.
   6. Masters degree in another field. (Please specify__________________________
e.g., education, psychology, etc.
   7. Doctorate. (Please specify field___________________________. Please also
      specify field of Master's degree___________________________.)

4. In what area of maternal/child health do you practice, serve as administrative staff, or educate nurses or nursing students?
   1. Obstetrical nursing.
   2. Newborn nursery.
   3. Neonatal ICU.
   4. Pediatrics or Adolescent nursing.
   5. Community health nursing.
   6. Ambulatory care nursing.
   7. Other. (Please specify________________________________)

5. How many years of experience do you have in nursing? (Including experience as a nursing administrator or educator.)
   1. Less than one.
   2. 1-4 years.
   3. 5-10 years.
   4. 11-15 years.
   5. 16-20 years.
   6. 21-25 years.
   7. 26-30 years.
   8. More than 31 years.
6. How many years of experience do you have in maternal/child health nursing? (Including experience as an administrator or educator in this field.)
   1. less than one.
   2. 1-4 years.
   3. 5-10 years.
   4. 11-15 years.
   5. 16-20 years.
   6. 21-25 years.
   7. 26-30 years.
   8. More than 31 years.

7. What is your current status?
   1. Currently practicing.
   2. Temporarily not practicing.
   3. Permanently not practicing/Retired.

8. What type of position do you hold?
   1. Staff nurse.
   2. Head nurse or supervisor.
   3. Inservice educator.
   4. Faculty at a school of nursing. (Type of Program? __________)
   5. Clinical nurse specialist.
   7. School nurse.
   8. Community health nurse.
   11. Other (Please specify __________).

9. In what type of area do you live?
   1. Urban.
   2. Suburban.
   3. Rural.

10. In what type of area do you practice?
    1. Not currently practicing.
    2. Urban.
    4. Rural.

11. From the map provided below, please indicate the region of the state you live in.
    1. Region 1
    2. Region 2
    3. Region 3
    4. Region 4
    5. Region 5
    6. Region 6
    7. Region 7
    8. Region 8
    9. Region 9
    10. I live outside of Michigan.
12. How many children do you have of your own?
   1. None.
   2. 1
   3. 2-3
   4. 4 or more.

13. Have you had experience with children other than your own or in nursing?
   1. Yes.
   2. No.

14. If yes, please indicate in what capacity. (Examples: as a babysitter, foster parent, Sunday school teacher, Boy or Girl Scout leader, etc.) ____________________________________________________.

15. Do you use nursing diagnosis in your setting of practice or educational institution?
   1. Yes.
   2. No.

16. Have you used it in other service or educational settings?
   1. Yes.
   2. No.

*17. If yes, (to either #15 or #16) how long have you used (did you use) nursing diagnosis in your practice/teaching experience?
   1. Less than one year.
   2. 1 year.
   3. 2 years.
   4. 3 years.
   5. 4 years.
   6. More than 4 years.

18. How long did you use nursing diagnosis during your nursing education?
   1. I did not use it during any of my nursing education.
   2. 1 year.
   3. 2 years.
   4. 3 years.
   5. 4 years.
   6. More than 4 years.

**19. If you used nursing diagnosis during your nursing education, at which level did you use it? (Indicate all that apply.)
   1. Diploma level.
   2. Associate degree level.
   3. Baccalaureate degree level.
   4. Masters' degree level.
   5. Doctoral degree level.
20. If you use (used) nursing diagnosis, do (did) you use the list of the North American Nursing Diagnosis Association?
   1. Yes.
   2. No.

21. If yes, how many years have you been using (did you use) the list?
   1. Less than one.
   2. 1-2.
   3. 3-4.
   4. More than 4 years.

22. If you have used other lists of nursing diagnoses (such as those of the University of Toronto, or of the Visiting Nurse Association of Omaha, Nebraska) please indicate these here, with an estimation of how long you used them.

THANK YOU! YOUR RESPONSES ARE GREATLY APPRECIATED!

* Question no. 17 had a printing error in the questionnaires that were mailed. Those questionnaires read:
  17. If yes, (to either #11 or #12)....

** Question no. 19 had a printing error in the questionnaires that were mailed. Those questionnaires read:
  19. If you used nursing diagnosis during your clinical education,...