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# 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

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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

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

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.

ALTERATION IN GROWTH AND DEVELOPMENT:

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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 simultaneously 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, manipu-
lative

--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 profession-
als 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 Coviak 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

Level I                                          ALTERATIONS IN ELIMINATION

Level II                              Bowel                              Urinary

Level III        Constipation   Diarrhea   Incontinence      [???]      Incontinence
                                                                         (identified, but
                                                                          not on "accepted"
                                                                          list)
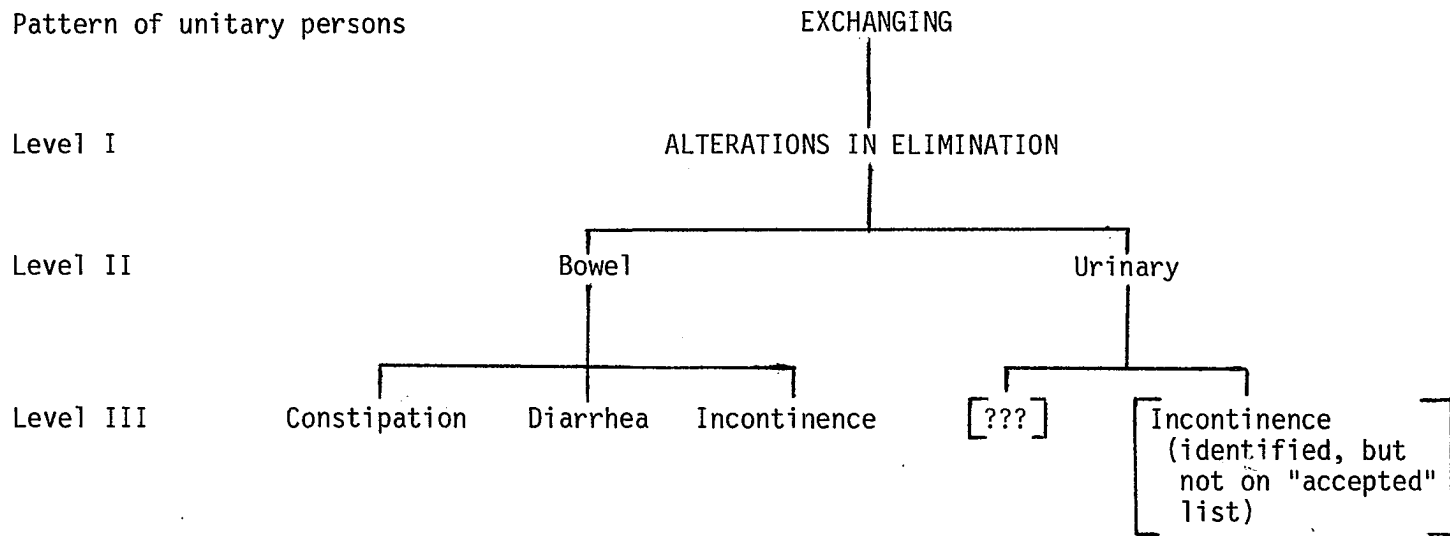
    Adapted from:  Kritek, P.B., "Report of the work on taxonomies."  In Kim, M.J., McFarland,
G.K. & McLane, A.M. (eds.), Classification of Nursing Diagnoses:  Proceedings of the Fifth Nation-
al Conference, pp. 48-50.  St. Louis:  C.V. Mosby Co., 1984.

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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 "handi-

capped" 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 develop-

mental 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 pa-
tients' continuous self-care requisites, and formulate
the courses of action necessary for using selected proc-
cesses 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 ($p < .05$).

## NULL HYPOTHESES

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 develop-

ment" 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 manipu-

   lative skills typical of age

--altered physical growth

--inability to perform self-care activities appro-

   priate 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 sug-
gested 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 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 question-naire (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 childrens' 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 childrens'

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

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

Table 2

Agreement of Experts For Cue Interpretation

| Statement | Response choice | |
|---|---|---|
| | Agree | Disagree |
| | Frequency of response | |
| The finding that the child's height and weight fell at the 5th percentile is a clinical example of altered physical growth. | 1 | 3 |
| 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. | 4 | |
| Observing a 17 month-old only pointing and grunting at objects during an assessment interview would cause you to suspect a language lag. | 4 (one expert qualified her answer with "could") | |

| Table 2 (cont.) | Agree | Disagree |
|---|---|---|
| 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. | 3 | 1 |
| Finding that a 17 month-old child could not walk yet would lead you to suspect a motor lag. | 4 | |
| Finding that a 17 month-old seldom crawled would lead you to suspect a motor lag. | 4 | |
| 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. | 4 | |
| Refusal of a 17 month-old to use a spoon or cup is one example of a self-care deficit for that age group. | 2 | 2 |
| Developmental lags often have their origins in childhood. | 4 (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 Coviak 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 re-liability 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 con-sidering 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 tech-
niques, 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 diagno-
sis 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 simi-

lar, 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

| Specialty/Experience Grouping | Agreement ratio for diagnosis | |
|---|---|---|
| | Including FTT | Excluding FTT |
| Clinical specialty | | |
| Pediatrics/Adolescent | .50 | .46 |
| Obstetrical | .38 | .13 |
| Neonatal ICU | .40 | .40 |
| Newborn Nursery | .33 | .33 |
| Community health | .50 | .50 |
| Ambulatory health | .50 | 0.00 |
| Other | .57 | .57 |
| Experience with nursing diagnosis | | |
| None | .14 | 0.00 |
| Practice only | .43 | .36 |
| Education only | .50 | .50 |
| Practice and education | .52 | .52 |

| Table 3 (cont.) | Including FTT | Excluding FTT |
|---|---|---|
| Less than 4 years experience | .60 | .60 |
| More than 4 years experience | .48 | .48 |
| Highest educational level | | |
| Doctoral degree, Other | 1.00 | 1.00 |
| Master's degree, Nursing | .50 | .38 |
| Master's degree, Other | .67 | .67 |
| Baccalaureate degree, Nursing | .53 | .53 |
| Baccalaureate degree, Other | .67 | .33 |
| Associate degree | .45 | .45 |
| Diploma | 0.00 | 0.00 |
| Years of experience in M.C.H. | | |
| Less than 1 | .80 | .40 |
| 1-4 years | .42 | .42 |
| 5-10 years | .54 | .42 |
| 11-15 years | .25 | .25 |
| 16-20 years | .25 | .25 |
| 21-25 years | 1.00 | .67 |
| 26-30 years | 0.00 | 0.00 |
| More than 31 years | ---- | ---- |
| None | .50 | .50 |

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 <u>primary</u> 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 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 4

Basic Level and Current Levels of Education of Responding Nurses

| Educational Level | Current level | | Basic level | |
|---|---|---|---|---|
| | $\underline{n}$ | Percent | $\underline{n}$ | Percent |
| Diploma | 9 | 15.0 | 21 | 35.0 |
| Associate Degree | 11 | 18.3 | 14 | 23.3 |
| Baccalaureate: Nursing | 17 | 28.3 | 25 | 41.7 |
| Baccalaureate: Other fields | 3 | 5.0 | | |
| Master's degree: Nursing | 16 | 26.7 | | |
| Master's degree: Other field | 3 | 5.0 | | |
| Doctorate | 1 | 1.7 | | |

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

| Nursing Field | Frequency | Percent |
|---|---|---|
| Child/Adolescent health | 24 | 40.0 |
| Community health | 10 | 16.7 |
| Maternity Nursing | 8 | 13.3 |
| Neonatal ICU | 5 | 8.3 |
| Newborn Nursery | 3 | 5.0 |
| Ambulatory care | 2 | 3.3 |
| Other | 7 | 11.7 |
| Unreported | 1 | 1.7 |

Table 6

Number of Years of Experience of Respondents

| Years of experience | In Nursing | | In Maternal/Child Health | |
| --- | --- | --- | --- | --- |
| | Frequency | Percent | Frequency | Percent |
| Less than one | 3 | 5.0 | 5 | 8.3 |
| 1-4 years | 12 | 20.0 | 12 | 20.0 |
| 5-10 years | 14 | 23.3 | 24 | 40.0 |
| 11-15 years | 9 | 15.0 | 8 | 13.3 |
| 16-20 years | 12 | 20.0 | 4 | 6.7 |
| 21-25 years | 4 | 6.7 | 3 | 5.0 |
| 26-30 years | 2 | 3.3 | 1 | 1.7 |
| More than 31 years | 4 | 6.7 | -- | --- |
| Not reported | | | 1 | 1.7 |
| None | | | 2 | 3.3 |

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 7

Nursing Positions Held by Nurse Respondents

| Type of position | Frequency | Percent |
|---|---|---|
| Staff nurse | 25 | 41.7 |
| Clinical nurse specialist | 6 | 10.0 |
| Community health nurse | 6 | 10.0 |
| Administrator | 5 | 8.3 |
| Faculty at nursing school | 4 | 6.7 |
| Head nurse/Supervisor | 2 | 3.3 |
| Inservice educator | 2 | 3.3 |
| Nurse practitioner | 2 | 3.3 |
| Patient educator | 2 | 3.3 |
| Ambulatory care nurse | 1 | 1.7 |
| Other | 3 | 5.0 |
| Not reported | 2 | 3.3 |

Table 8

Type of Area of Residence and Practice

| Type of area of residence | Frequency | Percent |
|---|---|---|
| Urban | 22 | 36.7 |
| Suburban | 24 | 40.0 |
| Rural | 13 | 21.7 |
| Not reported | 1 | 1.7 |

| Type of area of practice | | |
|---|---|---|
| Urban | 34 | 56.7 |
| Suburban | 11 | 18.3 |
| Rural | 9 | 15.0 |
| Not currently practicing | 6 | 10.0 |

Table 9

Region of Residence of Respondent (Within Michigan)

| Region number | Frequency | Percent |
|---|---|---|
| One | 37 | 61.7 |
| Two | 3 | 5.0 |
| Three | 5 | 8.3 |
| Four | 5 | 8.3 |
| Five | 3 | 5.0 |
| Six | 2 | 3.3 |
| Seven | --- | ---- |
| Eight | 1 | 1.7 |
| Nine | 3 | 5.0 |
| Lives outside Michigan | 1 | 1.7 |

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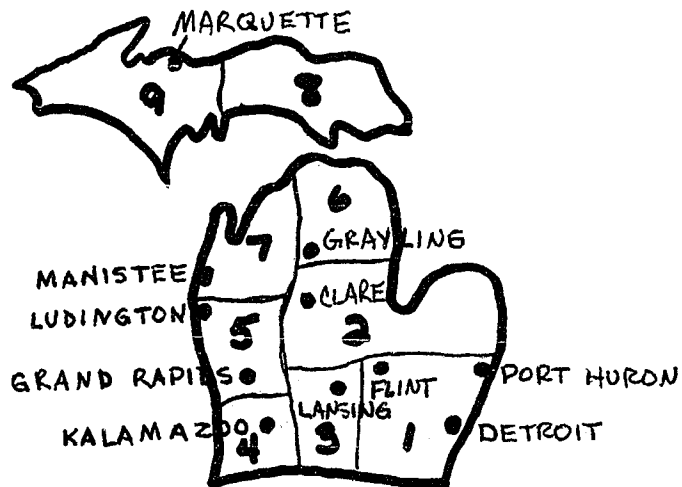
nurses from those regions identified, this could indicate a greater need for extension courses from the universities of the state, and for continuing education courses on nursing diagnosis. In the formal study, the data did not indicate that need.

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 Question-
naire related to the respondents' experience with nursing diagno-
sis. 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 educa-
tion (58.3%). Table 10 summarizes the numbers of years of

Table 10

Years of Experience With Nursing Diagnosis

| Years of experience | Practice | | Nursing Education | |
|---|---|---|---|---|
| | Frequency | Percent | Frequency | Percent |
| Less than 1 year | 3 | 5.0 | ---- | ---- |
| One year | 1 | 1.7 | 8 | 13.3 |
| Two years | 8 | 13.3 | 15 | 25.0 |
| Three years | 4 | 6.7 | 5 | 8.3 |
| Four years | 7 | 11.7 | 5 | 8.3 |
| More than 4 years | 20 | 33.3 | 2 | 3.3 |
| Never used | 9 | 15.0 | 21 | 35.0 |
| Not reported | 8 | 13.3 | 4 | 6.7 |

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 yout cftnlng 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

| Level of Education | Frequency | Percent |
|---|---|---|
| Diploma | 1 | 1.7 |
| Associate Degree | 7 | 11.7 |
| Baccalaureate Degree | 12 | 20.0 |
| Master's Degree | 14 | 23.3 |
| Doctoral Degree | 1 | 1.7 |
| Never used in Education | 21 | 35.0 |
| Not reported | 4 | 6.7 |

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

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

Table 13

Frequencies of Identification of Secondary Diagnoses

| Category | As Etiology | | As Alternate Diagnosis | |
|---|---|---|---|---|
| | Frequency | Percent | Frequency | Percent |
| Developmental lag | | | 15 | 25.0 |
| Altered nutrition | | | 15 | 25.0 |
| Altered family process | 1 | 1.7 | 15 | 25.0 |
| Altered parenting | 2 | 3.3 | 14 | 23.3 |
| Alteration in one aspect of growth & development | | | 7 | 11.7 |
| Altered bowel elim. | | | 7 | 11.7 |
| Knowledge deficit | 1 | 1.7 | 6 | 10.0 |
| Ineffective coping | | | 5 | 8.3 |
| Failure to thrive | | | 4 | 6.7 |
| Altered attachment | 1 | 1.7 | 4 | 6.7 |
| Emotional upset | | | 3 | 5.0 |
| Medical diagnosis, not FTT | 1 | 1.7 | 3 | 5.0 |

| Table 13 (cont.) | Frequency | Percent | Frequency | Percent |
|---|---|---|---|---|
| Altered growth & development | 1 | 1.7 | 1 | 1.7 |
| Self-care deficit | 1 | 1.7 | 1 | 1.7 |
| Anxiety of child related to repeated hospitalizations | | | 1 | 1.7 |
| "Adequate and avail- able support system" | | | 1 | 1.7 |

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 develop-
mental 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 di-
agnosis 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 di-
agnosis 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 ($\underline{p} < .05$) 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 respon-
dents 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 ex-
pertise 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 exper-
tise 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 repondents 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

| Analysis | Chi Square | $\underline{p}$ |
|---|---|---|
| FTT-IN | | |
| All respondents | 11.15 | .0109[a] |
| Child/adolescent health specialty | 4.19 | .2416 |
| Other nursing specialties | 3.44 | .3293 |
| FTT-EX | | |
| All respondents | 10.42 | .0153[b] |
| Child/adolescent health specialty | 6.82 | .0778[c] |
| Other nursing specialties | 1.32 | .7240 |

Note: $\underline{df}$ = 3, for all analyses in this table.

[a] See Table 15

[b] See Table 16

[c] 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

| Expertise Rank | Diagnosis of Altered Growth/ Development, FTT-IN Analysis | | |
|---|---|---|---|
| | Did diagnose | Did not diagnose | $\underline{n}$ |
| Lowest | 9 | 1 | 10 |
| Low-Moderate | 17 | 9 | 26 |
| Moderate-High | 8 | 0 | 8 |
| Highest | 16 | 0 | 16 |
| Total | 50 | 10 | 60 |

Note: Chi Square = 11.15, $\underline{df}$ = 3, $\underline{p} < .0109$, $\underline{N}$ = 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

| Expertise Rank | Diagnosis of Altered Growth/ Development | | |
| --- | --- | --- | --- |
| | Did diagnose | Did not diagnose | n |
| All respondents ($\underline{N}$ = 60)[a] | | | |
| Lowest | 7 | 3 | 10 |
| Low-Moderate | 13 | 13 | 26 |
| Moderate-High | 7 | 1 | 8 |
| Highest | 15 | 1 | 16 |
| Total | 42 | 18 | 60 |
| Child/Adolescent health specialty ($\underline{n}$ = 24)[b] | | | |
| Lowest | 3 | 3 | 6 |
| Low-Moderate | 4 | 2 | 8 |
| Moderate-High | 7 | 0 | 7 |
| Highest | 5 | 0 | 5 |
| Total | 19 | 5 | 24 |

[a]Chi Square = 10.42, $\underline{df}$ = 3, $\underline{p}$ <.0153, $\underline{N}$ = 60.

[b]Chi Square = 6.82, $\underline{df}$ = 3, $\underline{p}$ <.0778, $\underline{n}$ = 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

| Years of experience | Diagnosis of Altered Growth/ Development | | |
| --- | --- | --- | --- |
| | Did diagnose | Did not diagnose | $\underline{n}$ |
| Less than 1 | 4 | 1 | 5 |
| 1-4 | 4 | 8 | 12 |
| 5-10 | 13 | 11 | 24 |
| 11-15 | 1 | 7 | 8 |
| 16-20 | 1 | 3 | 4 |
| 21-25 | 3 | 0 | 3 |
| 26-30 | 0 | 1 | 1 |
| None | 0 | 2 | 2 |
| Total | 26 | 33 | 59 |

Note: Chi Square = 14.17, $\underline{df}$ = 7, $\underline{p} < .0483$, $\underline{n}$ = 59.

of diagnosis of a developmental alteration as primary diagnosis
were not achieved for any of the dimensions comprising the exper-
tise 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 respon-
dent'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 Diag-

nosis of Altered Growth and Development as Either Primary or

Secondary Diagnosis

| Highest education attained | FTT-IN Analysis[a] | | FTT-EX Analysis[b] | | |
|---|---|---|---|---|---|
| | Did diagnose | Did not | Did diagnose | Did not | $\underline{n}$ |
| Diploma | 3 | 6 | 2 | 7 | 9 |
| Associate Degree | 10 | 1 | 9 | 2 | 11 |
| B.S., Nursing | 15 | 2 | 12 | 5 | 17 |
| Baccalaureate, other field | 2 | 1 | 1 | 2 | 3 |
| M.S., Nursing | 16 | 0 | 14 | 2 | 16 |
| Master's degree, other field | 3 | 0 | 3 | 0 | 3 |
| Doctorate | 1 | 0 | 1 | 0 | 1 |
| Total | 50 | 10 | 42 | 18 | 60 |

Note: $\underline{N}$ = 60 and $\underline{df}$ = 6 for both analyses.

[a] Chi Square = 21.55, $\underline{p}$ < .0015.

[b] Chi Square = 16.49, $\underline{p}$ < .0114.

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Table 19

Contingency Tables of Relation of Nursing Specialty to Diag-

nosis of Altered Growth and Development as Either Primary or

Secondary Diagnosis

| Nursing specialty area | FTT-IN Analysis[a] | | FTT-EX Analysis[b] | | |
|---|---|---|---|---|---|
| | Did diagnose | Did not | Did diagnose | Did not | n |
| Child/Adolescent health | 21 | 3 | 19 | 5 | 24 |
| Community health | 10 | 0 | 10 | 0 | 10 |
| Neonatal ICU | 5 | 0 | 4 | 1 | 5 |
| Maternity | 3 | 5 | 1 | 7 | 8 |
| Newborn Nursery | 3 | 0 | 3 | 0 | 3 |
| Ambulatory care | 2 | 0 | 1 | 1 | 2 |
| Other | 6 | 1 | 4 | 3 | 7 |
| Total | 50 | 9 | 42 | 17 | 59 |

Note: $N$ = 59 and df = 6 for both analyses.

[a] Chi Square = 17.56, $p < .007$.

[b] 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

| Nursing diagnosis experience level | Did diagnose | Did not diagnose | n |
|---|---|---|---|
| No experience | 0 | 7 | 7 |
| Practice only | 5 | 9 | 14 |
| Education only | 1 | 1 | 2 |
| Education & practice | 18 | 15 | 33 |
| Total | 24 | 32 | 56 |

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 develop-
ment 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 identi-
fied by the nurses from the case study with defining characteris-
tics proposed by Coviak 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 identi-
fied by those who diagnosed altered growth and development, devel-

Table 21

Signs and Symptoms Identified by Respondents

| Sign/Symptom | Etiology | Primary diagnosis | |
|---|---|---|---|
| | | Altered growth/ development | Other |
| Height & weight 5th percentile | | 38 | 12 |
| Child pointed and grunted | | 34 | 8 |
| Child couldn't walk | | 35 | 10 |
| Child rarely crawled | | 35 | 9 |
| Refused spoon/cup | | 33 | 10 |
| Ate by bottle only | | 28 | 8 |
| Child spoke no words | | 28 | 7 |
| "Repeated hospital- izations | 7 | 22 | 7 |
| Medical history | 2 | 21 | 9 |
| Paternal absences from the home | | 16 | 3 |
| Shy with nurse | | 15 | 3 |

| Table 21 (cont.) | | Altered G/D | Other |
|---|---|---|---|
| Altered bowel elim. | 3 | 14 | 6 |
| Mother roomed-in | | 13 | 1 |
| Altered nutrition | 3 | 12 | 7 |
| Play with father | | 5 | 1 |
| Self-care deficit, feeding | | 2 | 1 |
| "Motor/physical lag" | | 2 | 1 |
| "Manipulation skill deficit" | | 2 | |
| "Language lag" | | 1 | 2 |
| Other cues | | 32 | 9 |

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

| Sign/symptom | Frequency | Percent |
|---|---|---|
| Height and weight at fifth percentile | 44 | 73.3 |
| Child unable to walk | 40 | 66.7 |
| Child rarely crawled | 40 | 66.7 |
| Child "pointed and grunted" | 39 | 65.0 |
| Child refused spoon/ cup. | 39 | 65.0 |

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 indi-
cated 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 iden-
tified 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 di-
agnosis 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 23

Mean Numbers of Cues Starred by Respondents

| Analysis | $\underline{M}$ | $\underline{SD}$ |
|---|---|---|
| Altered growth and development as primary diagnosis | | |
| FTT-IN | 3.78 | 3.26 |
| FTT-EX | 3.38 | 3.57 |
| Altered growth and development as either primary/secondary | | |
| FTT-IN | 3.06 | 3.05 |
| FTT-EX | 2.81 | 3.21 |

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

| Analysis | Chi Square | p |
|----------|------------|---|
| Altered growth and development as primary diagnosis | | |
| FTT-IN | 2.80 | .094 |
| FTT-EX | 4.30 | .038[a] |
| Altered growth and development as either primary/secondary | | |
| FTT-IN | 2.29 | .130 |
| FTT-EX | .93 | .330 |

Note: df = 1 for all analyses.

[a] See Table 25

Table 25

Contingency Table of Relationship of Identification of 75% of

Validated Cues to Diagnosis of Altered Growth and Development

|  | FTT-EX Analysis | | |
|---|---|---|---|
|  | Did diagnose | Did not diagnose | n |
| Identified 75% of cues | 18 | 16 | 34 |
| Did not identify 75% of cues | 6 | 20 | 26 |
| Total | 24 | 36 | 60 |

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

| Variable | r | p | Interpretation[a] |
|---|---|---|---|
| No. of starred signs/symptoms | .238 | .070 | Low, small relationship |
| No. of signs/symptoms identified | .014 | .917 | Negligible relationship |
| No. of validated signs/symptoms identified | .024 | .855 | Negligible relationship |

[a]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[a]

| Nursing diagnosis experience level | Did diagnose | Did not diagnose | $\underline{n}$ |
|---|---|---|---|
| No experience | 0 | 7 | 7 |
| Practice only | 5 | 9 | 14 |
| Education only | 1 | 1 | 2 |
| Education & practice | 18 | 15 | 33 |
| Total | 24 | 32 | 56 |

Note: $\underline{n}$ = 56, Chi Square = 7.42, $\underline{df}$ = 3, $\underline{p}$ <.0595.

[a] FTT-IN analysis did not reveal a significant Chi Square result.

Table 28

Nursing Diagnosis Experience Variables with Significant Rela-
tionships to Diagnosis of Altered Growth and Development,
FTT-EX Analyses[a]

| Variable | Chi Square | p | df |
|---|---|---|---|
| Used nursing diagnosis in practice institution | 6.78 | .009 | 1 |
| Years of use of nursing diagnosis in practice | 15.46 | .017 | 6 |
| Years of use of nursing diagnosis in education | 11.55 | .040 | 5 |

[a] 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 develop-
mental 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 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. Nico-
letti, 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.

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APPENDICES

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 Associa-
tion.  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

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## 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·.

_____1675__names representing the Michigan Nurses Association's most current

list of members at a price of__4¢__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 Regis-

tered Nurses and agrees that the purchaser will use the labels only for the mail-

ing 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 Associa-

tion representatives in detail and which is described briefly as follows:

(Samples of the enclosures are attached)_____

_____Samples on file._____

_____

_____

Date:__11/19/84____          ███████████████████████
                                         Purchaser

Please send a deposit of 1/2 estimated cost.      GVSC MS-N. Student
     Check  for $33.50                                    Title
                enclosed

AGREEMENT APPROVED

MICHIGAN NURSES ASSOCIATION

BY_____

JSG:ec/9-26-74/

APPENDIX B -- ORIGINAL PROFILE
RESPONDENT PROFILE QUESTIONNAIRE

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.
    3. Baccalaureate 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.
    3. Baccalaureate 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.
6. Nurse practitioner.
7. School nurse.
8. Community health nurse.
9. Ambulatory care nurse.
10. Patient educator.
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!

CASE STUDY QUESTIONNAIRE

Respondent no._____

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 diarhhea 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 especial 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.

<div align="center">Sincerely,</div>

<div align="center">

Cynthia Peltier Coviak, R.N.
M.S.-N. Student,
Grand Valley State College
</div>

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             1  2  3  4
    life  since the age of 6 months in hospital.

Child's height and weight were found to be at          1  2  3  4
    the 5th percentile on growth charts.

Child pointed and grunted at objects during            1  2  3  4
    the interview.

The mother stated he did not say any words             1  2  3  4
    at all.

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.)


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

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

Observing a 17 month-old only pointing and             AGREE        DISAGREE
    grunting at objects during an assessment
    interview would cause you to suspect a lan-
    guage lag.

Hearing the mother of a 17 month-old report that       AGREE       DISAGREE
   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       AGREE       DISAGREE
   yet would lead you to suspect a motor lag.

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

A self-feeding practice of taking foods by             AGREE       DISAGREE
   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        AGREE       DISAGREE
   is one example of a self-care deficit for that
   age group.

Developmental lags often have their origins in         AGREE       DISAGREE
   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

CASE STUDY QUESTIONNAIRE

Respondent no._____

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 hall-way. 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 diarhhea 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 G -- INFORMATIONAL LETTER/CONSENT FORM

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 ques-
tionnaires, relating to a nursing diagnosis to be proposed to the North
American Nursing Diagnosis Association. I am a member of this organi-
zation, 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 par-
tial 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 complete-
ly anonymous, in that no number will be assigned for coding of your re-
sponses 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, poten-
tially, 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 informa-
tion you can provide will be a valuable contribution to our profession.
Thank you for your cooperation.

Sincerely,

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

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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.
     3. Baccalaureate 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.
     3. Baccalaureate 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 administra-
   tive 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.
   6. Nurse practitioner.
   7. School nurse.
   8. Community health nurse.
   9. Ambulatory care nurse.
   10. Patient educator.
   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!

APPENDIX I -- EXAMPLE OF POSTCARD FOR REQUEST FOR RESULTS

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 wil-
lingness 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.

Respondent no._____

    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 hall-way. 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 diarhhea 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.

## PROFESSIONAL PROFILE QUESTIONNAIRE
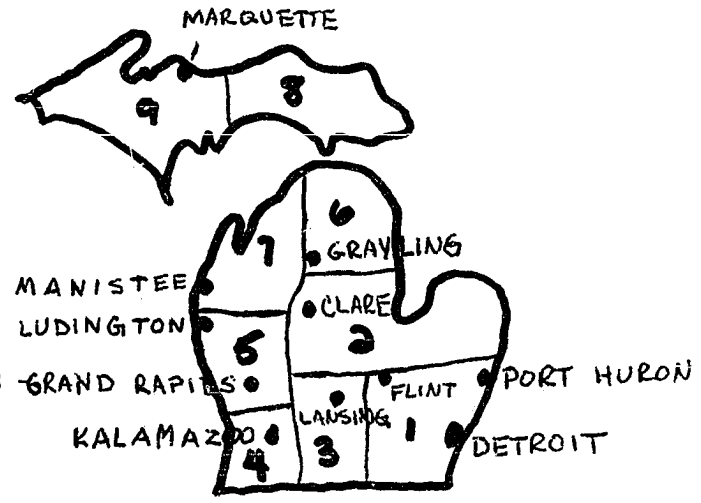
Respondent no._____

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.
    3. Baccalaureate 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.
    3. Baccalaureate 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.
   6. Nurse practitioner.
   7. School nurse.
   8. Community health nurse.
   9. Ambulatory care nurse.
   10. Patient educator.
   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.
    3. Suburban.
    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.

MARQUETTE

MANISTEE
LUDINGTON
GRAND RAPIDS
KALAMAZOO
GRAYLING
CLARE
LANSING
FLINT
PORT HURON
DETROIT

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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 baby-sitter, 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!


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

&ast;&ast;  Question no. 19 had a printing error in the questionnaires that were mailed.  Those questionnaires read:
19. If you used nursing diagnosis during yout cftnlng education,...