

UNIVERSITY OF GHANA

**Critical Thinking Dispositions of Mental Health  
Nursing Students: A Study at the Pantang Nurses'  
Training College, Ghana**

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This Thesis is submitted to the University of Ghana, Legon  
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of M.Phil Degree in Nursing

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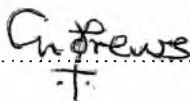
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### Declaration

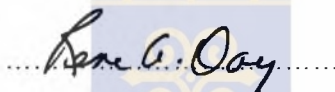
I declare that this thesis is a result of my own research work carried out in the Department of Nursing, University of Ghana, Legon. All references have been duly acknowledged.



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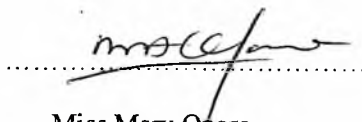
### Declaration by the Thesis Committee Members

This is to certify that we the under-listed committee members have supervised the M'phil thesis by Andrews Dake and have found that it is complete and satisfactory in all respects.



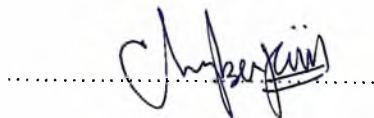
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## Dedication

I dedicate these words to the mental health nursing students at the Pantang Nurses' Training College and other nurses in Ghana:

Imagine it, the nursing that we have come to meet.....

Let us create a caring and inviting environment for our clients, work smartly together and apply reflective thinking in our problem solving and decision-making.

Remember, our best can still be improved upon.



### **Acknowledgements**

This work usually requires the involvement of a lot of people. Therefore, I take this chance to express my special acknowledgement to my co-supervisors: Professor Rene A. Day, Miss Mary Opare and Dr Benjamin Amponsah. Their patience, guidance, suggestions and unending support and encouragement made my work complete. Also, my acknowledgement goes to the visiting Professors of the University of Alberta: Linda Ogilvie, Marion Allen, Wendy Austin, Beverly O' Brien, Pamela Brink, Peggy Ann Field, Judith Hibberd, Judy Mill, and Vicky Strang, whose academic guidance and support made this thesis stronger. My sincere thanks to Dr Profetto McGrath and Dr Linda Slater who assisted me in getting literature materials for my project work. I would also like to acknowledge the staff of the Department of Nursing, University of Ghana, for their support and encouragement. Also, I express my sincere thanks to the family of Dr. and Mr. Judy and Tom Mill in Edmonton, Canada. They supported me in diverse ways when I was in Canada for my fieldwork.

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Anyone who has done a masters programme will recognize the costs and benefits of it. I therefore express my sincere gratitude to the Canadian International Development Agency (CIDA), the Association of Universities and Colleges of Canada (AUCC), the Ministry of Health Ghana, the College of Health Science and Korle-Bu Teaching Hospital, and University of Ghana and the Ghana government for their financial support to me.

I would be remiss to declare that I accomplished this project work without the presence of God in my life. He has been my inspiration, protector and advocate and has kept my heart full of joy. All the people who helped me through this project have served as His ministers in my work and in my life.

### **Abstract**

Critical thinking is viewed as a necessary skill for nurses to make competent clinical judgments. Critical thinking by nurses in decision making and problem solving is compatible with the revised criteria for accreditation from the National League for Nurses (NLN, 1991). The Nurses' and Midwives' Council for Ghana shares similar goals in its nurse educational reform programmes. Nurse educators are expected to teach and assess critical thinking ability in nursing students. Some authors, however, argue that before examining or promoting the critical thinking abilities of the individual, a preliminary disposition to think critically must exist. The purpose of this study was to assess the feasibility of using the California Critical Thinking Dispositions Inventory (CCTDI) to assess the dispositions to think critically for mental health nursing students at the Pantang Nurses' Training College in Ghana. A descriptive design using a convenience sample (n =81) was implemented. A pilot study among a small group of students (n = 14) from Ankaful Psychiatric Nurses' Training College in Ghana who did not participate in the main study was conducted to ensure that the questionnaire was clear and the data collection method assessed. Descriptive and inferential statistics were used to analyze the data. Results showed that for the year of study, mean scores for students in year three on the truth-seeking sub-scale were significantly higher than mean scores for students in year two. In terms of age, sub-scale scores of self-confidence and analyticity were positively and significantly correlated. Sub-scale scores on open-mindedness and inquisitiveness were significantly but negatively correlated with age. There were no other significant findings.

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## **Chapter One**

### **Setting the Pace**

#### **Critical Thinking Dispositions of Mental Health Nursing Students**

The current rapid change in technology and new knowledge globally is reflected in client care. For instance, clients are becoming more knowledgeable about health as well as getting more involved in their own care. They therefore have higher expectations of health professionals in their decision-making and problem solving in nursing practice. To meet these challenges, nurses will need to be highly educated and critical thinking will be a major required outcome. This will empower them with a broad knowledge base so as to deal with the philosophical, ethical and technical issues related to their clients. In other words, such a background will enable nurses to reason critically about simple and complex problems and make decisions in such a way that management of patient care is safe, effective and of high quality. This application of critical thinking by nurses to problem solving and decision-making is compatible with the recently revised criteria for accreditation from the National League for Nursing (NLN, 1991) and the Nurses' and Midwives Council for Ghana has noted a similar goal in their current nurse educational reform programmes (B. Kumaku; Personal communication, January 8, 2002). The NLN (1991) has argued that critical thinking skills are a major required outcome in nursing education.

However, some authors argue that before examining or promoting critical thinking abilities of the individual, a preliminary disposition to think critically

must exist (Dewey, 1933). That is, the set of habits of the mind to value the use of critical thinking would compel the individual to achieve mastery over critical thinking skills. The nursing profession in Ghana is currently experiencing pressure from within and without regarding its purpose, educational preparation, practice and research. In response, educational reforms are moving towards higher education whereby a diploma in nursing will be the basic level for entry to practice. It is an expectation that the changes will promote students' abilities in critical thinking so as to enhance their decision-making and problem solving in practice as well as their worldview in general. Unfortunately, there is relatively little assessment of critical thinking abilities in students in the various nursing programmes in Ghana. The purpose of this study is to explore the critical thinking dispositions of mental health nursing students in years 1, 2 and 3 at Pantang Nurse's Training College in Ghana.

### **Background to the Study**

Critical thinking skills and critical thinking dispositions have been identified as fundamental to the development of professional judgment in a wide variety of practice fields (Facione, 1995). For instance, professions such as nursing, journalism, education, business, engineering, the military, and the public service "rely on critical thinking, as well as their experience and their knowledge of their fields to make decisions in dealing with clinical practice, and leadership, communication, as well as legal, economic, tactical, strategic, ethical, policy or design problems" (Facione & Facione, 1994a, p.2). Critical thinking is the

process of “purposeful, self-regulatory judgment”, and as such is a human cognitive process (American Philosophical Association [APA], 1990, p.3). It involves decision-making about what to do or believe that is open to one’s own review and revision. In coming to that judgment, one gives reasoned consideration to evidence, method, conceptualization, context and standards (Facione & Facione, 1994a). This implies that critical thinking is a reasoning process that is used in problem solving and decision-making.

Critical thinking is only one component that assists an individual in making decisions and solving problems. The other two components are knowledge of content and practical experience (Facione & Facione, 1994a). Knowledge, experience and critical thinking can be seen as a dynamic systems theory of thinking that is ever changing and evolving. In other words, there is a willingness to engage in a process of reasoned decision making based on one’s knowledge base and practical experience. Besides, some authors (e.g., Facione & Facione, 1994) are of the view that a person adept at critical thinking must have an overall disposition to think critically. The disposition to think sets the tone for ways of viewing and examining problem situations or issues requiring the use of critical thinking skills.

In a practice discipline such as nursing, the practitioner is faced with multiple clients, families with complex problems and population- related problems within the working environment that need to be solved. The nurse may be faced with a problem that does not have predetermined solutions. A registered mental health student nurse on duty in one of the psychiatric hospitals in Ghana

approached me to help him attend to a 26-year old patient with schizophrenia. According to him the patient complained of persistent blurred vision for five days and he did not know what steps to take. The student was encouraged to consider all possible reasons for this symptom (based on experience and knowledge) and then to engage in a reasoning process to assess and plan care and evaluate the care of the patient. Based on these guidelines, the nurse was able to solve the client's problem. If the nurse had applied critical thinking in his decision-making and problem solving, it would have enhanced his assessment and analysis by connecting the clinical observation to his theoretical knowledge so as to anticipate events likely to threaten the safety of the patient. Effective nurses are required to develop a critical thinking disposition so that they are able to consider multiple possibilities in identifying alternatives to their data or problem and potential intervention so as to arrive at a sound judgment. Facione (1995) noted that critical thinking and critical thinking dispositions of nurses in decision-making and problem solving are indicators of quality nursing practice.

The requirement to include critical thinking skills in all nursing curricula by the National League for Nursing (NLN, 1991) occurred in the mid 1980s. To accomplish this, students who possess and are able to develop a critical thinking disposition must be selected. The NLN (1991) has indicated that professional nurses require advanced skills of reasoning and analysis to carry out sound nursing practice. It is stated in the NLN (1991) guidelines for accreditation for various nursing programmes that critical thinking needs to be defined in a relevant way for their own programmes. The critical thinking disposition of the potential

student should be assessed prior to admission to a nursing programme. Such a background would enhance favorable outcomes in nurses' practice.

The Nurses and Midwives Council for Ghana, with similar goals in their new educational reform, has noted that to prepare nurses for the future, they will need to recruit nurses who are competent in the content and skills of the profession and who also possess the critical thinking abilities to make appropriate clinical judgments and solve problems in their practice (B. Kumaku, Personal communication, January 8, 2002;). In considering critical thinking and the disposition to think critically as essential components of nurse education, the Department of Nursing, University of Ghana has recently embarked upon a general review of their curriculum and has reiterated this emergent need. This has been re-emphasized in their draft mission statement (2001) that baccalaureate nurses must possess critical thinking abilities to function in this world of rapidly changing technology and new knowledge (D. Ewuah-Piasah, Personal communication, January 8, 2002;).

People may have the skills and knowledge base to deal with a given problem, and yet, unless some external force demands it of them, they may not engage in problem solving and apply their skills and knowledge. These people are likely not to have had a strong disposition toward critical thinking in problem solving. That is, they are not internally motivated to use thinking as their main problem solving strategy. Therefore, it is imperative that a preliminary disposition to think critically must exist (e.g., Dewey, 1933; Facione & Facione, 1994a).

### **Statement of the Problem**

Ineffective decision making and problem solving by health professionals are crucial health care issues because they lead to unsafe, ineffective and low quality client care. Such shortfalls may lead to malpractice, negligence of duty or harm to the client. Nurses can be involved in making crucial life-and-death decisions. Facione & Facione (1994a) stated that because clinical practice is unpredictable and ever changing, it is imperative for nurses to reason critically about the decisions they make in practice and to act in such a way that their care exemplifies reasoned consideration, constructive thinking, and a particular disposition that leads to favorable outcomes”(p.236). Therefore, research in nursing education related to assessing critical thinking ability in nurses is relevant.

No investigations into critical thinking and the disposition to think critically as a curriculum outcome of Ghanaian nursing programmes were found. Nevertheless, there is recognition of the crucial need to promote critical thinking in the new educational reforms in the various nursing programmes in the country (Beatrice Kumaku, January 8, 2002; Personal communication).

### **Purpose of the Study**

The purpose of the study was to describe the critical thinking dispositions of the mental health nursing students at the Pantang Nurses' Training College in Ghana using the California Critical Thinking Dispositions Inventory (CCTDI) developed by Facione and Facione, (1992) and to identify a tool that can be used to describe the Critical Thinking Dispositions of mental health nursing students in Ghana.

### **Research Questions**

- (a) What are the dispositions toward critical thinking for students in the Pantang Nurses' Training College?
- (b) Are there significant differences in the critical thinking dispositions among the first, second and third year students?
- (c) What is the relationship between critical thinking dispositions and students' characteristics such as age, gender, year of study/level of education, and admission criteria (score).

### **Significance of the Study**

Critical thinking dispositions of mental health nursing students at Pantang Nurses' Training College and their relationships to specific variables of gender, age, level of education/year of study and score based on admission criteria will be explored. As a part-time tutor at the Nurses' Training College, Ho in Ghana from 1993 to 1996 and a full time tutor at the Ankaful Nurses' Training College, Cape Coast, I encountered multiple clients and families with mental health problems ranging from simple to complex problems to be solved. This has generated my interest in mental health nursing students, in particular, because my experience teaching mental health nursing theory and practice suggests that mental health nursing students often encounter clients with complex problems during their theoretical and clinical teaching and learning experiences.

The Ghanaian diploma programme is a three-year course in which critical thinking skills have been integrated into the curriculum. Meanwhile, there is still

consultation going on between the Ministry of Health/Ghana Health Service, the Nurses and Midwives Council for Ghana, and the College of Health Sciences and the Department of Nursing, University of Ghana, Legon whereby the nursing colleges will be accredited in the College of Health Sciences. This is to enable graduates from the colleges of nursing who excel and meet the requirements of the University to be eligible to do a two-year bridging programme whereby successful candidates will be awarded a Baccalaureate Degree in Nursing. It is an expectation that with this shift in general education, students' abilities in critical thinking will be enhanced. Since nurse educators value critical thinking abilities, it is essential that educators foster this higher-order thinking during the educational process. Therefore, the outcome of this study is of interest to point the way to future research about higher nursing education in Ghana.

### **Organization of The Thesis**

This thesis is organized into six chapters. The literature review is presented in Chapter Two. The research process is described in Chapter Three. Results are found in Chapter Four, followed by discussion of results in Chapter Five and the summary and conclusions in Chapter Six.

## **Chapter Two**

### **Literature Review**

The purpose of the literature review for this study was to explore critical thinking and critical thinking dispositions in nurse education, assess measurement of critical thinking dispositions, and to identify a tool that can be used to describe the Critical Thinking Dispositions of mental health nursing students in Ghana. Educational strategies that enhance students' dispositions toward critical thinking were discussed. The relationship between critical thinking and a desire to acquire dispositions to think critically were examined. As well, the issues in mental health that require nurses to possess critical thinking abilities so as to ensure sound nursing practice were examined.

The electronic databases that were used for this literature search were CINAHL, Medline and PubMed dating from 1982 to 2003. In addition, the Google, Yahoo and Ingenta search engines were used to search the Internet. The key words were: (a) critical thinking dispositions +Facione, (b) critical thinking + Facione (c) (nursing students OR nursing education) AND (thinking OR judgment OR decision making OR problem OR critical thinking disposition). Most studies that were found were conducted in the United States or Canada.

#### **Definitional Issues**

##### *Critical Thinking*

Some scholars believe that critical thinking is a universal phenomenon common to all disciplines. Others report that some aspects of critical thinking must be discipline-specific (McKeachie, 1986). For instance, McPeck (1981)

defined critical thinking as “the propensity and skill to engage in an activity with reflective skepticism” (p.81). In McPeck’s definition, precision of thought, judiciousness and accuracy in the thought process are implied. Ennis (1985) defined critical thinking as “reflective and reasonable thinking that is focused on deciding what to believe or do” (p.45). Critical thinking is a willingness to reconsider or suspend judgments, or to consider alternative choices. According to Paul (1993) “critical thinking is thinking about your thinking while you are thinking in order to make your thinking better” (p.19). There is a meta-cognitive activity of self-regulation, which is a core critical thinking skill. According to Bandman & Bandman (1988) critical thinking is the “rational examination of ideas, inferences, assumptions, principles, arguments, conclusions, issues, statements, beliefs and actions” (p.7).

Critical thinking was conceptualized by the consensus definition that originated in the Delphi project conducted by the American Philosophical Association (APA, 1990). The panel of experts developed a working or neutral definition of critical thinking and ways in which to assess or test a person’s critical thinking abilities (Facione & Facione, 1994a). Critical thinking was characterized by the American Philosophical Association (1990) as the:

Purposeful, self-regulatory judgment, which results in interpretation, analyzing, evaluation and inference, as well as explanation of the evidential, conceptual, methodological, criteriological or contextual consideration upon which that judgment is based. (p.3)

The overall concept of critical thinking consists of the six critical thinking cognitive skills of interpretation, analysis, evaluation, inference, explanation and self-regulation (Facione & Facione, 1994a).

### *Critical Thinking Dispositions*

Critical thinking has been used synonymously with critical thinking skills (Dressel & Mayhew, 1954). The explication of the dispositions to use critical thinking as a separate entity is a relatively recent development. This is based on the argument by some scholars that critical thinking dispositions are necessary for critical thinking to occur by ensuring that skills are used in the proper spirit (Ennis, 1985). Critical spirit involves openness to examine nursing knowledge, beliefs, attitudes, issues and instructions in the practice of nursing.

There are various views about the definition of critical thinking dispositions. Some authors (e.g., Ennis & Oxman-Michelli 1987; Kurfiss, 1988; Paul, 1990; Perkins et al, 1993; Siegel, 1988) prefer a stipulative definition (i.e., how the author prefers to use a term in a given context). Others are more empirically based (Facione, 1990; Facione, Facione & Sanchez, 1994; Jones & Brown, 1993; King & Kitchener, 1995; Wade & Tavriss, 1993). That is, there is an attempt to make or succeed in making a theoretical connection between a term and certain cause-effect or explanatory relation. Ennis (1985) supported this view of critical thinking dispositions. Ennis noted that dispositions are integrated into an individual's beliefs or actions. He suggested that dispositions such as open-mindedness, accurate information as the subject permits and dealing with aspects

of a complete whole in a systematic way are vital in problem solving. According to Oxman-Michelli (1992), critical thinking disposition involves the inclination to think through situations in a methodical and persistent manner, as an integral component of the critical thinking process. Paul (1993) identified affective attitudes and traits such as humility, courage, confidence, fair mindedness, integrity and thoughts underlying feelings. To Paul, the ideal critical thinker is the one who is intellectually humble and is therefore consistently seeking to recognize the limitations of his/her knowledge. Facione (1990) viewed a critical thinking disposition as empirically based and defined it as the consistent internal motivation to employ one's critical thinking abilities in judgments about what to believe or do in a given situation. This implies that if the individual is disposed toward thoughtful and intellectually honest problem solving as well as being skillful and knowledgeable, there is the likelihood of consistent success.

Based on a Delphi study involving a panel of experts in critical thinking, the American Philosophical Association developed a consensus statement related to affective dispositions. In their view, the ideal critical thinker is:

habitually inquisitive, well informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgment, willing to consider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in the seeking of results which are as precise as the subject and the circumstances of inquiry permit. (APA, 1990, p.3)

There are affective dispositional components of critical thinking that characterize the ‘critical spirit’ namely: “inquisitiveness, open-mindedness, analyticity, systematicity, confidence, truth seeking and maturity”. A description of each disposition follows (APA, 1990, p.3). In this context:

Inquisitiveness refers to being curious and eager to acquire knowledge and learn explanations even when the applications are not immediately apparent. Open-mindedness refers to tolerance to divergent views and having a willingness to seriously entertain alternatives. Analyticity refers to demanding the use of reason and evidence to resolve problems. Systematicity measures the tendency towards use of an organized, orderly, focused and diligent process in the inquiry state. Confidence refers to trusting one’s own reasoning and inclination to use these skills rather than other strategies, to respond to problems. Truth seeking refers to courageous desire for the best knowledge, even if that knowledge may fail to support or may undermine one’s preconceptions, beliefs, or interest. Maturity refers to prudence in making, suspending, or revising judgment.

To be a critical thinker implies that one has various obligations to fulfill. For instance, the individual has to make sure that he or she understands the argument that is being put forward. In addition, as a critical thinker, the individual has to judge the argument. According to Adler and Van Doren (1972) the two obligations of the critical thinker are met in answering four questions:

- 1) What is the discussion about as a whole?
- 2) What is being said in detail, and how? (What are the main ideas, conclusions, and argument?)
- 3) Is it true? (Are the conclusions sound or mistaken?)
- 4) What of it? (What are the implications of the conclusions for thought and action?)

Answering the first two questions allows you to say I understand; answering the third and fourth questions allows you to say either I agree or I disagree.

For the purpose of this study, the APA definition will be used as it forms the basis for the critical thinking disposition measurement tool to be used. In addition, the APA definition has grouped the dispositions into larger and more unified constructs, which have proved useful in nursing education (Jones & Brown, 1991). The intellectual dispositions of the learner set the tone for ways of viewing and examining problem situations or issues requiring the use of critical thinking skills.

### **The Relationship between Critical Thinking and Critical Thinking Dispositions**

Prior to the early 1980s, critical thinking generally had been used synonymously with critical thinking skills (Pascarella & Terrenzini, 1991). Later, scholars agreed to explicate the dispositions so as to define the critical thinker. This was based on the argument that critical thinking dispositions are necessary for the development of critical thinking (Oxman-Michelli, 1992).

There are mixed views about the relationship between the skills and the dispositions. Dewey (1933) contended that there is a positive relationship between critical thinking skills and critical thinking dispositions. Similarly, Facione and Facione (1992) noted that there is a positive relationship between critical thinking and the dispositions; however, the specific manner in which they are related is unclear. Facione and Facione (1992) studied nursing students from 50 nursing programmes in Southern California. The purpose of the study was to examine the relationship between critical thinking skills and critical thinking dispositions in cognitive development. Data from an aggregate analysis of 145 samples from 50 nursing programmes ( $N=7,926$ ) revealed a positive correlation between critical thinking and critical thinking dispositions both at entry into a nursing programme ( $r=.20, p<.001$ ) and at exit ( $r=.17, p<.001$ ). Similarly, Perkins, Jay, and Tishman (1993) noted that there is a one-to-one correlation between the skills and the dispositions. Facione, Sanchez, & Facione (1995) suggested that critical thinking and critical thinking dispositions may be mutually reinforcing and that the dispositions and skills may be interacting in clusters. For instance, confidence and maturity working together may lead one to higher-level inference.

Colucciello (1997) also conducted a cross-sectional, descriptive, comparative and correlational study with a convenience sample of 328 baccalaureate-nursing students. The purpose of the study was three-fold. In addition to finding out the students' critical thinking skills and dispositions, and their differences based on academic levels, she explored the relationship between skills and the dispositions. The California Critical Thinking Skill Test (CCTST)

and the California Critical Thinking Disposition Inventory (CCTDI) were used for the study. The result was that second year nursing students obtained significantly lower scores on the dispositions inventory than those obtained by the third and fourth year students ( $f = 8.86, p < .000$ ). The lowest sub-scale score for all levels of nursing students was that of truth seeking. There was a significant positive relationship between all students' critical thinking skills and their critical thinking dispositions ( $r = .32, p = < .01$ ). A correlational design of a sample of 232 practicing nurses from Southern California was used to study the influence of critical thinking and the dispositions in cognitive development of the participant (Rapps 1992 as cited in Riegel & Glaser, 2001). The study was based on Perry's (1970) theory of cognitive development in which four independent variables were examined (i.e., knowledge base, critical thinking skills, critical thinking dispositions and experience). Three hierarchical levels of cognitive development (i.e., dualism, relativism, and commitment) were examined regarding the four variables. Dualism refers to individuals who see the world in polar or dichotomous terms (e.g., good vs. bad, right vs. wrong) and look to authority to give them one right answer. Relativism refers to individuals who are able to recognize that alternative perspectives exist, but not that each perspective is equally valid. Such people do believe that experts will eventually find the right answer. Commitment describes individuals who are dedicated to personal viewpoints but recognize the diversities in other people's ways of thinking. These persons realize that the values that they now hold may be temporary and tentative; and that right answers are viewed from the context in which the situation or

experience occurs. The results were that critical thinking skills were a significant contributor only to the dualistic level of cognitive development. Critical thinking dispositions contributed to all three levels of cognitive development. Critical thinking dispositions were broader and more crucial in the development of a critical thinker than skills (Rapps 1992 as cited in Riegel & Glaser, 2001).

### **Measuring of Critical Thinking Skills and Critical Thinking Dispositions**

The key measurement tools presently being used will be summarized. In addition, the researcher will elaborate on a local tool that was used to measure critical thinking skills in the West African sub-region. For the purpose of this study, the instrument of choice is the California Critical Thinking Disposition Inventory (CCTDI) developed by Facione and Facione (1992). This is because the most appropriate tool available for measurement of critical thinking dispositions is the CCTDI. However, to place the CCTDI into context, the other critical thinking measurement tools will be discussed as well. These include: the California Critical Thinking Skill Test (CCTST), the Cultural Value Assessment Tool (CVAT), the Holistic Critical Thinking Scoring Rubric (HCTSR), and the California Critical Thinking Disposition Inventory (CCTDI).

#### *California Critical Thinking Skills Test (CCTST)*

The California Critical Thinking Skills Test (CCTST) (Facione, 1990,) is based on a Delphi construct. It has been the most popular commercially available tool since 1993. The CCTST measures critical thinking skills in relation to short problem statements and scenarios and it consists of 34 multiple choice format

items, which are thought to be discipline-neutral (Facione, 1990). The test has to be administered in a class setting and 45 minutes are required to complete the test. The six cognitive skills conceptualized as components of critical thinking are interpretation, analysis, evaluation, inference, explanation, and self-regulation. The psychometric properties of the CCTST have been established for validity and reliability in a North American population (Ouzts, 1992). The test has undergone extensive evaluation including Kuder-Richardson 20 internal consistency reliability measures. This is the first instrument to derive its construct validity from the Delphi project definition of critical thinking (APA, 1990). Facione (1990) identified this highly sophisticated standardized test as the best of the commercially available instruments. The test discriminates between students who have taken specific courses in critical thinking and those who have not. To support the internal validity of the tool, a cross-sectional, descriptive, and correlational study was conducted among a convenience sample of nursing students representing five academic levels in an American baccalaureate-nursing programme. There was a statistically significant difference in critical thinking skills according to the academic level ( $F=6.63, p<0.05$ ). The overall internal consistency reliability estimate was (KR-20, 0.70 alpha). This was within the range .65 and .75, which is considered desirable (Norris & Ennis, 1989).

#### *A Cultural Value Assessment Tool*

The Cultural Value Assessment Tool (CVAT) was developed in Illinois (Ommagio, 1986). The tool has fifty-two items and the subjects respond to each item using a five-point Likert scale. The test measures critical thinking of the

individual. The participants were encouraged to take the tool with them, fill it out, and bring it to the researcher on a different day. Faculty members teaching the cultural course, from which the tool was developed, reviewed the tool for content validity. Although the tool has been tested in Nigeria, West Africa, it cannot be used for this study because it was devised to measure only critical thinking skills and not the dispositions for critical thinking. The tool is one of the recent tools on critical thinking developed in North America and tested in Nigeria. Its validity and reliability have been supported in one nursing program in Nigeria (Ommagio, 1986). The ideas for the development of some of the statements included in the tool were taken from the required textbook in a course.

#### *The Holistic Critical Thinking Scoring Rubric (HCTSR)*

The holistic strategy, which is to assess the dispositional side of critical thinking, uses a tool that mixes skill measurement with dispositional measurement. The tool offers more qualitative data but precision is sacrificed. The tool consists of four fixed levels and a description of characteristics for performance for each of the levels and can be used to evaluate overall evidence of critical thinking in essays, presentations and clinical practice. For example, the U.S. Air Force Academy (USAFA) incorporated the language of critical thinking dispositions in developing a rubric to rate levels of performance for framing and resolving problems (U.S.A.F.A, 1995). The HCTSR is in the public domain through an Internet web site ([www.calpress.com](http://www.calpress.com)).

#### *California Critical Thinking Disposition Inventory*

The California Critical Thinking Disposition Inventory (CCDTI)(Facione

& Facione, 1992) is the first objective instrument designed to measure seven aspects of critical thinking disposition. The tool can be used to assess attitudes, opinions and beliefs regarding critical thinking. The tool was built on the Delphi study experts' consensus definition of the ideal critical thinker. The instrument has 75 items and subjects respond to each statement using a six-point Likert scale. In scoring the tool, the total score ranges from 60 to 420, with 350 or higher indicating positive overall dispositions toward critical thinking. Each of the seven aspects scale ranges from 10 to 60, with a positive score being 40 or higher. Scores below 40 suggest negative dispositional characteristics such as intolerance, imprudence and lack of confidence, or disregard for relevant reasons and evidence. To arrive at the final instrument, "multiple pilot item prompts" were written for each phrase used in assessment of the ideal critical thinker. College level critical thinking educators screened the resulting 250 prompts, in order to identify possible ambiguities of interpretation. A selection of 150 pilot prompts was retained in a preliminary version of the instrument. The pilot version was administered to a representative sample of 164 students at three different Universities; one in Canada, and two in the United States (Facione & Facione 1996, p.3). After reading each statement, participants responded by choosing one of six options ranging from "disagree strongly" to "agree strongly".

The individual's response generates overall scores as well as seven sub-scale scores. These sub-scales include; truth seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity (Facione & Facione 1996). The truth-seeking scale measures intellectual

honesty, the courageous aspirations to acquire the best knowledge in any situation, the tendency to pose challenging questions, and the willingness to pursue the reason and evidence regardless of where it leads. Open-mindedness reflects an individual's ability to be accept different beliefs and ideas. The analyticity scale appraises alertness to possible difficulties and alertness to problem solving when necessary by using reason and evidence. The tendency to be an organized, focused, diligent and a determined individual is reflected in the systematicity scale. The critical thinking self-confidence scale reveals the level of trust an individual recognizes in one's reasoning process and the ability to direct others to arrive at sound decisions. An individual who is intellectually curious, who appreciates being well informed, and who is disposed to master things, even if the direct application is not immediately evident, reflects inquisitiveness. The maturity scale aims at an individual's disposition to be reflective in making judgments. This scale deals with "cognitive maturity and epistemic development"(Facione & Facione 1996, p.3).

To support the validity of the CCTDI tool, two investigations were conducted in two universities in the United States and one in Canada as mentioned above. These studies included 164 diverse college students from a Midwestern U.S baccalaureate-nursing programme. The participants were presented with a statement of prompts to express their opinions, beliefs, values, expectations and perception. The result revealed an alpha level range of .60 to .70 on each dispositional subscale and an overall alpha of .90. This indicated high internal consistency of the dispositional subscale. Similarly, the relationship

between the CCTDI and the CCTST was studied. The result indicated a significant relationship of  $r = .66, p < .001$ , (Facione & Facione, 1992; Sanchez, 1993). This result supports the overall construct validity of the CCTDI. However, the subscale of truth-seeking reflected an overall weakness at each of the academic levels with a total mean score of 38.37. This may have been because a reciprocal exchange of knowledge was not encouraged in teaching and learning within the nursing programme. This might indicate passive learning in students, thereby restricting their pursuit of inquiry. The findings supported the overall correlation reported by Facione and Facione (1994b).

### **Issues in Measuring Critical Thinking**

The criteria for accreditation from the National League for Nursing (NLN) included the need to measure growth in critical thinking. Chaffee (1997) stated that critical thinking is a complex process and, as a result, developing appropriate ways to measure it becomes a challenge. Measurement is the process of “assigning numbers to objects where the numbers are used to qualify or quantify a concept or a phenomenon of interest” (Waltz, Strickland, & Lenz, 1994, p. 31). There are several issues that must be considered when determining methods to measure the concept of critical thinking and the dispositions to think critically. These consist of the following:

- (a) Matching the definition to programme goal
- (b) Reliability and validity of the tool, and
- (c) Usability of the tool

### **Teaching/ Facilitating Critical Thinking Skills and Dispositions**

The selection of teaching strategies and learning experiences in nursing education has been traditionally governed by behavioral objectives. However, in the past few decades, nursing education has been undergoing a major revolution, with attention focused on how to teach students to think critically. Therefore, nurse educators are continually re-examining the “best” way to teach so as to prepare students for life-long learning. This is compatible with the revised criteria for accreditation from the National League for Nursing (1991). Promotion of critical thinking and a disposition for critical thinking are viewed as major outcomes in nursing education. In a study to find out faculty members’ views of factors that promote nursing students’ development of critical thinking, the results revealed that 63 per cent of nurse educators were in favor of strategies that required active participation on the part of the student. These strategies included seminar participation, the use of the nursing process, and panel discussion (Baker, 1992). Similarly, Sander (1992) randomly sampled 1000 masters and doctorally prepared nurse educators to study their preferred view of experiential teaching and learning strategies that would promote students’ critical thinking abilities. About 64 percent of the participants’ categories identified five major experiential learning situations (critique, simulation activities, interactive activities, lecture and writing). Some scholars recommended three essential teaching goals that enable nursing faculty in facilitating students’ critical thinking and dispositions. These are “facilitating students perception of their ability to use reasoned

appraisal, encouraging inquisitiveness and promoting a habit of seeking and providing rational for decision making” (Haffer & Raingruber, 1998, p.65).

According to Loving and Wilson (2000), faculty ought to “provide the structure within which students can learn and within which students can learn to learn” (p.70).

In summary, nurses must possess a high level of critical thinking skills and critical thinking dispositions. It is the responsibility of educators to create opportunities for students to develop critical thinking as students progress through the curriculum. Furthermore, educators must become facilitators of learning. Various authors have categorized teaching and learning strategies that will facilitate students' learning process. Five main strategies have been recognized in nurse education (Sander, 1992):

- 1) Modeling by nurse educators and nurses in the practice setting.
- 2) Verbal, individual and/ or group activities such as presentations, role playing, interviews, discussions, structured controversies and debates, clinical rounds, problem-based learning, case study analysis and thinking aloud.
- 3) Writing in the form of papers, reflective journals, concept analysis, critiques, nursing care plans and charting;
- 4) Computer assisted learning and simulation, and
- 5) Questioning.

These strategies will be defined.

### *Role Modeling / Thoughtful Mentoring*

This is a form of experiential learning in the classroom and the clinical area that is effective in promoting students' critical thinking skills and dispositions. According to Facione and Facione (1992) educators and mentors can mix nurture with challenge and point the way toward learning by helping learners see relevant patterns in apparently chaotic information and identify promising approaches to problem solving. It is the responsibility of the learner to be actively involved in the learning process. Paul and Heaslip (1995) stated that to "model for students to think, one has to ask probing questions, demanding understandable explanations, question untested assumptions, and at times let people make mistakes which they can then fix themselves" (p, 47). Furthermore, Burnard (1989) noted that "mentors or instructors must model those habits of mind and use those thinking skills which others are expected to emulate and exercise" (p.304).

### *Writing*

Learning through writing stimulates the disposition to think critically through becoming actively involved with the literature, learning to judge the quality of the literature, organizing and interpreting into logical sequence (Brown & Sorrel, 1993). McCaughterty (1991) pointed out that teachers' reviews of students' drafts allows early assessment of students' critical thinking and dispositions in processing the material. This allows for early intervention if problems are detected. Alternatively, Goodman (1992) studied two groups of junior baccalaureate nursing students. In the study, writing was emphasized as a strategy to promote cognitive development of the participants. Forty-five nursing

students taking the same course were divided into two groups, with 29 students in the experimental group and 16 students in the control group. The writing experience was only provided to the experimental group over a semester period. The result indicated no statistically significant differences in the cognitive development between the two groups.

### *Simulation*

Simulation is another example of experiential learning that promotes critical thinking dispositions. It may be presented in the form of computer software, role-play, case studies, or games to represent the reality. This approach requires application of knowledge and critical thinking skills in the classroom or the laboratory as a structured activity. According to Thompson (1982) simulation enhances decision-making skills and content retention. Bastubel (1997) reported that the use of computers provided the educator with the “ability to assist the learner in the achievement of educational objectives in about one- third the time required in the traditional approach” (p.276). In a study of nursing students who were given a computer course as part of their nursing education, students using computer-based instruction performed better and had more positive attitudes toward their instructional methods than conventionally taught students.

Cox (1988) studied the effect of using a computer-assisted instrument to teach students how to administer pediatric intravenous medication. In that study, participants in the experimental group who had completed the simulations administered the medication in the actual pediatric setting more quickly and accurately than the participants in the control group. On the other hand, Perciful

(1992) studied the impact of the use of computer simulation within clinical nursing education on student learning. The result showed that although the experimental group had higher scores than the control group, there was no statistically significant difference in the results.

*Process Evaluation (Evaluate Process, Not Results Only)*

When concerned about content knowledge and automatic or scripted problem solving we can look primarily, if not exclusively, at the results to evaluate the students. However, to build critical thinking skills and strengthen thinking dispositions, mentors must look at the process. This is because it is not enough to get the right answer; one must be able to get to that answer by solid reasoning. This is important as the right result achieved for the wrong reason could be effective one time and ineffective for clients on another occasion (Facione & Facione, 1992).

*Expect and Reward Virtue*

The “idea of consistent internal motivation to be inquisitive, organized, analytical, confident, judicious, tolerant and intellectually honest is an intellectual virtue. This virtue inclines the individual towards being a learner his or her whole life and being thoughtfully engaged to be an effective problem solver and decision maker in practice” (Facione & Facione, 1994b, p.344). Therefore educators are encouraged to provide rewards that reinforce those who are able and willing to think.

### *Role Play*

This is a dramatic approach in which individuals assume the role of others, usually unscripted spontaneous interactions that are observed by others for analysis and interpretation. According to Burnard and Chapman (1990), role play is an example of experiential teaching and learning in nurse education that enhances critical thinking and the dispositions to think critically. Similar, Stark (1996) noted that role-play could be used to encourage active participation by allowing the investigation of personal and interrelationship behaviours and the exploration of the affective and cognitive domains. This enhances students' abilities to reflect on theories taught in classroom when they are in the clinical environment. This strategy may assist them in making sound clinical judgments.

According to Colucciello (1997) instructors should use role-play to assist students with an accommodator trait learning style. This is because accommodators prefer participation or "hands on" experiences. Involving students in role-playing and simulation, and offering them opportunities to lead a small group, will facilitate their problem solving skills. Ultimately, assimilation of knowledge is expected to occur.

### *Reasoned Thinking and Evidence-Based Inquiry*

Barrows and Tamblyn (1990) reported that learning "results from exercising one's critical thinking skills and habits of the mind toward the understanding or resolution of a problem" (p.302). That is, the approach is implemented to help the professional to develop analytical skills using a process of logical deduction. This is carried out within the framework of a simulated

situation. Similarly, Frost (1996) observed that Problem-Based -Learning (PBL) in the education of health care professionals is a strategy that can bridge the theory-practice gap. This is possible because the PBL approach uses clinical problems and professional issues as the focus for integrating all the content necessary for clinical practice. Furthermore, Magnussen, Ishida and Itano (2000) studied baccalaureate nursing students under different conditions who were engaged in a type of PBL curriculum. Critical thinking scores were measured at the beginning and end of programme. Students with low critical thinking scores at the beginning of the programme experienced a significant increase in mean score by the end of the programme. Students in the middle group demonstrated no change in mean score and those in the highest group actually had lower mean scores at the end of programme. Also, PBL promotes the learner's problem solving skills, independent and self-directed learning abilities and critical thinking. On the other hand, Day and Williams (2000) carried out a pilot study on baccalaureate nursing students (n=120) at the University of Alberta. The aim was to find out the effect of problem-based learning. Findings indicated there were no significant correlations between the participants' age, gender, and level of education and the critical thinking scores and critical thinking dispositions.

Carprio, O' Mara and Hezekiah (1996) studied newly qualified baccalaureate nurses participating in a four-year integrated, problem-based programme in Canada. The purpose of the investigation was the identification of factors enabling nurses to excel on the Canadian Nurses Association Testing Services (CNATS) examination. Twenty percent (20%) of the questions in the

CNATS examination were targeted at the candidates' critical thinking ability and 48 percent of the questions were targeted at the affective domain (receiving or responding, valuing, organizing and characterization) and other aspects of nursing knowledge. In the study, 114 responses were tested using stepwise equations. The students' averages on problem-based courses were the best indicators for success on the Canadian licensure examination.

### **Issues In Mental Health That Require Nurses To Possess Critical Thinking Abilities**

Mental health is a “complex phenomenon, which is determined by complex social, environmental, biological, and psychological factors. Successful implementation of public health services is needed to control neuropsychiatric disorders such as depression, anxiety disorders, schizophrenia, dementia and epilepsy” (WHO, 1996, p.51). According to Sainsbury (1996), as many as 150 million people worldwide at any given time are suffering from some kind of neuropsychiatric disorder such as schizophrenia, alcohol use, or bipolar and obsessive compulsive disorders. A third of these may be affected by more than one of the neuropsychiatric illnesses. Three quarters of those affected are in the low-income countries. These numbers are expected to increase sharply over the next few decades, particularly among people in the low-income countries and Ghana is no exception to this.

Strategies that will promote critical thinking in mental health nurses are needed so that care provided is safe, timely and of high quality. The complex

nature of mental health conditions makes assessment of clients very critical. For example, in assessment of the client, the nurse has to approach the situation from a multi-dimensional perspective. That is, the nurse must be aware of one's own and the client's religious beliefs, scientific views about the etiology of the disease, professional codes of ethics in health care, and issues relating to human fragility. From reflection and analysis of the reasons underlying each issue from a different frame of reference, the nurse must be able to make sound clinical judgments.

Critical thinking can help resolve controversial issues by application of formal, inductive and informal criteria to evaluate arguments made in support of one side or the other of the issue. Moreover, nurses may be faced with critical procedures in the institutional setting. For example, they may need to make a decision about suicide precaution emergency restraint. This requires sound judgment because of the ethical dilemmas involved in mental health nursing.

It is imperative that mental health nurses be critical thinkers in their problem-solving situations. In addition, with the integration of mental health into the Primary Health Care concept where the community psychiatric nurses are to be the resource person in the community to care for mental disorders, good critical thinking skills are necessary to enhance their clinical judgment. Siegel (1988) has suggested that the promotion of critical thinking is an educational ideal as it facilitates students' self-sufficiency and autonomy in the judgments they make. In clinical assessment, nurses need critical thinking abilities to enhance their technical and interpersonal skills in the care of their clients. In one study, nurses (n=27) who had a background of traditional nursing education and were

involved in clinical assessment of patients were inaccurate in their problem solving (del Bueno, 1995). Promoting critical thinking in their education might lead to an improved outcome in their problem-solving abilities. Because of the complex nature of mental disorders, critical thinking by nurses in their clinical judgments needs to be fostered. For example, the manic patient may appear canny and manipulative. Similarly, the schizophrenic patient may exhibit false beliefs. Substance abuse patients may show maladaptive behavior in problem solving and thereby resort to excessive drinking or smoking. Therefore, health professionals need to be able to apply reason and evidence as well as revise their judgments so as to deal with such situations.

Society changes and health services and patient needs are becoming increasingly complex. Davis, Cameron and Ross (2001) noted that through evidenced-based practice nurses could find better ways to care for their clients with such complex needs. In a clinical trial of adult female patients with panic disorder who were recruited from emergency departments in a Canadian city, the aim was to ascertain if empowerment of patients in monitoring the severity of their own symptoms and knowing when to go to the emergency department is of benefit to the patient and staff. Results indicated that patients with unrecognized, untreated panic disorder were over-medicated, visited doctors and emergency departments more often and were hospitalized for longer periods of time than their counterparts. Cost might be reduced if nursing interventions based on this type of evidenced-based practice are applied in the care of patients. As mental health professionals encounter patients with emotional and physical health

problems, it is imperative that they learn to be expert thinkers in order to make a positive impact on the well being of their patients. This can be achieved through the development of critical thinking abilities so that decisions are made on the best available evidence.

Moreover, psychiatric nurses will need to apply critical thinking in relation to their role in ensuring patients' rights as this is often complicated by ethical considerations. For example, ethical dilemmas may arise from health care professionals' paternalistic attitudes toward patients. In this case, something may be done "for the patient's own good" even though the patient would probably disagree with the action. In behavior control, the nurse may be faced with the problem of making a decision about the right thing to do. This is because behavior is a personal choice and any behavior that does not impose on the rights of others may be acceptable. Unfortunately, this will not help. As an example, think of a severely depressed patient who wants to commit suicide. It is crucial for nurses to analyze ethical dilemmas such as suicide attempts. The nurse must critically examine opposing values of the benefits of treatment versus the patient's right to liberty.

### **Dispositional Differences In Critical Thinking Related To Some Selected Demographic Variables**

Few studies were found on dispositions toward critical thinking. This is partly because of the lack of awareness about the distinctiveness of the concept from the concept of critical thinking skills.

### *Age*

There is an assumption that critical thinking abilities improve with age. This is based on the argument that older people are more likely to be critical thinkers as moral reasoning or development correlates with maturity. (i.e., the older individual might have successfully reasoned through a wide range of situations based on experience) (Alfaro-LeFevre, 1995). A positive correlation between age and critical thinking scores based on the use of Watson-Glaser Critical Thinking Appraisal (WGCTA) tool was reported (Behrens, 1996; Tiessen, 1987). In one study (Tiessen, 1987) of 150 BSN students ranging from 18-39 years (mean 21-29), a low positive correlation ( $r = 0.61$ ,  $p < 0.10$ ) was found between older age and critical thinking ability. The ages of the participants ( $N = 113$ ) in Behrens' study were not provided, but the majority (67.7%) drawn were younger than 24 years old. This sample of graduate nurses ( $n = 360$ ) drawn from two large health care agencies was stratified and randomly selected. Of the 360 names drawn, only the 121 nurses who reported their ages were included in the study. A positive correlation between age and critical thinking was found.

On the other hand, Gross et al. (1987), Lynch (1988), Waite (1989) and Brooks and Shepherd (1990) found no positive correlation ( $r = -.213$ ,  $p < .01$ ) between age and critical thinking scores of students conveniently sampled from a variety of nursing programmes (Diploma, ADN, BSN, MSN, and PHD).

### *Gender*

The differences between genders vary with the dispositional subscales. For example, a consistent finding among studies on critical thinking dispositions is a

low score on truth-seeking disposition among all undergraduate students. Critical thinking disposition subscales vary with gender, with males stronger in analyticity and females stronger in open-mindedness and cognitive maturity. Facione and associates (1994a) studied 587 freshmen at a private University in Canada using the CCTDI to investigate students' critical thinking dispositions. The mean score for the group was 34.7 and combined Verbal Scholastic Aptitude Test (SAT) scores were 1,095. The results were that only 13 percent of the group scored positively (scores above 40) on the seven sub-scales of the instrument. The common finding was a negative disposition for both males and females on the truth seeking sub-scale. The other 87 percent scored below 40 on at least one of the seven sub-scales. The most common finding among the participants (n=587) was a negative disposition toward truth-seeking. The low score of the students may have been due to the fact that the group consisted of first year students and teacher-centered pedagogical strategies might have been encouraged during the initial part of their programme. Similarly, there were gender differences for first and second year students (n=198) at a public urban university in California and of 324 women and 262 men at a public rural university in California (dance, physical education, nursing and physical therapy). Males scored higher on analyticity while women were more disposed towards open-mindedness and cognitive maturity (Facione et al., 1994b). Also, a longitudinal study using a descriptive, exploratory design was conducted to investigate the critical thinking abilities of 106 males and 118 females from a Mid-Atlantic University over a semester. Males were weaker in truth- seeking (25%) than females (16%).

However, 33 percent of the females were weak in confidence compared to 13 percent of the males. Generally, it is believed that the validity of information as well as truth telling is strongly emphasized in nursing curricula. However, nursing classes may reward instructor-defined answers as opposed to truth, and students may tend to become excessively dogmatic in their approach to solving problems. The reason why a novice nursing student may lack confidence may be related to the numerous critical decisions that must be made where mistakes are costly. Currently new knowledge and technology globally are rapidly changing. These situations may easily overwhelm students (Ber, McGowan & Rubbin, 1996).

#### *Level of Education*

Authors of some studies report that years of education have a significant influence on critical thinking scores whilst other studies do not support that hypothesis. Colluciello (1997) conducted a cross-sectional, descriptive, comparative and correlational study with a convenience sample of 328 baccalaureate nursing students. The goals of the study were to assess critical thinking skills and dispositions based on academic levels. The CCTST and CCTDI instruments were used for the study. Second year nursing students obtained scores that were significantly lower than the overall scores obtained by third and fourth year nursing students ( $F=8.86, p \leq .0000$ ). The lowest reported subscale score for all levels of the nursing students was that of truth seeking. There was a positive relationship between the students' critical thinking skills and their critical thinking dispositions ( $r = .32, p \leq .01$ ).

In another study, Pardue (1987) used the Watson Glaser Critical Thinking

Appraisal (WGCTA) to measure critical thinking in a correlational, comparative study to assess the level of critical thinking of nursing graduates from four different programmes. The final sample consisted of 50 nurses prepared at the diploma level, 24 prepared at the Associate Degree Nurse (ADN) level, 33 prepared at the Bachelor of Science in Nursing (BSN) level and 37 at the Master of Science in Nursing (MSN) level. Significant differences were found among the groups of nurses. The WGCTA scores of nurses prepared at the BSN and MSN level were significantly higher than those of the nurses who had completed a diploma or ADN programme.

Similarly, Matthew and Gaul (1979) conducted a correlational, comparative study to assess critical thinking abilities based on levels of education or the type of programme (ADN, Diploma, BSN, BSN, RN, MSN). They used the WGCTA instrument to measure the critical thinking abilities of a purposive sample of 22 BSN and 26 graduate students. They found no statistically significant differences between the two groups' critical thinking abilities. Gross, Takazawa, and Rose (1987) reported that year of education was not a significant indicator of critical thinking scores of 108 ADN and BSN students as determined by the WGCTA at programme entry and exit.

#### *Admission Criteria (Score)/GPA*

Knowledge of a reliable predictive measure is useful to guide admission procedures, monitor progress, provide counseling and give remedial activities at individual and at group levels (Bauwens & Gerhard, 1987). Tiessien (1987) contended that if nurse educators can use critical thinking and admission scores or

GPA as a yardstick to predict critical thinking abilities, then the same criteria could be used to review their teaching and learning strategies so as to enhance students' success.

Behrens (1996) studied 113 freshman diploma nursing students from three different groups to assess the relationship between admission scores and critical thinking scores in the programme. The results revealed a significant correlation between critical thinking scores of the three groups and their admission scores/GPA ( $r = .59, .53, \text{ and } .51, p < .01$ ). The relationship between variables such as critical thinking ability, admission score, and the National Council Licensure Examination for RNs (NCLEX-RN) in female baccalaureate nursing students were explored by Bauwens and Gerhard (1987). Entry-level admission and critical thinking scores were significantly correlated with exit GPA and critical thinking scores. Moreover, entry-level critical thinking scores and admission scores explained 22 percent of the variance in NCLEX scores. The critical thinking scores and GPA at graduation were also positively correlated ( $r = .05$  and  $r = .52, p < .005$ ) with the NCLEX scores supporting the hypothesis that entry level critical thinking and admission GPA are predictors of success in nursing (Bauwens & Gerhard, 1987).

### **Summary of the Relevant Literature**

There are several themes that emerged from the literature review. These are:

- (a) There were differing definitions of critical thinking. The themes

appeared to be similar in terms of the dispositions toward critical thinking but there is no one way to define critical thinking. The lack of agreement in defining the concept is attributed to issues in measuring critical thinking and dispositions to think critically.

- (b) The reliability and validity of instruments that are used in the measurement of critical thinking have been established. The CCTDI instrument was used for this particular study because it is also used to assess the disposition for critical thinking.
- (c) Five categories of teaching and learning strategies have been identified that will facilitate students' critical thinking and dispositions.
- (d) A number of issues have been identified that will require mental health nurses to possess critical thinking abilities in their problem solving and decision making. This includes philosophical, ethical, and technical issues associated with rapid changes in technology and new global knowledge related to client care.
- (e) Dispositions toward critical thinking may be related to selected demographic variables such as age, gender, level of education, and admission criteria (scores).
- (f) A consistent finding among studies on the dispositions is that undergraduate students tend to possess low truth-seeking

dispositions. Critical thinking disposition sub-scales have been shown to vary with gender, with males being stronger in analyticity while females are stronger in open-mindedness and cognitive maturity.

The purpose of this study was to describe the critical thinking dispositions of the mental health nursing students at the Pantang Nurses' Training College in Ghana using the CCTDI.

Specifically, the following working hypotheses were addressed:

- 1) There will be a positive correlation between the ages of the students and their critical thinking dispositions.
- 2) Male nursing students will perform significantly higher than their female counterparts on the truth-seeking and self-confidence dispositional sub-scales.
- 3) Third year students will perform significantly higher on the overall dispositional sub-scale than the first and second year nursing students.
- 4) Students with higher admission scores will score higher on critical thinking ability than students with lower admission Scores.

## Chapter Three

### Research Methodology-Philosophy and Approach

#### *Philosophical Underpinnings*

The study is rooted in pragmatism with pragmatism viewed as the theory of truth and meaning. According to the pragmatist Dewey, 1916; as cited in Peirce & James (1962):

The truth can be known only through its practical consequences. Meaning is the sum total of all the sensory experiences that might be conceptualized. According to the pragmatist, all that we can know about the world is our experience. They view reality as the process of transaction, which involves doing and undoing. Through the process of doing we derive meaning from the act and its results. (p.383)

This can be related to critical thinking whereby the individual explores purposeful self-regulatory judgment by giving reasoned consideration to evidence, methods, conceptualization, context and standards in problem solving.

Dewey noted, “knowledge is rooted in experience, which may be immediate or mediate. Immediate experience is simply undoing while mediated experience is the interaction of man and his mind with the environment, which requires the use of experience”(Dewey, 1916; as cited in Peirce & James, 1962, p.385). This is similar to the process of scientific research. The pragmatist values the individual’s use of his own mind in problem solving rather than an unthinking

reliance on some 'higher' authority. To this end, values emerge from the process of reflective deliberation. To ensure effective education of individuals, they must be provided with the conditions or dispositions that will make their growth possible. In addition, the learner brings with him all the meanings, values, and experiences that constitute his/her personality; the self. The teacher serves as a helper, guide, and arranger of experiences that will lead to growth.

In relating the pragmatists' view to the nursing metaparadigm concepts, which include nursing, health, environment, and person, it is believed that:

- 1) the environment has an important influence on the development of the individual; therefore, the study of the individual is indivisible from that of his/her community and those factors that influence his/her environment. In addition, life experiences obtained from exposure to the environment, education, and social factors influence the individual's critical thinking skills and critical thinking dispositions.
- 2) all behavior of the individual is meaningful. As well, these behaviors arise from personal needs and goals and can be understood only from the person's internal frame of reference and within the context in which it occurs. In addition, individuals have the right to participate in decision-making regarding their physical and mental health care.
- 3) mental health is a critical and necessary component of comprehensive health-care services.

- 4) the functions of the nurse are both curative and preventive and include caring, teaching and discovery. Nurses must utilize critical thinking and the dispositions in their decision-making and problem solving and/or clinical judgments in such a way that management of patient care is safe, effective, and of high quality.
- 5) nursing education is to help individuals become self-determining, independent thinkers and the process of cognitive development through critical thinking skills and critical thinking dispositions will be the outcome that best characterizes such a thinker (Stuart & Laria, 1995, p.8).

### **The Research Approach**

This section presents information on the research design, targeted population, sampling procedure to be used, the tool that was used for data collection and the procedure. In addition, data analysis procedures are described and ethical considerations are discussed.

#### *Research Design*

In this study, a quantitative design was used to address the research questions. To measure the psychological traits inherent in the participants, a non-experimental research (descriptive correlational) design was applied. The design enabled the researcher to describe the relationship between mental health nursing students' critical thinking dispositions and their demographic variables such as

age, gender, year of study, and admission score (Kerlinger, 1986). The non-experimental approach is mostly preferred in nursing research or health-related research, because, although there is considerable emphasis in scientific research on understanding what causes behaviors, conditions, and situations, researchers can often do little more than describe existing relationships without fully understanding the causal relationships that exist (Polit & Hungler, 1991).

### *Target Population*

The target population for the study was the mental health nursing students at the PNTC in Ghana. These students were chosen for the study because it is one of the mental health nursing educational institutions preparing students at the Diploma level. Also, students in this institution had no nursing background prior to the program entry unlike the Ankaful Training Institution where students are admitted with a basic nursing background. Furthermore, the Pantang institution has the largest population of students, allowing a larger sample size to enhance the power of the tests measured by the dispositions inventory. In this study, all nursing students (n=81) at Pantang Nurses' Training College, Accra were invited to participate in the study.

### *Study Setting and Program Description*

The study setting for the proposed thesis was Pantang Nurses' Training College in Ghana. The college is about fifteen (15) kilometers from the Accra metropolis in the greater-Accra region of Ghana. It is at the North- Western part of the Accra Aburi road, which is about 1.5 km from the main road. The school and the hospital are within the same premises, and occupy about 1.5 hectares. The

student population of the school is about 81. The college provides courses for the regular students and short (affiliation) courses for general nursing students from all over the country in psychiatry/mental health nursing, which is a prerequisite for their licensure examination and subsequent entry to practice.

### *Program Description*

Qualified applicants from the senior secondary school are admitted to the diploma in mental health nursing program, which leads to entry to practice after successful completion. That is, individuals are admissible with Senior Secondary School Education (SSSE) with three passes in core subjects: Mathematics, English and Integrated Science and three passes in any Electives with an aggregate score on the six subjects of 24 or better; or with 5 credits at 'O' levels in English, Mathematics, Science and any other subjects from Arts/Science together with two 'A' level passes in science or Arts and a General paper. Also, enrolled psychiatric nurses with the above qualification who are returning to the nursing institution for the professional course as well as Registered General Nurses (RGN) with two years' working experience who would like to specialize in mental health nursing can be admitted. In addition, the prospective candidate is supposed to pass an entrance examination conducted by the West African Examination Council. Candidates with a nursing background are exempted from the entrance examination. According to a directive from the Human Resource Division of the Ministry of Health and the Ghana Health Service, administration of the entrance examination by the West African Examination Council was suspended as of January 2003. The various institutions are to take up that

responsibility. Students range in age from 19 to 40 or more years old. Once prospective candidates are admitted and have completed the prerequisites, the diploma program starts either in February or September. The programme of education and training in mental health nursing requires six semesters to complete and each semester is of four months' duration. In all, the programme must have been not less than three years in duration. The programme demonstrates a balance of theoretical and practical instruction of not less than one-third theoretical training and not less than one-half clinical or practical training. At the end of every second semester, students are expected to do practicum in specified clinical areas for a period of six weeks during that semester break. Furthermore, the programme includes theoretical and clinical or practical instruction and experience in mental health, including the care of: children; adolescents; adults; the elderly; and community care, continuing care and rehabilitation. The second option of the programme is for Registered general nursing (RGN) who would like to specialize in mental health nursing. Such an individual nurse must have completed a programme in general nursing of not less than three years in length. Then, the prospective nursing student is expected to complete a post-basic programme in mental health nursing which has not less than eighteen months in length. The post-basic programme curriculum is the same as for the three-year programme. Nonetheless, they are exempted from doing some of the preliminary courses as they already had that background.

The Nurses and Midwives' Council for Ghana have designed the curriculum in conjunction with the Ghana Health Service and other stakeholders.

The major taught courses and clinical teaching in the various semesters include the following:

*Year One- Semester one and two*

- 1) Anatomy and Physiology
- 2) Microbiology
- 3) Nursing
- 4) Psychology
- 5) Sociology
- 6) First Aid
- 7) Nutrition and Food Science
- 8) Introduction to Computer Science
- 9) Communication Skills
- 10) Statistics
- 11) African Studies
- 12) Clinical teaching /Nursing Practical

*Year Two –Semester One and Two*

- 1) Medical-Surgical Nursing
- 2) Psychopharmacology
- 3) Psychopathology
- 4) Senior Nursing
- 5) Principles and Practice of psychiatric Nursing
- 5) Public Health Nursing
- 6) Midwifery/ Maternal and child Health

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- 11) African Studies
- 12) Clinical teaching /Nursing Practical

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- 1) Medical-Surgical Nursing
- 2) Psychopharmacology
- 3) Psychopathology
- 4) Senior Nursing
- 5) Principles and Practice of psychiatric Nursing
- 5) Public Health Nursing
- 6) Midwifery/ Maternal and child Health

7) Field Trips/Affiliation courses

*Year Three- Semester One and Two*

- 1) Gerontology
- 2) Changing Roles in Mental Health Nursing
- 3) Current Issues in Nursing
- 5) Medical-Surgical nursing
- 6) Introduction to research Methods
- 7) Community Psychiatric Nursing
- 8) Care Study
- 9) Critical care/Theatre Nursing
- 10) Clinical teaching/Practical

*Teaching and Learning Strategies*

The common teaching and learning strategies being implemented in the theoretical and clinical teaching include: lecture method, discussions, presentations, group activities and questioning, writing and case scenario. In the clinical setting, it is mainly coaching, demonstration, clinical rounds, preceptorship, and case study. Students' assessment and evaluation are in two-fold. There is an internal assessment, which is in three parts. This involves continuous assessment, which takes thirty per cent (30%) of the total mark. The mid-semester assessment and end of semester examination covering theory and practical areas and this takes seventy per cent (70%) of the total mark.

The regulatory body for the external assessment is the Nurses' and

Midwives' Council for Ghana. This is done after the sixth semester; where students take a licensure examination as prerequisite into practice.

An introductory course that covers content and practice in critical thinking is under consideration. Nevertheless, critical thinking processes are partially integrated into the programme courses. The licensure examination is supposed to assess students' critical thinking. After qualification and or registration, the individual nurse is expected to do at least six months continuous internship so as to be recognized as a professional registered mental health nurse.

#### *Tool For Data collection*

A standardized tool was used to assess to the critical thinking dispositions of mental health nursing students in Ghana. An important aspect of the research was to describe the relevance of the tool for the Ghanaian context. The study was about critical thinking dispositions and a standardized tool, the California Critical Thinking Disposition Inventory (CCTDI) developed by Facione and Facione (1992), was used (Appendix A). The questionnaire was in English and usually takes about 20 minutes to administer. In addition, a short questionnaire about demographic characteristics developed by the researcher was used to obtain data from the participants (i.e. age, gender, year of study/ level of education, and scores based on admission criteria (Appendix B). Prior to the study, a pilot sample (n=14) from Ankaful Nurses' Training College, Ghana who were not to be part of the main study was used to ascertain the usability, readability, and understanding of words used in the CCTDI and the demographic form. From the pilot study, it was observed that students required 25 minutes to complete the tool.

### *Scoring the CCTDI*

The CCTDI can be either hand scored or machine scored using the seven scoring templates included with the test manual. There is one template for each of the seven scales. The seven templates also facilitate the calculation of the overall CCTDI total score.

To score the CCTDI using the seven scoring templates, one first finds the number of points for each item response in a given scale then sums those points and converts that sum to the scale score. The conversion of raw points to scale score can be accomplished using the ‘CCTDI Scale Standardization Test Table’ or the score can be hand calculated using the conversion ratio for each scale.

When all seven scales have been recorded, it will have generated all seven scale scores. The sum of the scale scores is the CCTDI Total Score.

### *Interpretation of CCTDI Scores*

The CCTDI offers eight scores; the seven scale scores and the overall CCTDI Total Score. Persons with a weak disposition toward critical thinking earn no more than 3 points per item, while persons with a strong disposition toward critical thinking earn 5 or 6 points per item. The CCTDI Scale Standardization Table permits these points to be converted into the proper scale scores.

The recommended score for interpretation of each scale is 40 and the suggested target score is 50. Persons who score below 40 on a given scale are weak in that critical thinking dispositional aspect; persons who score above 50 on a scale are strong in that dispositional aspect.

An overall CCTDI Total Score of less than 280 shows serious and overall

deficiency in the disposition toward critical thinking. An overall score of 350 or more is a solid indication of across the board strength in the disposition toward critical thinking.

### *Data Collection*

A convenience sampling was used to recruit the participants into the study. This is a non-random sampling technique (Brink & Wood, 1998; Polit & Hungler, 1991). The sampling technique was chosen based on the purpose of the study. To this end, the Pantang mental health nursing students were the potential participants appropriate for the study in relation to exploring the critical thinking dispositions of mental health nursing students in Ghana.

### *Recruitment of Participants*

Initially, the researcher contacted the Principal of the Pantang Nurses' Training College (NTC) to inform her of the intended study. The Head of the Department of Nursing, University of Ghana wrote a letter on behalf of the researcher for the study (Appendix C). Permission was then sought from the school authorities by the researcher to meet the entire student body collectively if possible or, alternatively, in their respective classrooms to inform them about the study. An advertisement of the study was made and all students were invited to participate in the study. A specific date for the study was set for the 6<sup>th</sup> of June 2002. The venue, time, and role of the participants were indicated. Also, a participant information sheet indicating the overview of the study was provided to the students (Appendix D). The sample was all the students (n=81) of Pantang NTC because they all willingly agreed to participate.

### *Description of Research Procedure*

In this descriptive study, data were collected among participants in levels 1, 2 and 3 in their respective classrooms at Pantang Nurses' Training College. Before the questionnaire was administered, participants were given prior information about their participation in the proposed study. The venue was their respective classrooms during their normal class period. Those who did not want to participate were asked to leave or hand over a blank questionnaire and were informed that a decision not to participate would not have any adverse consequences. Those who were willing to participate in the study were asked to sign a consent form (Appendix E). All students (n=81) were provided with the consent form because they all willingly agreed to participate in the study. The participants were informed that the test measures personal characteristics and critical thinking or habits of the mind that involve the use of critical thinking skills. The test must be administered in a class setting. It is a commercial tool or product. The exercise took about 25 minutes to complete. Each participant completed the questionnaire independently without consulting other participants. However, the researcher was available to respond to questions about items that needed clarification and was present during the whole exercise.

### *Research Assistant*

A research assistant who is an undergraduate nursing student from University of Ghana was involved in the data collection. She was briefed on her

specific roles and the scope of her responsibility. The assistant helped in the distribution of the questionnaires and collection of the completed questionnaires.

### *Research Standards*

Issues of validity and reliability were considered in the study. For example, data collection and data analysis procedures fit the research questions and were comparable to studies from the literature. A pilot study with sample size 14 was carried out as a means to support the workability of the instrument for a Ghanaian student population. Based on the feedback, it was detected that the words used in the CCTDI and the demographic form were clear to the participants. Nonetheless, the participants were not able to finish within the 20 minutes, as is normal procedure for questionnaire. An extra five minutes was therefore added for them to complete the questionnaire and, in the rest of the study, 25 minutes were allocated to enhance questionnaire completion.

A major issue in relation to standards involved the cultural relevance of the tool for a Ghanaian nurse context. Ways of ascertaining such relevance center on issues of reliability and validity described in the next section, as well as on comparison of study findings to nursing student samples in other countries.

### **Issues in Measuring Critical Thinking**

The criteria for accreditation from the National League for Nursing (NLN) included the need to measure growth in critical thinking. Chaffee (1997) stated that critical thinking is a complex process and as a result, developing appropriate ways to measure it becomes a challenge. Measurement is the process of

“assigning numbers to objects where the numbers are used to qualify or quantify a concept or a phenomenon of interest” (Waltz, Strickland, & Lenz, 1994, p. 31).

There are several issues that must be considered when determining methods to measure the concept of critical thinking and the dispositions to think critically.

These consist of matching the definition to programme goals, the reliability and validity of the instruments, suitability of the tool to the programme, and the usability of the tool.

In terms of matching the definition, each nursing program is to develop or refine its own definition of critical thinking (NLN, 1991). Therefore, to appropriately measure it, the critical thinking definition must be clearly based on program goals. That is, instruments chosen to measure it must have a definition that matches the school’s definition of the concept.

There are a variety of commercial instruments to measure critical thinking. However, because these tests were developed based on a particular author’s definition, the instrument may or may not be appropriate for an individual program. This concern has prompted assessment experts to suggest that locally developed instruments may better conform to program goals than commercially developed instruments (Payne, Vowell, & Black, 1991).

When considering any test of critical thinking, reliability and validity are not solely inherent in the test, but are clearly related to characteristics such as the items, the students, and the situation in which the test is to be taken (Yarbrough, 1992). Reliability of an instrument is the “degree of consistency of which it measures the attributes it is supposed to be measuring” (Polit & Hungler, 1991,

p.410). That is, the ability of the instrument to create results that can be reproduced. Reliability of a measuring tool can be assessed in different ways such as stability, internal consistency, and equivalence.

The stability of a measure refers to the extent to which the same results are obtained on repeated administration of the instrument. Assessment of the stability of a measuring tool is based on test-retest reliability. Here, the researcher administers the same test to a sample of individuals on two occasions and then the computer is used to calculate the correlation between the scores obtained. (i.e., a reliability coefficient). *Internal consistency* of an instrument refers to the extent to which all of its subparts are measuring the same characteristic. The approach involves split-half technique where the items composing a test are split into two groups and scored independently and the scores on the two half-tests are used to compute a correlation coefficient. Alternatively, each item is correlated with all other items (i.e., alpha coefficient). *Equivalence* approach involves two techniques: (1) when different researchers are using two instruments to measure the same phenomena at the same time; and (2) when two presumably parallel instruments are administered to individuals at about the same time. The aim is to determine the consistency or equivalence of the instruments in yielding measurements of the same traits in the same people. Stability and equivalence have been demonstrated for the CCTDI in previous research (Facione & Facione, 1994) and were not tested as part of this study.

#### *Reliability of the CCTDI*

The overall reliability of the CCTDI was established by Facione and

Facione (1992) and confirmed by Facione, Sanchez, and Facione (1995). Facione and Facione (1992) administered CCTDI to a sample of 587; the overall Cronbach alpha reliability was .91 and the individual sub-scales Cronbach's alpha ranged from .71 to .95.

Validity refers to "the degree to which an instrument measures what it is supposed to be measuring" (Polit & Hungler, 1991, p.418). There are different facets of validity and the purpose of a study and type of data collection instrument used guides the researcher's choice of reliability and validity strategies (Brink & Wood, 1998, p. 331). There are four types of validity that need to be considered when assessing the properties of an instrument (i.e., face, construct, content and criterion- related validity).

Face validity determines whether the instrument looks as though it is measuring the appropriate construct. Although face validity should not be considered as primary evidence for the quality of an instrument, it may be helpful for a measure to be considered to have face validity if other types of validity have also been shown.

Construct validity is the degree to which the instrument measures the underlying construct. Construct validity is a difficult and a challenging task for researchers (Polit & Hungler, 1991, p. 420). Assessing the construct validity of the instrument is an important consideration when selecting an appropriate instrument. This was observed in the findings of the current study in relation to the participants' dispositions scores and their scores based on admission (i.e. participants with higher admission scores tend to score higher on the dispositions

inventory and it progressed in that manner). The participants with high admission scores performed better on the total and sub-scale dispositional inventory than those with lower admission scores.

Content validity is concerned with the sampling adequacy of items for the construct that is being measured. Content validity is relevant for both affective measures such as psychological traits and for cognitive measures. For example, in affective measures, the researcher who wanted to develop a new instrument would begin by developing a thorough conceptualization of all components of the construct of interest so that the measure would adequately capture the entire domain (Frank-Stromborg, 1989).

There are no completely objective methods of measuring the adequate content coverage of an instrument. Nevertheless, an expert in the field should be able to judge whether or not the tool adequately samples the known content (Brink & Wood, 1998, p.176). In addition, a panel of experts cognizant of the content area can be drawn together to judge whether or not a particular instrument adequately represents the known universe of the content being covered.

Criterion-related validity is “the degree to which a subject’s performance on a measurement tool and the actual behavior are related” (Brink & Wood 1998, p.336). Predictive and concurrent validity are examples of the types of criterion-related validity. Predictive validity refers to “the adequacy of an instrument in differentiating between the performance and behavior of individuals on some future criterion” (p.337). For example, when a researcher correlates the incoming Scholastic Appraisal Test (SAT) of critical thinking scores of students with

subsequent grade- point average, the predictive validity of the SATs for universal performance is being evaluated. Concurrent validity is established based on the correlation between two measures of the same concept administered simultaneously (Brink & Wood, 1998).

An issue that determines whether or not an instrument can be used as part of a program assessment plan is feasibility. Feasibility is linked to resources. When financial resources are limited, the cost of both the instrument and the scoring of test results becomes a very important consideration. Also, how much researcher's time and effort will this instrument demand? Besides, one has to consider the availability of the equipment and computer program needed for data analysis.

It generally takes 20 minutes to administer the California Critical Thinking Disposition Inventory test, although our pilot study in Ghana suggested that 25 minutes was needed. This could be because English is not the first language of many students. Before an instrument is selected for testing critical thinking and critical thinking dispositions, assessment of all these issues must be considered. When the answers to these questions are unsatisfactory, alternatives to the instruments may need to be considered.

### **Data Analysis**

Descriptive statistics were used to describe the participants' personal characteristics of age, gender, year of study/ level of education, and scores based on admission criteria as well as scores on dispositional subscales that suggest a

tendency toward the use of critical thinking skills. Statistical Package for Social Sciences (SPSS) was used for data analysis. Analysis of Variance (ANOVA) was used to compare mean scores among the students in each year of the programme. In addition, t-tests and measures of central tendency (i.e., means and standard deviations) were used where appropriate.

As part of the overall data analysis process, the reliability of the CCTDI was established using the Cronbach alpha. This result is reported in chapter four of the thesis.

### **Ethical Considerations**

#### *Confidentiality/Anonymity*

The participants were assured of confidentiality of the study (no names), as only code numbers appeared on the questionnaires. That is, neither the demographic questionnaire nor the dispositions inventory had any identifying information. The completed questionnaires were kept in a locked cabinet and were accessible only to the researcher, the supervisor, and the thesis committee. Prior to undertaking the study, ethical approval was sought from the Institutional Review Board (ethics committee) at Noguchi Memorial Institute for Medical Research, University of Ghana (Appendix F).

#### *Disposal of Data*

After the study, the data collected from the participants and other data will be retained for seven years, after which they will be destroyed in accordance with the policy of the University of Ghana (College of Health Sciences' Ethics Committee).

### *Benefits And Risk*

There were neither perceived risk nor immediate direct benefit to the participants. Although there was no immediate benefit, the zeal of participation in a study of this kind could influence participants' ideas about critical thinking and their dispositions toward critical thinking.

### *Summary of the Research Process*

In summary, the CCTDI was administered to 81 students in mental health nursing at Pantang Nurses' Training College. Findings are presented in Chapter Four.

## **Chapter Four**

### **Results**

The results of the study are presented in this chapter. Included are a description of the sample, discussion of the reliability of the CCTDI for the study population, and a summary of the critical thinking dispositions of Pantang mental health nursing students. Also, dispositions scores of students from each class are presented in relation to demographic variables such as age, gender and admission scores.

#### **Description of Sample**

Data were collected from all the students (n=81) in the three academic levels of Pantang Nurses' Training College (PNTC). Table 1 summarizes the demographic information of participants.

**Table: 1** Description of Sample

Variable	Dimension	Sample (N = 81)	Percent (%)
<b>Gender</b>	Male	30	37
	Female	51	63
<b>Year of Study</b>	Year One	29	35.80
	Year Two	28	34.56
	Year Three	24	29.62
<b>Educational Level</b>	Senior Secondary General Cert. "O" & "A"	60	74.6
		18	22.2
	Other	3	3.7
<b>Age in years</b>	15 to 19	3	3.7
	20 to 24	53	65
	25 to 29	18	22.2
	30 to 34	7	8.6
<b>Admission Scores</b>	Aggregate 6 -11	3	3.7
	Aggregate 12 -17	18	22.2
	Aggregate 18 -23	38	46.9
	Aggregate 24-29	22	27.2

In this study, data were collected from 51(63%) female and 30(37%) male participants. This comprised 29 (35.80%) participants from the first year group, 28 (34.56%) participants from the second year group, and 24 (29.62%) participants from the third year group. Data were gathered on the participants' highest level of academic achievement prior to admission to the nursing programme. Participants with senior secondary school educational background formed the largest group of 60 (74.6%). Also, 18 (22.2%) participants had educational levels of General Certificate 'O' and 'A' before admission to the

Pantang nursing program. Three participants (3.7%) had additional qualifications. That is, one had completed a three-year teacher-training program, one had completed a two-year Higher National Diploma program in Agricultural Engineering and the third person completed a three-year post-secondary program in cocoa-board services. The overall mean age was 23.6 years and the standard deviation was 0.69. The age range was between 19 and 34 years.

The categorization of the admission score or aggregate for intake into the nursing program is as follows: aggregate 6 to 11 is valued as an outstanding/excellent performance, aggregate 12 to 17 is equivalent to very good, aggregate 18 to 23 is good and aggregate 24 to 29 is fair. The majority of the students (46.9%) are in the “good” category. Of note is that over one quarter of the students (27.2%) had an admission score or aggregate in the “fair” category.

#### *Analysis of Reliability*

The overall reliability of the CCTDI has been established (Facione & Facione, 1992). In order to find reliability between correlation coefficient of Cronbach Alpha for the instrument norm done by Facione and Facione (1992) in the USA and the Alpha in the current study, a reliability analysis was calculated. Initially, the coefficient values were converted to  $z$  ( $z$  obs values). The values obtained were then assessed using some set decision rule (Cohen, 1988) to determine the likelihood of difference in the correlation between the two groups' scores. It was found that although reliability in the current study as compared to the instrument norm for the critical thinking dispositions of truth seeking, self-confidence, and maturity was low and for analyticity was high, the overall

reliability showed no significant differences ( $z = 0.291$ ,  $p = 0.460$ , two tailed) in the reliability scores. While this could be of concern regarding the cultural differences for establishing the validity and reliability of the tool, a similar test was run for comparative analysis between the reliability scores of a study done on North American nursing students by Profetto-McGrath (1999) and the current study. The findings showed no significant overall differences between the three groups' alpha scores. These findings are presented in Table 2. It seems likely therefore, that CCTDI is as reliable for use with nursing students in Ghana as it was for use with student nurses in Western countries.

**Table: 2** Reliability Analyses of Differences in CCTDI Alpha scores in Facione and Facione (1992), Profetto-Mcgrath (1999) and Current Study (2003).

Sub-scales	F & F (1992)	P. M (1999)	Current Study (2003)
Overall alpha score	.91	.91	.81
Truth-seeking	.71	.70	.31
Systematicity	.74	.73	.68
Inquisitiveness	.80	.84	.70
Open-mindedness	.73	.64	.64
Self-confidence	.78	.82	.56
Maturity	.75	.70	.55
Analyticity	.72	.84	.79

**Abbreviations-** F & F =Facione & Facione (1992), P.M. = Profetto-McGrath (1999)

### **Critical Thinking Dispositions of Mental Health Nursing Students**

This section presents the critical thinking disposition scores and the subscale scores for the 81 participants of the study.

*Total Critical Thinking Dispositions Scores*

Table 3 provides the total overall disposition mean scores of the three academic levels. The overall mean scores were: for the year one group (283.28); for the second year group (287.70) and for the third year group (290.00). The minimum score (182), as well as the maximum score (351), was registered from the third year group. There were no significant differences in the mean scores across the three years of the programme.

**Table 3:** Years One to Three Total Critical Thinking Dispositions Scores

Year	Mean	SD	Median	Min -Max
Year 1	283.28	21.19	284.00	238 327
Year 2	287.70	20.20	289.50	243 316
Year 3	290.00	34.93	294.50	182 - 351
All years	286.94	25.48	287.00	182 - 351

*Years One to Three Total Critical Thinking Dispositions Sub-Scale Scores*

Table 4 shows the three academic levels' dispositional sub-scale scores. The highest mean score was attained on the subscale of analyticity (50.36). About 5% of the participants were able to attain the maximum score of 60. The overall second highest dispositional sub-scale score was for inquisitiveness (48.14).

Furthermore, the mean score for systematicity was 46.53 for the three groups. Also, the overall mean score for open-mindedness was 44.63. The findings revealed scores below the cut-off point on overall mean scores for the three dispositional sub-scales of truth-seeking (36.37), maturity (38.85), and self-confidence (39.85).

**Table 4:** Years 1-3 Mean scores of Critical Thinking Disposition Sub-Scale

Sub-Scale	All years (n=81)		year1 (n=29)		Year 2(n=28)		Year 3(n= 24)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Truth-seeking	36.37	7.18	37.14	7.98	33.71	5.33	38.54	7.12
Open-Minded	44.63	6.21	43.59	4.54	44.82	5.58	45.67	8.35
Analyticity	50.36	6.05	49.00	5.76	51.74	5.10	50.63	7.24
Systematic	46.53	6.31	46.24	5.42	46.75	6.73	46.63	7.03
Confidence	39.85	6.64	38.45	5.84	40.56	7.15	40.63	6.94
Inquisitiveness	48.14	6.06	47.41	5.46	49.18	4.75	47.79	7.92
Maturity	38.85	6.56	39.17	5.32	38.67	6.23	38.96	8.33

#### *Year One Critical Thinking Dispositional Sub-Scale Scores*

Table 4 presents results attained by year one participants on the critical thinking disposition sub-scales. In all, the mean scores for the participants on the scales of analyticity (49.00), inquisitiveness (47.41), systematicity (46.24), and open mindedness (43.59) were above the target score of 40. The truth – seeking, self-confidence and maturity mean scores were below the cut-off point. The year one participants showed the least variance with truth-seeking with a standard deviation of 3.61 and a range of 7. The minimum and maximum sub-scale scores were truth-seeking (17-53), open-mindedness (32-56), inquisitiveness (36-57), systematicity (37-57), maturity (25-50), self-confidence (25-49), and analyticity (37-58).

### *Year 2 Critical Thinking Disposition Sub-Scale Scores*

Data from second year students are presented in Table 4 and show mean scores between 40-50 on five dispositional sub-scales (analyticity, open-mindedness, systematicity, confidence, and inquisitiveness). The truth seeking and maturity sub-scales were below 40. The lowest score of the study (22 on the maturity sub-scale) was registered by a student from the second year group. The minimum and maximum sub-scale scores were truth-seeking (21-47), open-mindedness (34-56), inquisitiveness (41-59), systematicity (33-58), maturity (22-49), self-confidence (22-51) and analyticity (43-60).

### *Year Three Critical Thinking Dispositional Sub-Scale Scores*

Table 4 presents third year participants' dispositional sub-scale scores. The group attained mean scores above 40 on five dispositional sub-scales: open-mindedness, inquisitiveness, systematicity, self-confidence, and analyticity. Furthermore, participants from this year group had the highest overall mean scores for open-mindedness, self-confidence and inquisitiveness sub-scale scores as compared to the other year groups. Concerning the truth-seeking sub-scale, the highest overall mean score (38.54) was registered from this group. Additionally, 12% of the participants from this group registered a mean score of 57 on the truth-seeking sub-scale, the highest of the three levels of academic group. The minimum and maximum sub-scale scores were truth-seeking (24-57), open-mindedness (34-56), inquisitiveness (18-58), systematicity (29-57), maturity (22-49), self-confidence (17-52) and analyticity (28-60).

**Table 5** Year 1-3 One-way Between Group ANOVA Post-hoc Test

Scale	<u>Year 1</u>		<u>Year 2</u>		<u>Year 3</u>	
	mean difference	p	mean difference	p	mean difference	p
Truth seeking	3.42	.068	-4.83*	.015	4.83*	.015
Open-mindedness	1.24	.456	-.85	.627	-2.08	.230
Analyticity	-2.54	.177	1.63	.332	.910	.589
Systematicity	-.51	.765	.13	.944	.380	.828
Self-confidence	-2.19	.216	-.018	.992	2.18	.239
Inquisitiveness	-1.76	.227	.38	.823	-1.39	.415
Maturity	.74	.673	.21	.907	-.530	.775

*Years 1-3 One-way Between- group ANOVA with Post-hoc Test*

A one-way between-group analysis of variance was conducted to explore the impact of year of study on participants' critical thinking dispositions as measured by the dispositions inventory. Participants were divided into three groups according to their year of study. There were statistically significant differences [ $F(2, 78) = 3.37$ ,  $p < 0.05$ ] among the three groups regarding only the truth-seeking sub-scale scores. Post-hoc comparisons using the Tukey HSD test indicated that mean scores for the third year students (Mean = 38.54, SD = 7.12) were significantly different from year two participants (Mean = 33.71, SD = 5.33), ( $F(2, 79) = 3.368$ ,  $p = .015$ ). Year three did not differ significantly from group one. There were no significant differences among the students according to years in the programme and any of the other dispositional sub-scale scores.

### **The Relationship Between CCTDI Scores and Demographic Variables**

The working hypotheses of this study attempted to find out the relationship between critical thinking dispositions and selected students' characteristics; age, gender, year of study and their admission scores. These characteristics have been dealt with in relation to the total critical thinking dispositions and the sub-scale scores, respectively.

#### *Ages of Participants and Total Critical Thinking Dispositions Scores*

Table 6 shows data on participants' age and the total scores on the dispositions to think critically. The overall mean score for the 19 years of age participants was 296, the 20 to 24 years age groups score was 286.79, the 25 to 29 years age groups' score was 291.28, and the 30 to 34 years age group scored 273. The total overall mean score was 286.94.

**Table: 6** Ages of Participants and Total Critical Thinking Dispositions Score

Age	No	Mean	SD	Min	Max
19 yrs	3	296	6	290	302
20-24 yrs	53	286.76	23.44	238	328
25-29 yrs	18	291.28	22.17	182	326
30-34 yrs	7	273	46.54	182	357

#### **Age of Participants and Critical Thinking Sub-scale Scores**

In this study, participants' age and disposition toward critical thinking were examined. The critical thinking sub-scale scores for the various groups of students are shown in Table 7. Based on the CCTDI scores obtained, mean scores were above 40 on six of the seven sub-scales: truth-seeking, open-mindedness,

inquisitiveness, systematicity, maturity, and analyticity for the 19 years age group. Also, compared to the other age groups, this age group attained the highest mean scores on five of the sub-scale scores. Furthermore, the 20 to 24 years age group scored above 40 on the five sub-scales of open-mindedness, inquisitiveness, systematicity, self-confidence and analyticity.

The 25 to 29 years age group attained mean scores above 40 on five dispositional sub-scales (open-mindedness, inquisitiveness, systematicity, self-confidence, and analyticity). This group attained the highest score on the systematicity sub-scale. The 30 to 34 years age group scored above the cut-off point of 40 on the four sub-scales of inquisitiveness, systematicity, self-confidence and analyticity.

**Table: 7** Age and Critical Thinking Dispositions Sub-Scale Scores

Sub-Scale	Age (years)	Mean	SD	Min	Max
Truth- Seeking	19	42.00	7.55	43	49
	20 to 24	35.66	6.76	17	53
	25 to 29	37.56	7.63	26	57
	30 to 34	36.29	7.63	24	48
Open-mindedness	19	47.33	8.50	39	56
	20 to 24	44.38	5.66	32	60
	25 to 29	46.17	6.53	37	59
	30 to 34	38.29	9.12	24	48
Inquisitiveness	19	51.33	3.06	48	54
	20 to 24	48.57	5.39	36	59
	25 to 29	48.39	4.70	41	57
	30 to 34	42.86	11.50	18	51
Systematicity	19	46.00	1.00	45	47
	20 to 24	46.17	6.32	33	58
	25 to 29	47.56	5.24	22	49
	30 to 34	46.86	10.12	22	46
Maturity	19 yrs	41.00	7.55	34	49
	20 to 24	39.06	5.94	25	54
	25 to 29	39.39	7.42	22	49
	30 to 34	35.00	8.50	22	46
Confidence	19 yrs	35.67	1.53	34	37
	20 to 24	39.85	6.46	25	51
	25 to 29	40.44	5.58	22	49
	30 to 34	40.14	11.33	17	52
Analyticity	19	52.33	2.08	50	54
	20 to 24	50.70	5.85	37	60
	25 to 29	50.00	4.83	28	60
	30 to 34	47.86	10.70	28	60

#### *Correlation Between Age and Critical Thinking Dispositions*

The first working hypothesis stated that there will be a positive correlation between the ages of the students and their critical thinking dispositions. To examine the linkage between the disposition to think critically and age, the Pearson product moment correlation was computed on the sub-scales and total score of the disposition inventory. Table 8 presents correlation coefficient scores

between critical thinking disposition sub-scale scores and age.

**Table 8** Correlation (r) Between Age and Critical Thinking Disposition Scores (n=81)

<i>Sub-scale/ scale</i>	<i>Age</i>
Total scores of CCTDI	-.102
Truth seeking	.008
Open mindedness	-.279*
Inquisitiveness	-.234*
Systematicity	.070
Maturity	-.139
Self-confidence	.468**
Analyticity	.517**

\*p < 0.05; \*\* p < 0.01

In this study, open mindedness, and inquisitiveness scales are negatively and significantly correlated with age. In other words, the younger students achieved stronger dispositions on open-mindedness and inquisitiveness scales. On the other hand, self-confidence and analyticity sub-scale scores are positively correlated with the dispositions to think critically, with the older age groups tending to score higher than the younger age group.

### **Gender and Critical Thinking Dispositions Sub-Scale Score**

The second working hypothesis stated that male nursing students will perform significantly higher than their female counterparts on the truth-seeking

and self-confidence dispositional sub scales. Table 9 presents findings on gender and critical thinking dispositions sub-scale scores. The findings have shown a slightly higher mean score for females as compared to males on five of the seven sub-scale scores (open-mindedness, inquisitiveness, systematicity, self-confidence and analyticity) as well as total scores, but these differences are not statistically significant. Males scored only slightly higher than females on truth-seeking (a difference of 1.9) and on maturity (a difference of 2.57).

**Table: 9** Performance Scores on Critical Thinking Dispositions Sub-scales by Gender

<i>Subscales</i>	<i>Males</i>		<i>Females</i>		<i>t</i>	<i>d*</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
Total scores	283.53	31.55	288.94	21.22	.992	0.01
Truth-Seeking	36.53	5.99	36.27	7.85	-.156	-1.9
Open-Mindedness	43.77	6.80	45.14	5.84	-.959	0.01
Inquisitiveness	46.27	7.11	49.24	5.11	-2.178	0.06
Systematicity	46.33	7.42	46.65	5.63	-.215	0.04
Maturity	40.47	7.32	37.90	5.94	1.719	0.04
Self Confidence	38.77	8.00	40.49	5.69	1.130	0.01
Analyticity	49.23	6.99	51.02	5.40	-1.287	0.02

*d\** = Effect size

*Gender difference on Truth seeking and Self-confidence Sub-scale Scores*

An independent- sample t-test was conducted to compare the total dispositions' scores of males and females. There were no significant differences

in scores [ $t(2, 79) = .992, p = .360$ ]. The magnitude of the differences in the means was very small ( $\eta^2 = 0.011$ ).

An independent- sample t-test was conducted to compare the truth seeking and self-confidence subscale scores for male and female participants. There were no significant differences in the truth seeking subscale scores [ $t(2, 79) = -.156, p = .88$ ]. The effect size was large ( $-1.9$ ). Also, there was no significant difference in self-confidence scores for males and females [ $t(2, 79) = 1.130; p = .26$ ]. The magnitude of the difference in the means was very small ( $\eta^2 = .01$ ).

### **Relationship Between Admission Score and Total Critical Thinking Dispositions Scores**

The third working hypothesis was related to the relationship between the participants' admission scores prior to the nursing programme and the critical thinking dispositions scores. In Table 10, the categorization of the admission score or aggregate for intake into the nursing program was as follows: aggregate 6 to 11 is valued as an outstanding/excellent performance; aggregate 12 to 17 is equivalent to very good; aggregate 18 to 23 is good and aggregate 24 to 29 is fair. The mean score of participants with admission scores of 6 to 11 was 306. The participants with admission scores of 12 to 17 attained an overall mean score of 288.83. Participants with admission score of 18 to 23 had an overall mean score of 285.61 and those with admission scores of 24 to 29 had an overall mean score of 285.

The total overall mean score for the group was 286.94. Generally, participants with the best admission scores (6 to 11) performed better than the rest

of the categories and the trend followed in that sequence. There were no statistically significant differences in the total critical thinking disposition scores for the four groups [ $F(3,77) = .70, p = .55$ ].

**Table 10:** Performance Scores on Total Critical Thinking Dispositions by Admission Scores

<i>Admission Score</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
CTTOT Scores	81	286.94	25.48	182	351
6 to 11	3	306.67	11.02	294	314
12 to 17	18	288.83	20.20	243	326
18 to 23	38	285.61	29.08	182	351
24 to 29	22	285	23.99	238	328
Total	81	286.94	25.48	182	351

### **Relationship Between Admission Scores and Critical Thinking Sub-scale Scores**

In this study, participants' scores based on admission and disposition toward critical thinking were analyzed. The sub-scale scores for the various groups of students are shown in Table 11. Based on the disposition inventory scores obtained, mean scores were above 40 on six of the seven subscales: open-mindedness, systematicity, inquisitiveness, maturity, analyticity, and self-confidence for the aggregate 6-11 group. Also, compared to the other groups, this group attained the highest mean score on four of the sub-scales: systematicity, self-confidence, maturity and analyticity. Furthermore, the 12- 17 group scored above 40 on five of the dispositional sub-scales: open-mindedness,

inquisitiveness, systematicity, maturity and analyticity. They were able to attain the highest score on the truth seeking sub-scale (38.50). The lowest score on the self-confidence sub-scale was attained from this group.

The 18-23 group attained mean scores above 40 on five dispositional sub-scales: open-mindedness, inquisitiveness, systematicity, self-confidence and analyticity. The group attained the highest score on the open-mindedness and analyticity sub-scales. Also, the 24- 29 group scored above the cut-off point on five sub-scales: open-mindedness, inquisitiveness, systematicity, self-confidence, and analyticity.

**Table 11** Critical Thinking Disposition Sub-scale Scores and Participants' Admission scores

<i>Scale</i>	<i>Admission Score (Aggregate)</i>	<i>Mean</i>	<i>SD</i>
Truth seeking	6 to 11	37.00	3.61
	12 to 17	38.50	7.11
	18 to 23	35.55	7.41
	24 to 29	35.95	7.22
Open-mindedness	6 to 11	45.33	5.86
	12 to 17	44.06	5.22
	18 to 23	45.74	6.28
	24 to 29	43.09	6.85
Inquisitiveness	6 to 11	48.33	1.53
	12 to 17	48.72	5.30
	18 to 23	47.84	7.34
	24 to 29	48.14	4.65
Systematicity	6 to 11	51.33	3.51
	12 to 17	45.89	6.54
	18 to 23	46.08	6.65
	24 to 29	47.18	5.79
Maturity	6 to 11	45.00	3.46
	12 to 17	41.33	5.35
	18 to 23	37.84	6.86
	24 to 29	37.73	6.56
Self confidence	6 to 11	41.67	9.50
	12 to 17	38.28	6.09
	18 to 23	40.34	7.48
	24 to 29	40.05	5.29
Analyticity	6 to 11	56.67	2.52
	12 to 17	50.22	5.42
	18 to 23	49.92	6.63
	24 to 29	50.36	5.63

*Dispositional Sub-scale Scores of Participants Based on Admission Scores*

A one-way between group ANOVA was conducted to explore the impact of admission scores on participants' total critical thinking dispositions.

Participants were divided into four groups according to their scores based on admission (Group 1: aggregate 6 to 11; Group 2: 12 to 17; Group 3: 18 to 23;

Group 4: 24 to 29). There were no significant differences in the participants' critical thinking disposition scores in relation to their admission scores.

**Table 12** One-way Between- groups ANOVA with Post- hoc Test for Critical Thinking Disposition of Participants' Scores Based on Admission Scores

<i>Scale</i>	<i>Mean square</i>	<i>F</i>	<i>Significance</i>
CTTOT	460.815	0.702	.554
Truth seeking	37.347	0.717	.545
Open mindedness	35.364	0.915	.438
Inquisitiveness	33.195	0.084	.969
Systematicity	31.231	0.778	.510
Maturity	96.932	2.367	.077
Self confidence	21.479	0.477	.699
Analyticity	42.328	1.162	.330

### **Summary**

The descriptive findings have been presented in this chapter including the description of the sample, assessment of reliability of the CCTDI for a Ghanaian student nurse population, and presentation of the critical thinking dispositions scores of students compared for years in programme, age, gender, and scores based on admission criteria. In the majority of the sub-scales of CCTDI, participants showed a positive disposition toward critical thinking: analyticity, inquisitiveness, open-mindedness, and systematicity. As well, two sub-scale scores showed negative correlation between age and critical thinking dispositions. Furthermore, there were no significant differences in the participants' total critical

thinking disposition scores in relation to their demographic variables (gender, age, scores based on admission, and year of study). Nonetheless, a one-way ANOVA showed significant differences of mean scores for truth seeking of third and second year students. The discussion in Chapter Five, explores the significance of the results.

## Chapter Five

### Discussion

The discussion of results in this chapter focuses on the research questions and the working hypotheses.

#### **What are the Critical thinking Dispositions of Mental Health Nursing Students?**

Generally, the total dispositions scores for the three academic levels showed an overall mean score of 286. This reflected the groups' overall positive dispositions toward critical thinking. It cannot be concluded as to whether the participants' attainment of this score was based on the curriculum of the program, the instructional methodologies being adopted in the program, or the presence of the dispositions in the participants prior to program entry. Nor can we conclude that there was an increase in the critical thinking abilities through the program. All the academic levels were within the range of 280-350 and this reflected a positive overall disposition. These mean scores were slightly above the cut-off point, which indicated minimal tendency for critical thinking dispositions on the average. Although the third year participants' mean score was slightly higher than those in the second year by 2.3 points and those in year one by a margin of 6.72, there were no statistically significant differences in their overall mean scores, except for the sub-scale score on truth-seeking. The explanation for the slightly higher mean score for the third year participants over the other groups could be that, experience and the year three course curriculum or the synthesis of learning that is expected to occur by third year might have enhanced their critical thinking dispositions.

One person attained a score of 351, which reflected an overall stronger orientation toward the critical thinking dispositions. On the other hand, 31 participants had overall total disposition scores of less than 280, which showed serious overall deficiency in the disposition toward critical thinking. Forty-nine participants attained scores within the range of 280 to 350.

A one-way ANOVA showed no statistically significant differences [ $F(2, 78) = 0.63, P = .429$ ] among the three academic levels. This finding of the study is similar to that of Facione (1990). In her study, the overall mean scores for the sample were; 310.0 for the 510 nursing sophomores 308.0 for the 817 nursing juniors, and 311.4 for the 1035 nursing seniors. The participants from Facione's study scored higher than the participants in this study. The explanation could be that the participant characteristics are different. For example, the participants in this study are being prepared at the level of diploma coupled with limited teaching and learning facilities in the environment. Furthermore, the Ghanaian cultural system with its authoritarian educational approaches and pressure for conformity, as well as the differences in educational expectations of teachers and parents in the two countries, might have affected the students' dispositions.

Furthermore, students in this study were able to attain a mean score above 40 on four of the dispositional sub-scales (i.e., analyticity, inquisitiveness, open-mindedness, and systematicity). These findings are quite close to Facione and Facione's (1994b) study in which the participants attained scores above 40 on six of the dispositional sub-scales. It is interesting to note that the highest mean score among the seven sub-scales attained by the participants was on the analyticity

sub-scale. Analyticity measures alertness to reason and evidence to solve problems. A health care professional or a mental health nurse who is not inclined toward analyticity will likely fail to anticipate significant consequences. The explanation from this high mean score on the analyticity may mean a lot. For example, in this study, assessing the process of critical thinking ability of the participants was mainly centered on the thinking processes. Meanwhile, if the assessment were to be done such that the participant is engaged in the process of doing the tasks, and if the learner is able to articulate what one is thinking as one goes along, perhaps a more holistic assessment of the sub-scale could have been derived. In this regard, the finding is noteworthy for further studies on the sub-scale using the skills and the dispositions to score the participants.

In this study, the second highest mean score was attained for inquisitiveness (48.14), which tallied with the results of Colucciello (1997) and Facione (1995) who reported a mean score of 48 on that scale. It must be noted that the participants in this study are being prepared at the diploma level. In Ghana, the staff - patient ratio in the psychiatric health care sector is very low. As the psychiatric nurses are the only staff who spend 24 hours daily with the patients, the other health professionals depend immensely on the mental health nurses' assessment data in their health care activities. This makes the nurses curious about expanding their knowledge toward patient care. When desired patient outcomes are not achieved, these nurses are most likely to continue to question treatment and other care options and look for other solutions. Therefore, it is not surprising to see a high mean score on their inquisitiveness dispositional

sub-scale. It is also possible that the high score on the inquisitiveness sub-scale has implications for the students' potentials for developing expert knowledge and clinical practice ability.

In this study, the mean score of open-mindedness for the three academic levels was 44.63. About 17.4% of the participants scored between 32 to 40 points on this dispositional sub-scale; about 61.6% of them scored between 40-50 on the scale; 19.7% scored between 50-59; and, one person was able to attain the maximum score of 60. Open-mindedness implies tolerance of divergent views with sensitivity to the possibility of individual bias (Facione and Facione, 1994b). This disposition is vital in mental health nursing care where staff are faced with difficult ethical issues in their problem -solving and decision-making.

On the other hand, truth-seeking had the lowest mean score of any of the sub-scales. This finding is congruent with the finding that a relatively large proportion of students in Western and Asian countries had truth-seeking scores below the cut-off point (Ber et al, 1996). The study groups' mean score for the truth-seeking sub-scale (36.37) was below the cut-off point and this reflects a negative disposition toward critical thinking. The low scores may be explained in relation to the Ghanaian culture. The culture emphasizes effort, endurance, and compliance. Parents and educators are usually influenced by this philosophy in their interactions with their children and students. As such, students tend to be socialized to be passive learners and are not encouraged to question and seek the truth. Facione and Facione (1996) indicated that truth-seeking targets intellectual honesty, objectivity, courage to acquire the best knowledge, the inclination to ask

challenging questions, and the willingness to pursue evidence and proof regardless of where it may lead. A lack of truth-seeking behaviors may endanger a client if the nurse does not pay attention to the evidence that points to patients' missed diagnoses or to cues indicating a change in patients' status. Facione and other studies in the western world and in Asia noted similar findings. It was suggested that most students would experience difficulties in learning if courses were designed on the assumption that all pre-registered nursing students will be equally capable of seeking the truth (Facione & Facione 1994b). Also, Perry (1970) related the low truth-seeking scores to the dualistic nature of thinking among students. He asserted that students in current educational programs are not interested in looking for the truth and are only concerned with the authoritative right answer. In summary, a one-way ANOVA using post-hoc comparison test indicated that mean scores for third year students were significantly different from second year students. The finding has shed light on the necessity to investigate the extent to which teaching and learning processes contribute to students' critical thinking dispositions.

Furthermore, the overall mean score of all the participants on the critical thinking self-confidence disposition was below the cut-off point of 40. Individuals with positive self-confidence dispositions trust themselves and believe that others trust them as well in making sound reasonable judgments. In addition, these individuals see themselves as good thinkers who are able to lead others in the rational resolution of problems. The low mean score of the group on self-confidence is quite difficult to explain. One may hold the view that these

participants might have rated their thinking skills lower than the actual critical thinking abilities. It is also possible that the participants may lack confidence in their ability to solve problems independently by assessing, interpreting, and applying information learned primarily through self-directed investigations of the resources currently available. Meanwhile, self-confidence is crucial to individuals in the Ghanaian nursing profession and needs to be fostered.

### **Do the Critical Thinking Disposition Scores Differ Among the Students?**

The second research question and the working hypotheses addressed issues in relation to the differences in critical thinking scores among the students at the PNTC.

#### *Truth-Seeking*

On the sub-scale of truth-seeking the highest score of 38.54 was achieved by the third year students. The year one participants scored higher (37.14) than the year two students (33.71). Truth-seeking targets honesty and objectivity with findings even if what is found does not support one's self-interest or one's preconceived opinions. The variations in the scores for the groups may explain that higher level of educational program does not necessarily guarantee higher development or enhancement of the individual student's attitude toward truth-seeking disposition. This low score might indicate a lack of seeking knowledge in a given situation or that the participants are afraid to ask questions. A one-way ANOVA showed significant differences of mean scores in truth-seeking for third and second year students. The explanation for this could be that experience, the year three-course curriculum or the synthesis of learning that is expected to occur

by third year might have put the year three students at an advantage. Also, the year three experiential learning might have encouraged reciprocal exchange of knowledge and that may foster their active search for knowledge.

The critical thinking scores on the truth-seeking sub-scale were no different in this sample when compared to the instrument norms as well as to other studies. For example, Colucciello (1997) found that the mean scores for each group of students enrolled in all of the academic levels were below 40 for the disposition of truth-seeking and below 50 for each of the subsequent six dispositions. Similarly, Facione, Facione & Sanchez (1994), in their study of undergraduate students ( $n = 334$ ) in six majors in a mid-Atlantic University, found a low truth-seeking disposition to be common.

In the Ghanaian educational system, educators often view questions asked by students as inconvenient. This may be due to the limited time at their disposal during the lecture periods. Moreover, they consider the questions to be a means of testing their knowledge base or a way of challenging them. As a result, some of the nursing students tend not to ask questions but only accept what they have been taught without challenge. Eventually, the passive role played by students in the instructional encounter tends to affect their active search for knowledge. Furthermore, the educational system in Ghana tends toward rote learning with limited questioning of the teacher or professor by the students and this may affect their ability to seek the truth. One of the major problems of many didactic-oriented classes is the presentation in a lecture of a myriad of content that students are expected to know. Reciprocal exchange of knowledge is limited in this

teaching context; and student questioning and discussion of the content is minimal. This type of pedagogy fosters a passive learner, which restricts the pursuit of inquiry. It stunts the probing of the students' thinking and reasoning processes and diminishes the encouragement of exploration of differing or opposing points of view.

In summary, a one-way ANOVA using post-hoc comparison test indicated that mean scores for third year students were significantly higher than year two students. The finding is of much interest and points to the need to investigate the extent to which teaching and learning processes contribute to students' critical thinking.

#### *Self-Confidence*

The mean score of the participants on the critical thinking self-confidence disposition was below 40, indicating a low disposition. Also, the year one participants showed the least variance as indicated by the largest standard deviation of 5.84 and a range of 24. The year two participants showed the greatest variation with a standard deviation of 7.15 and a range of 29. The first year group low score is not difficult to understand. This is because the rapid change in technology and global new knowledge, coupled with the complex nature of decision-making for mentally ill patients, may pose a challenge to these students thereby affecting their level of confidence. Also, many critical decisions must be taken with caution and mistakes can be disastrous to both staff and clients in the mental health situation. Meanwhile, these first year students were just nine months into their program. Therefore, they may lack confidence. In all, based on

ANOVA, there were no statistically significant differences among the three groups or among male and female participants on this sub-scale.

#### *Open-Mindedness*

The participants in the third year and the second year scored higher on the open-mindedness sub-scale as compared to the first year group. Indeed, nurse educators can enhance students' attitudes of open-mindedness through strategies such as debates, structured controversies, and written assignments. These approaches can be designed to challenge students to determine the legitimacy of their own views against the arguments or evidence of others who hold divergent views (Facione, 1990). In Profetto McGrath's (1999) study of baccalaureate nursing students, first, second and third year students tended to score higher than the fourth year students. Generally, in the Ghanaian educational system, the common practice of educators is to give assignments to students. This may foster an attitude of open-mindedness. However, the issue usually raised by students is that educators pay little attention to giving constructive feedback to students regarding their work on the assignments. This is a cause for concern, as students will not have the opportunity to enhance their learning for future assignments.

#### *Analyticity*

It is interesting to note that the year three and two participants attained a score of 50 and above on the analyticity sub-scale. This sub-scale measures the use of reason and evidence to resolve problems. Students endowed with the disposition measured by this sub-scale are able to seek out and make connections between their clinical observations and their theoretical knowledge base and this

is very crucial in mental health nursing practice. Also, this result might indicate that the second and third year students had more experience integrating theory with practice as compared to the year one participants. In general, the participants showed a positive disposition toward critical thinking on most of the sub-scales of the dependent measure (CCTDI), suggesting that although critical thinking is not formally taught, it may be implied in the content of nursing education or may be part of the general socialization and childrearing practices of Ghanaians.

### **What are the Relationships between the Participants' Dispositions Scores and the Demographic Variables?**

The third working hypothesis focused on the relationship between participants' critical thinking disposition scores and selected demographic variables.

#### *Age*

In terms of age the 19 years of age participants' mean score is 9.21 higher than the mean score of the 20 to 24 years of age group. This difference is not statistically significant. An explanation for the high mean score for the 19 years of age group participants over the other age groups, and in particular, the 30 to 34 of years age group may be explained by the following reasons. The assessment tool in this study may be more focused on the theoretical or thinking aspect of the participants than the practical aspect, which calls for an individual's experience. On the other hand, changes in schooling since the 30-34 year olds were in school may be a factor. Also, older students may have been lower on the dispositions inventory when they started the programme and stayed that way. In addition, the

negative relationship between age and sub-scales such as open-mindedness, analyticity, and critical thinking disposition scores is amazing. It is noted that experience is the function of age, education and maturity. It seems that the negative relationship between age and some of these critical thinking disposition scores indicate methodological artifacts in the research and shows evidence of low statistical power of the design. On the other hand, the results may imply that critical thinking abilities of the older students declined as they aged over the period of the nursing programme. Furthermore, other issues such as personal, family, and social factors might have affected the grown-ups in this study. This is hypothetical, however, and the differences may be attributed to chance, as they were not statistically significant. Nonetheless, the results of the self-confidence sub-scales are positively correlated with age ( $r = .468$ ;  $p = .003$ ). This result may encourage students to commit themselves to develop critical thinking self-confidence ability in their quest for problem solving and decision-making. Therefore, educators ought to help students develop that habit of the mind.

Age has been correlated with critical thinking and this relationship has been based on the notion that critical thinking ability improves as the individual advances in age. Alfaro-LeFevre (1995) noted that older people were more likely to be critical thinkers as development occurs with maturity and older people have experienced the application of reasoning in diverse ways. This view does not support the working hypothesis of the current study that there will be a positive correlation between the ages of the students and critical thinking dispositions. In this study, the results support the findings of other studies (Brooks & Shepherd,

1990; Gross et al, 1987; Lynch, 1988; Waite, 1989). They all found no positive relationship between age and critical thinking disposition scores.

In summary, this finding is worth noting in the study. Future studies are needed to explore the impact of age on critical thinking ability in nursing students from program entry to exit. This perhaps may show whether the individual's critical thinking ability has increased, decreased or remained the same as the student aged over the course of the nursing program. It would be difficult, however, to distinguish whether age or the nursing education programme enhanced any changes found.

#### *Admission Scores*

In this study, participants with excellent admission scores scored slightly higher on the dispositions inventory as compared to the other participants, with increasing admission scores related to increasing critical thinking dispositions scores. This is of enormous importance to the study in considering admission scores as a predictor of success in nursing programs. Bauwens & Gerhard (1987) noted that knowledge of predictive measures might be useful in guiding remedial services at various levels of the student's education.

In summary, a one-way ANOVA found no significant relationship between the admission scores and participants' critical thinking dispositions scores in the current study [ $F(3,77) = .702$ ;  $p = .554$ ]  $p > .05$ ]. This finding is similar to the study by Berger (1984). He noted no significant relationship between students' GPA/ admission scores and critical thinking ability ( $r = .139$ ).

On the other hand, the findings in this study contradict a number of studies

on the variable, which found a positive relationship between GPA/ admission scores and critical thinking scores as well as success in nursing programs (e.g., Behrens, 1996). She found a significant relationship between critical thinking scores of students and GPA/ admission scores ( $r = .591, .592$  and  $.511, p < .01$ ). Also, Facione (1990) believes that predicting a given student's success based on variables such as admission scores/ GPA, NCLEX is usually unsafe. This is because other multiple factors come into play in determining the success or failure of students in a program. In all, to determine the success or failure of a student in a program, further studies with large sample size and multiple comparisons on other variables are needed to determine the relevance of such measures as predictors of success in nursing programs in Ghana.

### *Gender*

Male participants tend to score slightly higher on the truth-seeking and maturity sub-scales. The findings of this study showed some similarities in the truth-seeking sub-scale but not self-confidence as compared to the findings reported by Berger (1984) and Sullivan (1987). Ber, McGowan and Rubbin (1996), in their longitudinal study of critical thinking dispositions of students ( $n=106$  males) and ( $n =118$  females) of a community college in the U S A, found that a higher percentage of the males scored higher on the truth-seeking sub-scale (25%) than did their female (16%) counterparts. Also, 33% of females were weak in critical thinking self- confidence as compared to 13% of the male counterparts. These findings are worth noting.

In this study, the female participants performed slightly higher on the self-

confidence scale than the male participants but the overall scores tended to be low. This result could be related to the influence of personal or cultural values and other issues in the Ghanaian set-up in the form of submissiveness to a higher authority. In other words, the low score on this scale may be due to the worldview of these individuals. They may rate their thinking abilities lower than their actual critical thinking abilities. In addition, the males' low performance on this scale may be due to their inability to take part in group activities and/ or peer review, activities which tend to enhance self-confidence of the individual.

In summary, no significant relationship was found between gender and the critical thinking dispositional sub-scale scores  $t(79) = .16; p = .88, p > .05$  level. This finding negates the working hypotheses of the current study that the male participants will perform significantly higher on the self-confidence and the truth seeking dispositional sub-scale scores than their female counterparts. Furthermore, data sets showed that there were no significant differences between gender, age and admission scores on critical thinking dispositions suggesting some level of homogeneity in the operation of these variables. These findings suggest a trend toward egalitarian practices in the nursing training programmes.

### **Summary**

In summary, the significance of findings was discussed in relation to critical thinking dispositions of students, years in program, age, gender, and admission scores. The summary and conclusion are presented in Chapter Six.

## Chapter Six

### Summary and Conclusion

The purpose of this descriptive study was to find out the critical thinking dispositions of mental health nursing students in the three academic levels at the Pantang Nurses' Training College (PNTC) in Ghana. The study used a conceptual framework based on the affective dimension of critical thinking as described by Facione and Facione (1992). The Second Chapter included a review of the literature. This helped the researcher to gain insight into the concept of critical thinking dispositions. As well, implications of the study in part evolved from the literature review. Chapter Three included the research design. The CCTDI was administered to 81 participants from the PNTC. In Chapter Four, the results of the study were presented. In the majority of sub-scales of CCTDI, participants showed a positive disposition toward critical thinking (i.e., Analyticity, Inquisitiveness, Open-mindedness and Systematicity). As well, many of the sub-scales and the total score showed negative correlation between age and critical thinking dispositions. Furthermore, Chapter Five included discussion of the study results. The discussion was guided by the hypotheses of the study. In all, a one-way ANOVA showed significant differences of mean scores for truth-seeking of third and second year students. Sub-scale scores on self-confidence and analyticity were positively and significantly correlated with age. Open-mindedness and inquisitiveness sub-scale scores were significantly but negatively correlated with age. There were no significant differences for gender or admission scores. In this final chapter, the limitations of the study, implications for nursing education, practice, and policy formulation, suggestions for further research, and

conclusions are discussed.

Generally, the findings of this study have implications for curriculum development and approaches to teaching. Also, using the participants' critical thinking disposition profiles, nurse educators might better understand students' dispositions to think critically. They might better select clinical opportunities to improve on the students' strengths in order to guide and support them in promoting their critical thinking ability.

### **Implications for Future Nursing Education**

Currently, demands for skillful and fair-minded thinkers and learners arise in every academic discipline and professional field. A prerequisite for success is to prepare students as critical thinkers and this is recognized as an achievable educational outcome.

By using critical thinking as a model to structure teaching, students might be given a broader way of conceptualizing. This may enhance their ability to make informed, fair-minded, clinical judgments in contexts of relative uncertainty, thus improving their nursing decisions and interventions in a wide variety of situations.

The findings in the study shed light on the teaching and learning process in mental health nursing education in one programme in Ghana. For instance, the high scores for analyticity and systematicity suggest that these students do use reason and evidence in their problem solving and decision-making. As well, the experiences of the second and third year students, particularly in their courses and the general programme expectations, may play a role in their ability to be more

organized, focused and diligent in their problem solving. Therefore, these dispositions of the students ought to be reinforced by the educators in the teaching and learning process.

The low scores for truth-seeking and critical thinking self confidence of the students raised questions as to whether the low scores were due to the popular Ghanaian nurse educators' lecture-based method of teaching. The teacher is viewed as the "source of truth" and the student "in ignorance." As well, the Ghanaian culture emphasizes effort, endurance and compliance. Our parents and educators reinforce such values.

The challenge for nurse educators is to adopt alternative methods to the traditional modes of instruction so as to enhance students' problem solving skills, independent and self-directed learning and critical thinking. This can be achieved through debates, critiques and problem-based learning, which encourages group learning, thereby developing students' leadership skills, open-mindedness and self-confidence. As obstacles may exist in implementing this teaching and learning process, educators must also educate or/ and update their knowledge and skills so as to meet the teaching and learning needs and styles. Also, to encourage truth-seeking, nursing students need to continually re-evaluate new information and evidence and be attuned to considering alternative evidence.

Furthermore, nurse educators and mentors should be encouraged to serve as role models in pedagogical strategies both in the classroom and clinical settings. That is, by using the participants' critical thinking dispositions profiles, nurse educators might better understand students' dispositions toward critical

thinking. They might better select clinical opportunities to build on the students' strengths, and guide and support them in promoting their critical thinking ability. Moreover, educators might be able to have research-based discussions about students' weaknesses in relation to critical thinking, how those might limit their ability to make sound judgments and what strategies could be used to strengthen the dispositions.

In summary, this work has implications for community mental health nursing education. If the emphasis is on care in the community, educators ought to produce mental health nursing graduates who will be independent and self-sufficient in promoting the mental health of their community.

### **Implications for Nursing Practice**

Health professionals and mental health nurses in particular, do work with clients and their families with complex health problems and other related problems. These problems do arise daily and tend to defy predetermined solutions. To meet these clinical situations, health professionals must engage in clinical judgments in a reflective manner toward their decision-making and problem solving.

The findings of this study provide health professionals with an insight into the potential ability of future practitioners in their clinical problem solving and decision-making abilities. For example, the dispositions scores could guide mentors in meeting the demands of their students or subordinates in the clinical teaching sessions. For instance, students could be introduced to the use of reflective journals or field diaries. Journaling requires the recording of

information so as to illustrate the student's ability to analyze, synthesize and interpret such information in making clinical decisions and solving clinical problems. This facilitates the growth of dispositional attributes such as analyticity and systematicity in the individual. It is worthy to note that the high scores for systematicity and analyticity have the potential to assist mental health nurses to be focused and diligent in their assessment of patients' data in the nursing process. Also, it might guide them to make more informed decisions and solve problems based on solid evidence, thereby ensuring safe, effective and high quality client care. Furthermore, the high scores on open-mindedness have implications for mental health nurses in their therapeutic roles. That is, it would assist them to be sensitive and tolerant to the views of their clients and families during counseling and other ethical decision-making sessions.

In clinical teaching, nurses and nursing students can be presented with case scenarios and/ or simulations so as to solve problems and make decisions that give them practice in planning and coordinating multiple and complex patient care demands. To this end, dispositional attributes such as analyticity and systematicity, inquisitiveness and open mindedness can be enhanced. Also, there should be identifiable preceptors on the wards who would make the environment conducive and relaxed for clinical teaching and learning of nursing students. Such preceptors should be available to coach or assist students in problem solving. Their presence and guidance and/ or interaction through peer review and group networking would foster self-confidence and open mindedness in students.

### **Implications for Future Nursing Research**

The findings in this study are solely about mental health nursing students from PNTC in Ghana. As such, these findings are unique. Nonetheless, the study of the dispositions toward critical thinking among nursing students is in its infancy in Ghana. Therefore, future replications of such studies in other locations are needed. Findings do suggest that the CCTDI is a valid tool in the Ghanaian nursing environment.

Concerning the critical thinking ability of the participants in this study, there are some areas that were not explored. Such areas deserve further research. This could include a longitudinal study of one group of Diploma in mental health nursing students, following them through the three years to determine what the variance from one year to the next might be by using the dispositions inventory to measure changes in the students' propensities for clinical thinking. This would enable the researcher to observe how learners engage in the process of doing their tasks as well as take note of how they articulate what they are thinking as they go along. This study could start with the commencement of the academic program and follow a cohort of students to the end of the program. The critical thinking dispositions abilities of the participants would then be determined to see whether they had increased, decreased or remained the same. As a comparison, a longitudinal study of critical thinking dispositions of students in another discipline of nursing (e.g., general nursing, intensive care nursing or critical care nursing) could be conducted. Moreover, future research could explore issues that may take place after nursing students' graduation that may affect critical thinking dispositions. If these factors in the practice environment are identified, they may

be adapted into learning strategies and tested.

Personally, I would very much like to continue working with these participants and to further explore their critical thinking dispositions in other spheres. For example, I could use a qualitative method to explore both the dispositions and skills of these participants. In this vein, I would be able to observe the participants' engagement in the process of doing their tasks as well as how they are able to articulate what they are thinking as they go along. Based on the disposition profiles of the participants in this study, I suggest that the dispositions inventory could be appropriately used with Ghanaian students.

Furthermore, a study of one group of baccalaureate nursing students in Ghana with a similar sample profile as the profile used to establish the instrument norm could be conducted to further validate the inventory use in the Ghanaian environment. Research on a larger scale using the approach of this study has the potential to further explore and validate the findings of this study. An action research study relating differing teaching strategies to critical thinking dispositions outcome scores could yield valuable insights into what educational strategies best improve critical thinking dispositions and/ or skills.

### **Implications for Policy Formulation**

Currently, there are educational reforms underway in the Ghanaian education system. This is reflected in nursing education in that nurse educators are expected to show the outcomes of their programs to various stakeholders and accreditation bodies. In order to increase the quality of educational programs in nursing, policies must be enacted whereby the goals, objectives and teaching

activities of nursing curricula will mandate significant improvement in critical thinking abilities in all nursing college graduates. In this vein, nurse educators must improve their curriculum and set higher standards, assume greater accountability and invite more student involvement in the teaching and learning process. Ultimately, college graduates should possess certain skills and dispositions of critical thinking in order to render effective, safe and high quality client care. The results of this study can be a contribution to these policies.

The low scores on truth-seeking and self-confidence on the dispositions inventory have implications for policy formulation. For example, policies should be enacted so as to encourage nursing institutions to change their traditional modes of instruction to a form of instructional methodology and education and curricular organization (e.g., problem-based learning) that has its roots in cognitive psychology and education. The problem-based learning has proved effective in professional nursing education in a Canadian University in Alberta (Day, & Williams, 2000). In other words, it is recommended that educational content and experiences include the essential knowledge and values presented in the form of a blueprint, and that the professional standards embedded in the blueprint be chosen as the standards or criteria by which nursing curricula are guided. Critical thinking should be included as a desired nursing education outcome. As part of this process, key players in curriculum development must have the total framework in mind. Other stakeholders who have an understanding of the potential outcomes should be identified and encouraged to become involved. Also, an evaluation programme must begin from the onset of the

programme. Furthermore, a policy should be in place so as to formalize and institutionalize a system of national in-service education and/ or orientation programming for every practicing nurse. The intent of this life-long programme is to update nurses' knowledge, skills and attitudes as well as nurture and/ or facilitate habits of the mind of nurses likely to enhance problem solving and decision-making. Furthermore, policies must direct the changing of the name of the nursing institutions (Nurses' Training College) to " College of Nursing" so as to reflect the upgrading in their level of education.

#### *Limitations of the study*

The participants in this study are from a single institution- PNTC in Ghana. As well, the small sample size ( $n=81$ ) serves as a source of possible bias. The small sample size may explain why there were no significant relationships between the demographic variables such as age, gender, admission scores and the critical thinking disposition scores. The research is therefore in no way representative of all mental health nursing students in Ghana. The findings serve as an illustration of what the critical thinking dispositions are for the students at Pantang Nurses' Training College. As such, the findings from this research cannot be generalized to other mental health nursing students in Ghana.

Furthermore, this is a tool designed for North American students. In the development of instrument norms, the sample consisted of baccalaureate students, whilst the present study was comprised of students being prepared at the diploma level in Ghana. Perhaps this factor and the small sample size have moderately affected the results for some of the dispositional sub-scale scores.

Whilst we cannot apply the findings of this study to the critical thinking dispositions of other mental health nursing students, the work has value in that it provides beginning insight into critical thinking dispositions of a small group of mental health nursing students in Ghana. Also, the findings in this study provide a foundation on which to build future more rigorously designed studies. The participants in this study have moderately validated some findings of the instrument norms and this has been most encouraging.

In summary, these limitations are acknowledged and are reflections of reality, which is fundamental to any research undertaken. As such, implications or recommendations have evolved from the study in relation to nursing practice, education, policy and future research.

### **Conclusion**

Critical thinking is increasingly recognized as a prerequisite to professional practice. Nurse educators are expected to teach and assess the critical thinking ability of nursing students. In this study, mental health nursing students at the Pantang Nurses' Training College (PNTC) were studied on their dispositions to think critically by using the California Critical Thinking Dispositions Inventory. Also, the inventory was used as a means of finding out the feasibility of its use in the Ghanaian context.

The study enabled me to develop some insight into the students' decision-making and problem solving. I believe these findings may be of some use to others. Nurse educators can derive meanings from the findings of the study and use them to improve upon their curriculum and instructional methodologies so as to enhance nurses' problem solving and decision-making. Also, it would guide practicing nurses in making competent clinical judgments.

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## APPENDIX A

**CCTDI (A Disposition Inventory)****DIRECTIONS:**

1. Put your code number on the 10 item answer sheet.
2. Indicate how much you agree or disagree with each of the 75 numbered statements by filling in the appropriate place on the answer sheet in the columns 1 to 6. Read the two examples first.

**EXAMPLE A: The best things in life are free.**

**(1) Agree Strongly** 00000● **(6) Disagree Strongly**

The answer sheet above shows the response of someone who **strongly disagree with Example A.**

**EXAMPLE B: I'm always doing more than my share of the work.**

**(1) Agree Strongly** 0●0000 **(6) Disagree Strongly**

The answer sheet above shows the response of someone who **Less Strongly Agrees with Example B.**

- 1 Considering all the alternatives is a luxury I can't afford.
- 2 Studying new things all my life would be wonderful.
- 3 The best argument for an idea is how you feel about it at that moment.
- 4 My trouble is that I'm easily distracted.
- 5 It's never easy to decide between competing points of view.
- 6 It bothers me when people rely on weak argument to defend good ideas.
- 7 The truth always depends on your point of view.

- 8 It concerns me that I might have biases of which I'm not aware.
- 9 I always focus the question before I attempt to answer it.
- 10 I'm proud that I can think with great precision.
- 11 We can never really learn the truth about most things.
- 12 If there are four reasons in favor and one against, I'd go with the four.
- 13 Men and women are equally logical.
- 14 Advice is worth exactly what you pay for it.
- 15 Most college courses are uninteresting and not worth taking.
- 16 Test that require thinking, not just memorizing, are better for me.
- 17 I can talk about my problems for hours and hours without solving anything.
- 18 Others admire my intellectual curiosity and inquisitiveness.
- 19 Even if the evidence is against me, I'll hold firm to my beliefs.
- 20 You are not entitled to your own opinion if you are obviously mistaken.
- 21 I pretend to be logical but I'm not.
- 22 It's easy for me to organize my thoughts.
- 23 Everyone always argues from their own self interest, including me.
- 24 Open mindedness has limits when it comes to right and wrong.
- 25 It's important to me to keep careful records of my personal finances.
- 26 When faced with a big decision, I first seek all the information I can.
- 27 My peers call me to make judgments because I decide things fairly.
- 28 Being open-minded means you don't know what's true and what's not.
- 29 Banks should make checking accounts a lot easier to understand.
- 30 It's important to me to understand what other people think about things.
- 31 I must have grounds for all my beliefs.
- 32 Reading is something I avoid, if possible.
- 33 People say I rush into decisions too quickly.
- 34 Required subjects in college waste time.
- 35 When I have to deal with something really complex, it's panic time.
- 36 Foreigners should study our culture instead of us always trying to understand theirs.

- 37 People think I procrastinate about making decisions.
- 38 People need reasons if they are going to disagree with another's opinion.
- 39 Being impartial is impossible when I'm discussing my own opinions.
- 40 I pride myself with coming up with creative alternatives.
- 41 Frankly, I'm trying to be less judgmental.
- 42 Frequently, I find myself evaluating other people's arguments.
- 43 I believe what I want to believe.
- 44 It's just not that important to keep on trying to solve difficult problems.
- 45 I shouldn't be forced to defend my own opinions.
- 46 Others look to me to establish reasonable standards to apply to decisions.
- 47 I look forward to learning challenging things.
- 48 It makes a lot of sense to study what foreigners think.
- 49 Being inquisitive is one of my strong points.
- 50 I look for facts that support my views, and not facts that disagree.
- 51 Complex problems are fun to try to figure out
- 52 I take pride in my ability to understand the opinion of others.
- 53 Analogies are about as useful as a sailboat on freeway
- 54 You could describe me as logical.
- 55 I really enjoy trying to figure out how things work.
- 56 Others look to me to keep working on a problem when the going gets tough.
- 57 Getting a clear idea about the problem at hand is the first priority.
- 58 My opinion about controversial topics depends a lot on who I talk to last.
- 59 No matter what the topic, I am eager to know more about it.
- 60 There is no way to know whether one solution is better than another.
- 61 The best way to solve problems is to ask someone else for the answers.
- 62 Many questions are just too frightening to ask.
- 63 I'm known for approaching complex problems in an orderly way.
- 64 Being open-minded about different worldviews is less important than people think
- 65 Learn everything you can, you never know when it could come in handy.

- 66 Life has taught me not to be too logical.
- 67 Things are as they appear to be.
- 68 If I have to work on a problem, I can put other things out of my mind.
- 69 Others look to me to decide when the problem is solved.
- 70 I know what I think, so why should I pretend to ponder my choices.
- 71 Powerful people determine the right answer.
- 72 It's impossible to know what standards to apply to most questions.
- 73 Others are entitled to their opinions, but I don't need to hear them.
- 74 I'm good at developing orderly plans to address complex problems.
- 75 To get people to agree with me I would give any reason that worked.

## Appendix B

## Background/ Demographic Questionnaire

DIRECTIONS: 1) To be filled out after completion of the inventory tool.  
2) Tick the appropriate answer.

Code Number.....

- 1) What is your gender?
  - A) Male
  - B) Female
  
- 2) What was your highest level of academic achievement (education) before admission to the nursing programme?
  - a) SSS Level
  - c) "O" & "A" Level
  - e) Other, please specify.....
  
- 3) In what year of the programme are you now?
  - a) Year one
  - b) Year two
  - c) Year three
  
- 4) What is your age?
  - a) 19 years
  - b) 20-24 years
  - c) 25-29 years
  - d) 30-34 years
  - e) 35-39 years
  - f) 40 years and above
  
- 5) What was your overall aggregate/ grade point at the highest level of education as indicated above?  
Please specify .....

Appendix C  
INFORMATION SHEET

**Project Title:** *Critical Thinking Dispositions of Mental Health Nursing Students*

**Researcher:** Andrews Dake, M'Phil. (Nursing) Student, University of Ghana, Legon

**Thesis Supervisor:** Mary Opare, BA, MN. (Phone # 513250)

**Purpose:** I will investigate Mental Health Nursing Students' Critical Thinking Dispositions

Critical Thinking is a means of problem solving and decision making which involves thorough appraisal or reflection over an issue or situation at hand.

The disposition to think sets the tone for ways of viewing and examining the problem situation or issues requiring the use of critical thinking skills.

I am a graduate student in the Department of Nursing at the University of Ghana and I am interested particularly in Mental Health nursing student background in critical thinking abilities. This has prompted me into conducting a research in critical thinking dispositions of mental health nursing students. In order to explore these areas, I want mental health nursing students who are willing to complete a questionnaire which measures critical thinking characteristics and habits of the mind. This will take about 20 minutes, and it will be arranged for students during class's period.

You do not have to put your name on the questionnaire so no one will know your answers.

You do not have to be in the study if you do not want to. Your decision will not affect your progress in the nursing programme.

The outcome of this study will provide educators and other people involved in curriculum development with valuable insights into how to assess critical thinking dispositions in students. Strategies that might facilitate the dispositions in students

will be recommended. The data may be presented at a research conference or published in a scholarly journal.

Department of Nursing, University of Ghana, Legon

Appendix D 1

CONSENT TO PARTICIPATE IN RESEARCH

**Project Title:** *Critical Thinking Dispositions of Mental Health Nursing Students*

I have been asked to participate in the above research to be conducted by Andrews Dake, from the Department of Nursing, University of Ghana. I give my free consent by signing this form and I understand that:

- a) The research will be conducted as described in the information sheet, a copy of which I have retained.
- b) If I decide to withdraw, my decision will be accepted. I do not have to give reason for withdrawal of my consent.
- c) My consent to participate is voluntary.
- d) The information and findings of this research may be presented at a research conference or published in a scholarly journal. However, my right to privacy will be retained and personal details will not be revealed, as only a code number will appear on any form or questionnaire.
- e) I have read and understood the information sheet and had all my questions answered to my satisfaction.

.....

.....

Signature of Participant

Date

.....

.....

Signature of Researcher

Date

## Appendix D 2

Confirmation that information and informed consent were understood

- 1 Tell me what you are being asked to do?
- 2 Can you refuse to be in the study?
- 3 Could anything bad happen to you if you decide not to be in the study?
- 4 What bad things could happen if you decide not to be in the study?
- 5 Could your doctors or nurses get mad at you if you decide not to be in the study?
- 6 Why would the doctors and nurses get mad? (Ask only if the answer to # 5 is yes. Be sure that they know that the researcher is not allowed to say who decided to be in the study and who decided not to be in the study).
- 7 Can anything good happen if you decide to be in the study?
- 8 What good things could happen?
- 9 Are you allowed to ask the researcher questions?
- 10 Are you allowed to quit the study once you have started?
- 11 How do you quit the study?
- 12 If you quit the study, will this affect how the doctors and nurses treat you?
- 13 What does the person doing the study mean by 'keeping a secret'?
- 14 Can the person doing the study tell anyone what you say while you are in the study? (Why or why not?)
- 15 Can anyone read what you say while you are in the study (Why or why not?)
- 16 How will the researcher make sure that no one knows who you are when you are in the study?

## APPENDIX E

Department of Nursing

May 29, 2002

The Principal  
Nurses' Training College  
Pantang.

Dear Madam,

## APPLICATION FOR SITE APPROVAL TO CONDUCT RESEARCH

I write to introduce to you Mr. Andrews Dake, a Master of Philosophy student from the Department of Nursing, University of Ghana, Legon. Mr. Dake is conducting a research entitled: *Critical Thinking Dispositions of Mental Health Nursing Students*.

I would be grateful if you could permit him to collect data from students in your institution toward his research work.

Attached is a copy of Ethical Clearance from the Institutional Review Board of the Nouguchi Memorial Institute for Medical Research, in the College of Health Sciences, University of Ghana, Legon.

Thank you.

Yours faithfully,

Ag. Head of Department  
Mare Opare (Miss)