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# Measurement of Critical Thinking for the RN to BSN Student

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## Measurement of Critical Thinking for the RN to BSN Student

Critical thinking is a necessary skill for professional nurses and has been noted to be key for successful nursing practice in the 21<sup>st</sup> century (Gyeong & Myung, 2008). The American Association of Colleges of Nursing (AACN) defines critical thinking as “All or part of the process of questioning, analysis, synthesis, interpretation, inference, inductive and deductive reasoning, intuition, application, and creativity” (2008, p. 36). Nurse educators are challenged to incorporate various teaching/learning activities and create opportunities to develop critical thinking skills as students’ progress through their nursing program (Billings & Halstead, 2009). It is also important for educators to evaluate nursing curricula for the impact on critical thinking (Billings & Halstead, 2009; Shin, Lee, Ha, & Kim, 2006).

Consistent with the *Essentials of Baccalaureate Education for Professional Nursing Practice* developed by the AACN, critical thinking is noted as an important program outcome of a Registered Nurse to Baccalaureate of Science in Nursing (RN to BSN) program in a state university in south central Kentucky. When deciding on how to quantitatively evaluate this outcome, faculty reviewed critical thinking instruments available at the time and selected the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>) as a measurement tool. The instrument was relatively inexpensive and had acceptable reliability scores. Additionally, InterEd offered customized, machine scoring and reporting of scores.

### **Purpose**

The purpose of this research study was to examine the effect of a RN to BSN nursing curriculum on critical thinking skills of registered nurses. The InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>) was utilized as a measure of critical thinking.

### **Methods**

Approval was obtained from the Institutional Review Board at the institution where the students were enrolled to conduct this quasi-experimental, pre-test/post-test design study. A convenience sample of students enrolled over a 10-year period (1999-2009) in an RN to BSN program was used.

The RN to BSN curriculum experienced some changes throughout the period of data collection, but maintained the consistent content to include leadership and management, research, professional issues, community/public health, and nursing informatics. During the data collection timeframe, this RN to BSN program allowed the students flexibility in progression through the program. During a regularly scheduled class meeting of a professional issues course required during the first semester, students completed the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>) as a pre-test. In a capstone course during the final semester students were asked to complete the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>) a second time as a post-test.

The InterEd Critical Thinking Instrument (CT<sub>N</sub>) consisted of 103 items. The items represented two critical thinking concepts: *critical thinking disposition* and *critical thinking skills*. Each concept had two subscales. The *critical thinking disposition* concept included the subscales of *self-efficacy* and *disposition toward rational processes*. The *critical thinking skills* concept included the subscales of *logical thinking and decision skills* and *decision under uncertainty skills* (InterEd, 2007).

Two of the subscales, *self-efficacy* and *disposition toward rational processes* measured students' attitudes toward matters relevant to critical thinking. Self-efficacy reflects how students perceive their effectiveness in a decision making environment. Disposition toward rational processes refers to the value individuals place on rational processes and their attitude toward

objectivity. The two remaining subscales, *logical thinking and decision skills* and *decision under uncertainty skills*, measured students' critical thinking skills. The *logical thinking and decision skills* concept is what many critical thinking tests attempt to quantitatively measure and includes the ability to draw inferences and make generalizations. *Decision under uncertainty skills* reflected making decisions in actual situations (InterEd, 2007). Alpha coefficients of the scales have been reported to range from 0.80 – 0.90 and test reliability coefficients were reported to be greater than 0.75 (InterEd, n.d.).

## Results

A total of 381 RN to BSN students completed the survey over the 10-year period. Out of that number, 237 surveys were declared unusable (pre-test or post-test was missing). One hundred and forty four surveys (pre/post surveys) were successfully matched and declared usable for the analyses. To assess changes in critical thinking over time, data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 16.0. One-way repeated measures (ANOVA) was used to measure the change in critical thinking of students as measured on the pre-test and post-test. The independent variable was the intervention (RN to BSN nursing curriculum). Students took the pre-test when they first enrolled in the program and the post-test at the point of graduation from the program. The dependent variable was the change in the critical thinking skills of these students after exposure to the RN to BSN nursing curriculum.

Results indicated there was no statistically significant change in students' *self-efficacy* [pretest,  $M = 61.20$ ,  $SD = 27.40$ ; posttests,  $M = 64.00$ ,  $SD = 29.22$ ];  $F(1, 143) = 1.45$ ,  $p > 0.05$ ), *logical thinking and decision skills* [pretest,  $M = 55.42$ ,  $SD = 28.14$ ; posttest,  $M = 54.23$ ,  $SD = 26.40$ ];  $F(1, 143) = 0.26$ ,  $p > 0.05$ ), and *decision under uncertainty skills* [pretest,  $M = 63.40$ ,  $SD = 27.20$ ; posttest,  $M = 64.41$ ,  $SD = 28.00$ ];  $F(1, 143) = .13$ ,  $p > 0.05$ ). However, a statistically

significant change was noted in students' *disposition toward rational processes*  $F(1, 143) = 9.43$ ,  $p < 0.01$ ) (Table 1). The mean for this subscale ranged from 56.10 [SD = 27.10] (pretest) to 63.10 [SD = 27.43] (posttest).

## Discussion

Faculty in this RN to BSN chose the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>) to measure critical thinking. The results of this study indicated that a statistically significant change occurred in the students' disposition toward rational processes, but no statistically significant change was noted in student's *self-efficacy, logical thinking and decision skills, and decision uncertainty skills*. This inconsistency in findings is similar to what has been noted in previous studies regarding the measurement of critical thinking (Leppa, 19997; Spelic et al., 2001).

Walsh and Seldomridge (2006) used the California Critical Thinking Disposition Inventory and the Watson-Glaser Critical Thinking Appraisal to measure critical thinking. Results indicated gains in critical thinking disposition of some cohorts and losses in other cohorts. They were unable to explain the inconsistent findings and posed questions about the definition and use of standardized instruments to measure critical thinking (2006).

Findings from this study support the questions regarding defining and measuring critical thinking posed by Walsh and Seldomridge (2006). If critical thinking is an essential component of professional nursing practice, perhaps there should be consistency in how it is defined and measured. One must also consider the intervention for the study. Similar to other RN to BSN curriculum, the intervention was a composite of selected courses focusing on research, leadership and management, and community health with incorporated assignments thought to develop critical thinking skills. One could question if the intervention could be directly linked to an

improvement in critical thinking skills as findings supported a change in students' *disposition toward rational processes*, but not in students' *self-efficacy, logical thinking and decision skills*, and *decision under uncertainty skills*.

Students entered the program with varying general education courses and hours and were able to select the number of nursing and/or general education courses they took each semester. As a result the timeframe for completing the program ranged from one year to several years. Some subjects completing the post-test still lacked general education courses. A majority of the students maintained full-time employment. The change in critical thinking noted could have been related to individual clinical experiences. After completing the curriculum and having the opportunity to apply the knowledge they obtained in a clinical setting may be when the change in critical thinking occurs.

### **Strengths and limitations**

Strengths of the study included the timeframe and sample size. One hundred and forty-four students enrolled in a RN to BSN program during a 10-year period were included in the study. Another strength was the reported reliability coefficients of the instrument. Limitations included a convenience sample of subjects enrolled in the same RN to BSN program; therefore, caution would have to be taken when generalizing the findings. Also, not having demographic information for the subjects was seen as a limitation. Extraneous factors such as length of time enrolled in the program, number of years in practice, previous degree, and age may have influenced critical thinking scores.

### **Implications**

This study adds information to the literature regarding measurement of critical thinking and has implications for nursing education and research. As noted, the findings support that the

RN to BSN curriculum had an effect on the students' disposition toward rational processes as measured by the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>). The inconsistent finding of not noting a statistically significant change in all subscales may cause one to question the validity of the instrument in measuring critical thinking in this population of students. More research should be conducted regarding measurement of critical thinking and the effect of specific teaching praxes and assignments.

Even though the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>) is no longer available, faculty had the professional responsibility to share this information to add to the available body of knowledge regarding measurement of critical thinking. This study could be replicated using an instrument currently available. Examining the effect of other variables such as practice area, number of years in practice, previous degrees, and age on critical thinking would also be important.

## **Conclusion**

Nurses are faced with a variety of patients, whether an individual, family, group, or community, that responds uniquely to health care problems. They must be able to utilize their nursing knowledge to provide appropriate education and/or care in each situation to promote a positive outcome. This requires that nurses possess critical thinking skills and critical thinking disposition (Billings & Halstead, 2009). Findings from this study indicate that this particular RN to BSN curriculum had a positive impact on the students' disposition toward rational processes component of critical thinking as measured by the InterEd Critical Thinking Nursing Instrument (CT<sub>N</sub>). Nurse educators must continue to discuss how to not only best measure critical thinking, but to design nursing curriculum to enhance critical thinking of graduates.

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