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Original article

Deliberate practice and nurse competence

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ABSTRACT

Background: Increasing demand for accountability in health care requires that we understand how nurses continually increase their expertise. Development of expertise has been linked to *deliberate practice* in many domains but little is known about how deliberate practice impacts the expertise of registered nurses.
Objectives: Evaluate the relationships among experience, education, deliberate practice, and competence as an empirical referent of expertise, and to identify which of the independent variables makes the highest contribution to competence.
Methods: Cross-sectional, descriptive, correlational study design was used. A purposive sample of RNs from one large, Midwestern teaching hospital was surveyed.
Results: After taking into consideration demographic variables, education and experience, deliberate practice made the greatest contribution to competence. No significant relationship was found between years of experience or education and competence.
Conclusion: This study provides empirical evidence for the relationship of deliberate practice to competence, a promising concept for explaining the development of skill acquisition in nursing.

Nursing expertise is fundamental to quality patient care (Benner, 1984; McHugh & Lake, 2010). In an era of increasing demand for accountability in health care it is important to understand how nurses continually increase their expertise as both knowledge expands and expectations for better outcomes rise. While the contributions of years of experience and education to better outcomes have been demonstrated (Aiken et al., 2011; Blegen, Goode, Park, Vaughn, & Spetz, 2013; Bobay, Gentile, & Hagle, 2009; Cho et al., 2015; Clarke, Rockett, Sloane, & Aiken, 2002; Estabrooks, Midodzi, Cummings, Ricker, & Giovannetti, 2005; Tourangeau et al., 2007), the relative role of deliberate practice in affecting nursing expertise has not been explored (Altmann, 2007; English, 1993; Ericsson, Whyte, & Ward, 2007).

Although no ubiquitous definition of nursing expertise exists, it is well established that the nurse expert presents advanced knowledge and skill. Competence is a measure of performance that is the active, behavioral expression of expertise lying on a continuum from novice to expert (Benner, 1984; McMullan et al., 2003). High levels of competence are not guaranteed with experience alone (Dunn & Shriner, 1999; Ericsson, 2006; Ericsson et al., 2007; Feltovich, Prietula, & Ericsson, 2006). Activities aimed at improving one's competence and leading to expertise are called *deliberate practice* (Ericsson, Krampe, & Tesch-Römer, 1993). Whereas other disciplines and occupations have addressed deliberate practice to explain the continued development of expertise (Charness, Tuffiash, Krampe, Reingold, & Vasyukova, 2005; Dunn & Shriner, 1999; Ericsson et al., 2007; Ward, Hodges, Starkes, & Williams, 2007) the health professions including nursing have little understanding of how clinicians garner continuously refined levels of expertise.

The purpose of this report is to provide information about the relationships among deliberate practice, competence, education level, and years of experience in professional nurses by: (1) evaluating the relationships among experience, education, deliberate practice, and competence as an empirical referent of expertise, and (2) identifying which of the independent variables makes the highest contribution to competence. This is the second analysis performed of a larger study. The previous publication refers to the deliberate practice instrument development (Bathish, Aebersold, Fogg, & Potempa, 2016).

1. Methods

1.1. Study design, sampling and setting

A cross-sectional, descriptive, correlational design was used. A purposive sample of only registered nurses (RN) working in adult

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intensive care units (ICU) was obtained. Minimum sample size for this analysis was estimated (G*Power 3.1 51) for a power of 0.80, and a small effect size of 0.20 was 42 for a model with 4 predictor variables.

1.2. Measures

Demographic information was collected including race, gender, age, years of experience as an RN, and highest education level in nursing. The Deliberate Practice in Nursing Questionnaire (DPNQ) was used to collect information about activities that nurses engage in to improve their performance. The 24-item questionnaire has six subcategories: continuing formal education, continuing professional education, self-regulated learning/self-development, precepting, specialty certification, and professional organization membership, from which a composite score is derived with a total possible score of 96. A composite score is calculated for all items based on a standardized mathematical methodology (Bathish et al., 2016). Content validity of this instrument was based on a comprehensive literature review and a five panel expert review. Cronbach's alpha coefficient of the DPNQ in the present study was 0.660 (standardized, 0.703) Items, scoring and reliability and validity characteristics have been reported (Bathish et al., 2016). Additionally, the Nurse Competence Scale (NCS) was used as the empirical referent of nursing expertise (Meretoja, Isoaho, & Leino-Kilpi, 2004). Permission for the use of this instrument was obtained from both the research developer, Dr. Riitta Meretoja (affiliated with Hospital District of Helsinki and Uusimaa, Finland) and from the copyright holder (Wiley-Blackwell). The NCS has 73 items inclusive of seven categories. Each item is measured on a 0–100 sliding scale in electronic format. For descriptive purposes the NCS was divided into four parts representing levels of nursing competence with the values of 25, 50, and 75 separating levels of weak, moderate, good and excellent. Self-reported nurse competence was used as it allows nurses to examine their practice within the environment in which they work. Competence moves along a continuum from novice to expert and is therefore proportional to expertise (Benner, 1984).

Reliability coefficients of both the DPNQ and the NCS in this sample are high and have been reported (Bathish et al., 2016). Our previous findings indicated a modest positive correlation in univariate analysis of the DPNQ and the NCS demonstrating construct validity. However, a multivariate analysis of the relationships among DPNQ, NCS, nurse experience and education was performed and is reported here to determine the relative importance of DPNQ, an emerging concept in the health professions, when other variables known to influence competence and expertise, education and years of experience, are also considered.

1.3. Data collection and analysis

Institutional review board approval was obtained prior to initiating the study. Qualtrics© survey software was used to deliver the study questionnaire electronically through confidential email. Data were analyzed using SPSS Version 21. Spearman rank order correlation coefficients were calculated to analyze relationships between experience and deliberate practice and nurse competence. The Mann-Whitney *U* test was used to examine the relationship between education and nurse competence. Independent samples *t*-tests examined relationships between education and deliberate practice. A theoretical hierarchical multiple regression analysis assessed the effect of gender, experience, education and deliberate practice on the self-reported nurse competence scale. Statistical significance was set at $p < .05$.

2. Results

A total of 92 electronic questionnaires were completed with an overall response rate of 41%. Eleven questionnaires were rejected for major missing data (>25%), giving the final sample of 81 questionnaires analyzed. The sample characteristics have been reported (Bathish et al., 2016) and were a majority of white race between ages 23 and 61 years working full time (33–48 h/week). Half the sample was female (54%). Years of experience as an RN ranged from 1 to 37 years with an average of 11 years working in critical care. Sixty-three percent of the sample had a bachelor's degree in nursing.

NCS scores ranged from 52 to 100 ($M = 85.15$, $SD = 10.83$) out of a possible score of 100. A majority (79%) of the nurses surveyed reported themselves in the Excellent (75–100) competence category on the NCS. Nurses considered themselves most competent in the Diagnostic Functions category ($M = 87.67$, $SD = 11.01$) and least competent in the Teaching/Coaching role ($M = 81.17$, $SD = 14.63$). Scores in the other categories were as follows: Ensuring Quality ($M = 81.62$, $SD = 13.52$), Therapeutic Interventions ($M = 86.07$, $SD = 12.05$), Helping Role ($M = 86.34$, $SD = 9.22$), Work Role ($M = 86.60$, $SD = 11.63$), and Managing Situations ($M = 87.25$, $SD = 11.22$).

DPNQ scores ranged from 9 to 60 ($M = 28.79$, $SD = 8.59$) out of a possible score of 96. Scores for subcategories of the DPNQ were: Continuing Formal Education ($M = 0.93$, $SD = 1.26$); Continuing Professional Education ($M = 11.17$, $SD = 5.67$); Self-Regulated Learning/Self-Development ($M = 10.66$, $SD = 3.14$); Precepting ($M = 3.55$, $SD = 2.28$); Specialty Certification ($M = 1.55$, $SD = 1.08$); Professional Organization Membership ($M = 0.85$, $SD = 0.99$). Over half ($n = 49$, 53%) of the nurses were not enrolled in any formal education classes or had not taken any formal education classes since becoming an RN. A little more than two-thirds ($n = 60$, 65%) held at least one to three specialty certifications. A little under half ($n = 41$, 44.6%) had no professional organization memberships, and roughly one-third ($n = 33$, 35.9%) of the sample had one membership. A majority ($n = 64$, 70%) of participants reported attending programs or conferences lasting a full eight – hour day and held within their workplace. Almost half ($n = 42$, 47%) had precepted on their current unit and a previous unit of work and only 8% ($n = 7$) had never precepted.

2.1. Predictors of competence

2.1.1. Experience and competence

No significant correlation was found between years of experience and the total NCS score ($rs = 0.131$, $p = .245$). There were significant positive correlations for experience with two of the seven nurse competence categories: Managing Situations ($rs = 0.243$, $p < .029$) and Work Role ($rs = 0.268$, $p < .014$). These correlations are weak and positive indicating that more years of experience practicing as an RN is associated with higher self-report competence in managing situations and work role competencies.

2.1.2. Education and competence

No significant difference was found in overall nurse competence scores of those with a bachelor's degree in nursing (BSN) or higher ($Md = 86.47$, $n = 53$) and those without a BSN ($Md = 90.71$, $n = 27$), $U = 526$, $z = -1.92$, $p = .054$, $r = 0.21$. Both groups reported competence in the Excellent category.

2.1.3. Experience and deliberate practice

No significant relationship was found between total years of nursing experience and deliberate practice ($r = 0.09$, $p = .403$). There were significant negative associations found for the deliberate practice subcategories of Certification ($r = -0.298$, $p < .01$) and Self-Regulated Learning/Self-Development ($r = -0.243$, $p < .05$). A significant positive correlation was found between experience and Precepting ($r = 0.507$, $p < .001$).

2.1.4. Education and deliberate practice

No significant difference in scores was found for those nurses with a BSN or higher in nursing ($M = 29.13$, $SD = 9.22$) as compared to those with less than a BSN in nursing ($M = 28.07$, $SD = 7.16$); $t(89) = 0.546$,