PERCEIVED STRESS AND SENSE OF BELONGING IN DOCTOR OF NURSING PRACTICE STUDENTS

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There is little research among doctor of nursing practice (DNP) students, a fast-growing population of nurses engaged in doctoral study. In this descriptive correlational study, levels of perceived stress, sense of belonging, and the relationship between these variables were examined. The sample included 89 female, predominantly White, post-master's DNP students from a Midwest university. A statistically significant inverse relationship \( r = -0.49, P < 0.01 \) between perceived stress and sense of belonging was found. Recommendations for future research include additional studies of perceived stress and sense of belonging in diverse DNP student populations and in various DNP education models. (Index words: doctor of nursing practice (DNP); DNP students; Perceived stress; Sense of belonging) J Prof Nurs 25:81–86, 2009. © 2009 Elsevier Inc. All rights reserved.

STRESS HAS BEEN identified in research to impede concentration, problem solving, decision making, completion of work, and other abilities necessary for student learning (Byars, 2005). Although students experience affirmation and optimism toward future opportunities, completing doctoral education undoubtedly gives rise to individual ambiguity in self-efficacy, emotions, and behaviors (Byars, 2005; Golden et al., 2005; Hughes & Kleist, 2005; Kirby, Biever, Martinez, & Gomez, 2004; McDermott, 2002; Piercy et al., 2005). Many nurses are unaware and unprepared for the roller coaster of affect, behavior, and attitude changes experienced along with the stress of doctoral education.

Defined as the psychological experience of fit and valued personal involvement in a system (Hagerty, Lynch-Sauer, Patusky, Bouwsema, & Colier, 1992), sense of belonging is another critical factor in students' achievement and behavior. Sense of belonging has been identified as a foundation for a variety of emotional and behavioral responses (Zielinski, 2004). Sense of belonging affects students' feelings about themselves, their engagement with other students and coursework, and their academic achievement (Osterman, 2000). Previously unknown and unexplored in the literature, this study was to describe the levels of perceived stress and sense of belonging and the relationship between these variables among nurses enrolled in a post-master's doctor of nursing practice (DNP) program. Analysis of perceived stress and sense of belonging in DNP students is important because many nurses have a tendency to take care of others but ignore their own needs (Zerwekh & Claborn, 2006). This topic is also timely because DNP programs and the number of DNP students have grown over fivefold in recent years. Nine DNP programs were listed by the American Association of Colleges of Nursing (AACN) in 2005; the number had increased to 60 DNP programs by early 2008 (AACN, 2005; AACN, 2008).

How do the educational strategies in the newly developed DNP programs affect students? The cohort model, for example, has been found to encourage sense of belonging and enhance student learning by providing an essential, effective and supportive environment for learning challenging and unfamiliar material (Ross, Stafford, Church-Pupke, and Bondy, 2006; Wall, Novak, & Wilkerson, 2005). Whether or not the cohort model affected DNP students' perceived stress and sense of belonging was also explored in this study.

Background

There were only two studies in the literature that involved students, perceived stress, and sense of belonging. Researchers in these two studies found that, when
perceived stress levels were lowered, there was an increase in coping skills, sense of belonging, written test scores, and perceived cohesion scores (Williams et al., 2004; Rohe et al., 2006). There is no previous research linking the variables of perceived stress and sense of belonging among nursing students at any level.

With no literature available on DNP students, studies on doctoral students from related disciplines were explored. Perceived stress levels were found to be 2 standard deviations (SD) above the norm in graduate counseling students (Byars, 2005). In a qualitative study among medical students in the United Kingdom, every student identified stress and its ominous effects related to the pressures of providing health care, professional socialization, lack of guidance, and transitional periods between years of study with increased clinical responsibilities (Radcliffe & Lester, 2003). Other researchers reported that doctoral students described vacillating satisfaction, wavering personal relationships, vicissitudes of thought and emotion, and ambiguity in self-confidence (Hughes & Kleist, 2005; Kirby et al., 2004; McDermott, 2002; Piercy et al., 2005). However, not all of the effects of perceived stress were viewed as negative as medical students attributed increased motivation, better performance, and an increased focus on studies to stress (Radcliffe & Lester, 2003). Older student age, being married, and working long hours were also identified as doctoral students’ characteristics that impacted academic performance and perceived stress level (Shields, 2002).

Based on organizational and motivational research from the workplace, sense of belonging was first addressed in the education literature in the 1980s (Osterman, 2000). The influence of the sense of belonging on psychosocial student factors, persistence, and academic stress was described by Hoffman, Richmond, Morrow, and Salmone (2002). Kember and Leung (2004) sampled adult college students (21% in postgraduate study) and found positive statistically significant relationships between sense of belonging, social support, self-determination, family negotiation, and self-negotiation. Radcliffe and Lester (2003) reported that fifth-year medical students felt that peer support (a similar construct to both sense of belonging and social support) was an important and valuable coping strategy for perceived stress. Rohe et al. (2006) confirmed a relationship between decreased perceived stress levels and increased perceived cohesion, another concept related to sense of belonging.

Using the Sense of Belonging Instrument (SOBI), nursing research defined levels of sense of belonging to be lower in: (a) women than that in men, (b) those with incomes below $40,000, and (c) those lacking spousal support (Hagerty, Williams, Coyne, & Early, 1996). The same study also indicated improved psychosocial functioning occurred with a higher sense of belonging. There was a gap in the literature regarding sense of belonging and nursing student populations.

Methods

Design, Sample, and Setting
A descriptive correlational research design was used with a convenience sample of post-master’s DNP students enrolled in a private Midwestern university. Inclusion criteria were: (a) current enrollment in the post-master’s DNP program, (b) female gender (to secure deidentified data within the small pool of enrolled post-master’s DNP male students), and (c) completed at least one class.

The sample of post-master’s DNP students lived across the nation and attended DNP courses in an intensive format over four to six consecutive 8-hour days, with 2 to 4 months of subsequent online work and faculty feedback. Classes were held on campus or at remote cohort locations across the United States. Cohorts with a minimum of 10 post-master’s DNP students typically completed four courses at the remote cohort site, taking the remaining DNP courses on campus. Students had the flexibility of enrolling in courses on campus or in remote cohort locations at various times during the year, without prescribed sequence, creating a unique course learning environment and an eclectic post-master’s DNP student body in each course.

Procedure and Instruments

After the university’s internal review board’s approval was received, data were collected using three instruments: (a) personal characteristics questionnaire, (b) the SOBI-Psychological (SOBI-P) subscale, and (c) the Perceived Stress Scale (PSS), using Qualtrics, an online survey software program. According to Dillman (2007), online surveying allowed for ease in administration and distribution to participants in diverse geographic locations, facilitated survey completion, and achieved a fast turn around response time.

Participants in this study were directed to limit their responses to each of the questions in light of their experiences as post-master’s DNP students rather than to respond related to the overall stress in their lives. To accurately describe the sample, determine those who met inclusion criteria, and ascertain any variable effect of factors enumerated in the literature, 17 personal characteristics questions were asked. Factors indicative in the literature to perceived stress (age, marital status, number of children and/or aging relatives in the home, full- or part-time employment and school status, and life stressors) and to sense of belonging (socioeconomic status, gender, religious and community activity participation, and family support) were queried (Hagerty et al., 1996; Selvy, 1974; Shields, 2002). Whether students enrolled in DNP courses as an individual or a cohort member or with a colleague or friend was determined in an effort to examine any effect the cohort model may have had on the variables of study.

The PSS is a self-report 14-item questionnaire that measures the degree that individuals perceive their life as unpredictable, uncontrollable, and overloading, with responses scored on a 5-point scale from never (0) to very often (4) for a possible perceived stress score range.
between 0 and 56 (Cohen & Williamson, 1988). The mean PSS score for a large random sample of the American population (N = 2,387) was 19.62 (SD = 7.49), according to Cohen and Williamson (1988). The predictive validity of the PSS was demonstrated by the high correlation (r = .52 to .76) to instruments measuring the same constructs, such as life event stress and physical symptoms (Cohen & Williamson, 1988). A strong test–retest reliability (r = .85) and Cronbach's alpha internal reliability of .84 for a sample of 312 college freshmen, .85 for 114 members of an introductory college psychology course, and .86 for 64 members of a smoking cessation class were reported (Cohen, Cohen, Kamarck, & Mermelstein, 1983). Reliability of .72 was found for use of a modified four-question PSS version in an online format, compared with .68 in the paper/pencil version (Herrero & Meneses, 2006). In the DNP sample from this study, the Cronbach's alpha coefficient was .89 for the PSS instrument.

Sense of belonging was measured with the SOBI-P, a 18-item self-report subscale that employed a 4-point scale ranging from strongly disagree (1) to strongly agree (4). Measuring the psychological experience of valued involvement in a system or environment, such as the DNP program, total scores ranged between 18 to 72 (Hagerty et al., 1996). Mean SOBI-P scores were reported from a sample of college students (range = 45.85–65.27, 95% confidence interval [CI]) and a sample of Catholic nuns (range = 57.83–69.77, 95% CI) (Hagerty & Patusky, 1995). The lowest SOBI-P scores were found in patients with a history of depression and drug abuse (range = 33.29–52.67, 95% CI) (Sergeant, Williams, Hagerty, Lynch-Sauer, and Hoyle, 2002). Content validity for the entire SOBI assessed by seven experts yielded an index of .83. The SOBI-P demonstrated construct validity through factor analysis (range of .42 to .85 for the factor structure loadings for items in the two factor-based scales) in contrasted groups (F = 38.16, P = .00). Validity was also demonstrated by how well the SOBI-P correlated to other measures of similar concepts, such as loneliness (r = −.72), reciprocity (r = .57), and social support (r = .56), measured in the community college population (Hagerty & Patusky, 1995). SOBI-P reliability calculated in this research was r = .93, similar to that in previous studies by Hagerty et al. (1996) who found internal consistency coefficient alpha values for SOBI-P of .91 to .93.

Results
Sample
Two hundred sixty-nine post-master's DNP student e-mail addresses received in a closed Excel file from the DNP program. Each was e-mailed an invitation to the online survey, accessible through a secured hyperlink embedded within the e-mail. Of the 269 invited participants, 131 (48.7%) consented and completed the survey. Twenty-four surveys with incomplete data in the PSS or SOBI-P instruments were excluded. An additional 18 respondents did not meet inclusion criteria, leaving 89 participants, exceeding 64 participants recommended by the GPower analysis for medium effect size, an alpha of .05, and a power level of .80 (Faul & Erdfelder, 1992).

Personal Characteristics
The mean participant's age was 47 years (SD = 7.68 years), ranging from 29 to 63 years. Ninety-four percent (n = 83) were Caucasian; 1 participant did not disclose her ethnicity. Seventy percent (n = 63) of the participants were married, and 23.6% (n = 21) were single. One participant did not respond to the employment questions, leaving 88 respondents who were employed, with most DNP students surveyed, 48.9% (n = 43), employed in nursing education. The majority (87.5%, n = 77) worked 40 to 60 hours a week, with 7 respondents (8%) working less than that amount of time. Of the respondents, 62.5% (n = 55) reported household incomes over $100,000. No one reported an income less than $40,000.

The majority (86.5%, n = 77) of the sample enrolled as part-time students. Only 2 students had taken off one or more semesters in the DNP program. More than half (50.5%) of post-master's DNP students in the sample were enrolled in a cohort (n = 45). Thirty-six percent (n = 32) of the 89 participants enrolled as individual post-master's DNP students, with the remaining 13.5% (n = 12) enrolling with at least one friend or colleague. The largest percentage (18.6%, n = 16) completed three courses, whereas the mean was five completed courses. Only 44.8% of the post-master's DNP students reported taking thesis or final project credits (n = 39). These data are results included in Table 1.

Data were collected in response to questions about current life stress, family support, and regular participation in religious and community events. Forty-three participants (48%) responded to having current life stress. The most frequent life stress (37.2%, n = 16) reported was relationships with family/friends; however, 30.2% (n = 13) and 32.6% (n = 14) reported current stress about financial and health issues, respectively. Sixty-three students (70.8%) in the sample reported very supportive spouses, partners, and family. Twenty-two participants (24.7% n = 89) reported supportive family and spouses, whereas 3 participants reported only minimal support for their DNP education. One post-master's DNP student (1.1%) reported no support at all. Most participants, 70.8% (n = 63), reported that they took care of no one or one person outside of work, such as children younger than 18 years, persons with special needs, or elderly persons. Sixteen participants (18% of the sample) cared for three to five persons. Two participants (2.2%) reported caring for five people outside of work. Involvement in activities was also reported, with 52.3% indicating weekly participation (n = 46) followed by 26% reporting monthly participation (n = 23) in either community or religious activities. One participant did not respond to the question about involvement in activities.

Perceived Stress and Sense of Belonging
Perceived stress scores ranged from 7 to 39. The mean PSS score was 22.91 (SD = 7.92). At the 95% CI, the calculated mean would be between 21.23 and 24.59.
that violated an ANOVA assumption. Inconclusive due to nonnormative data distribution (P = .28). Further exploration of differences between groups for PSS and SOBI-P scores and number of hours DNP students worked and spousal support was inconclusive due to nonnormative data distribution that violated an ANOVA assumption.

### Additional Analysis

Additional analysis was done to examine if any differences existed between DNP students who enrolled as individuals (n = 32), those who enrolled with at least one friend or colleague (n = 12), and those who enrolled as part of a cohort (n = 45). Results of a one-way analysis of variance (ANOVA) indicated no statistically significant differences between groups for PSS (F = .92, P = .40) or SOBI-P scores (F = 1.30, P = .28). Further exploration of differences between groups for PSS and SOBI-P scores and number of hours DNP students worked and spousal support was inconclusive due to nonnormative data distribution that violated an ANOVA assumption.

### Table 1. Characteristics of DNP Students

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age † (years)</td>
<td></td>
</tr>
<tr>
<td>29–39</td>
<td>11 (13.1)</td>
</tr>
<tr>
<td>40–50</td>
<td>43 (51.2)</td>
</tr>
<tr>
<td>51–63</td>
<td>30 (35.7)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>64 (71.9)</td>
</tr>
<tr>
<td>Divorced</td>
<td>12 (13.5)</td>
</tr>
<tr>
<td>Single</td>
<td>9 (10.1)</td>
</tr>
<tr>
<td>Separated</td>
<td>2 (2.2)</td>
</tr>
<tr>
<td>Widowed</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>Ethnicity †</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>83 (94.3)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>2 (2.3)</td>
</tr>
<tr>
<td>European</td>
<td>2 (2.3)</td>
</tr>
<tr>
<td>African American</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>DNP status</td>
<td></td>
</tr>
<tr>
<td>Part-time student</td>
<td>77 (86.5)</td>
</tr>
<tr>
<td>Full-time student</td>
<td>10 (11.2)</td>
</tr>
<tr>
<td>Took off semesters</td>
<td>2 (2.2)</td>
</tr>
<tr>
<td>Annual income ($)</td>
<td></td>
</tr>
<tr>
<td>&gt;100,000</td>
<td>55 (62.5)</td>
</tr>
<tr>
<td>40,000–100,000</td>
<td>33 (37.5)</td>
</tr>
<tr>
<td>Work hours per week</td>
<td></td>
</tr>
<tr>
<td>40–60</td>
<td>77 (87.5)</td>
</tr>
<tr>
<td>&lt;40</td>
<td>7 (8.0)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>4 (4.5)</td>
</tr>
<tr>
<td>Work setting</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>43 (48.9)</td>
</tr>
<tr>
<td>Clinical</td>
<td>33 (37.5)</td>
</tr>
<tr>
<td>Administration</td>
<td>12 (13.6)</td>
</tr>
</tbody>
</table>

Notes: n = 89 unless otherwise noted; not all participants answered each question. DNP = doctor of nursing practice.

* n = 84. † n = 88.

Sense of belonging scores, measured by the SOBI-P subscale, ranged from 34 to 70. The mean SOBI-P score was 60.85 (SD = 8.51). At the 95% CI, the calculated mean would be between 59.05 and 62.65. A Pearson’s product–moment correlation was computed to determine the relationship between perceived stress and sense of belonging; there was a significant negative correlation (r = −.49, P < .01) between the variables.

### Discussion

The average post-master's DNP student in this sample was 46 years old, similar to that of doctor of philosophy nursing students' age (M = 47 years) found in the research by Berlin and Sechrest (2002). While Shields (2002) indicated higher levels of perceived stress among students who were older, married, and working. This differed from the results in this study, which found DNP students with these attributes to have similar PSS scores to traditional students' scores reported in the literature. Less than half of DNP participants reported specific life stress (financial, health, and/or relationships). Cohen et al. (1983) reported that PSS scores were related to other measures of life stress including normative stress from daily, predictable life events and catastrophic or crisis-related stress. Discerning additional detailed information about these stressors in future studies of DNP students might offer a more complete view of their level of perceived stress.

The mean level of sense of belonging in this sample of post-master's DNP students was 60.85 (range = 59.05–62.65, 95% CI). Sargent et al. (2002) reported a significant buffering effect of sense of belonging against the development of depressive symptoms. Measuring depressive symptoms along with sense of belonging in DNP students would be important in future research.

The moderately strong, statistically significant inverse relationship found in this study (r = −.49, P < .01) between perceived stress and sense of belonging was consistent with the statistically significant inverse relationship between SOBI and PSS scores (r = −.68, P < .01) in depressed patients reported by Choenarom, Williams, and Hagerty (2005). Inverse relationships between concepts similar to sense of belonging (anxiety, social support, and belonging) and perceived stress were noted in the literature (Radcliffe & Lester, 2003; Rohe et al., 2006).

An unexpected finding was the lack of differences in perceived stress and sense of belonging scores between post-master's DNP students enrolled in cohorts, as individuals, or with at least one friend or colleague. Although this finding was contrary to the results of Croxton and Maginnis (2006) and Siefert and Mandzuk (2006), the unique structure of the post-master's cohort model at this particular university may factor heavily into the lack of congruency found. Students in this sample were able to enroll in cohorts in a traditional model, however, individuals alone or with a colleague or friend could also join one or more of the four courses offered at cohort locations. This was particularly popular if the cohort location was geographically proximal or perceived as more attractive than the campus site. Because of this, individuals who enrolled alone, with a colleague or friend, or in the cohort had the opportunity to form the same cohesive bonds with each other over multiple courses. More specific questioning in future research about social bonds formed between post-master's DNP student colleagues enrolled in traditional cohort models and those enrolled in alternate education models might provide a translucent picture of any differences in perceived stress and sense of belonging. Qualitative research exploring perceived
stress and sense of belonging or comparing the perceptions of these concepts between DNP faculty and DNP students would also yield data of interest in this new academic arena in nursing. Including more culturally diverse and male post-master's DNP students from various universities can provide increased generalizability of data.

Summary
Understanding the post-master's DNP students' experience and concepts of perceived stress and sense of belonging can enhance DNP education programs (McLoughlin & Kane, 2006). Post-master's DNP students might have a heightened awareness of perceived stress and sense of belonging and their effects during doctoral study. Education strategies that reduce perceived stress and increase sense of belonging may be employed to facilitate students' progress through the program of study. One such strategy might be a semester-long small-group interactive activity where students can gain a better sense of valued fit and involvement with each other. Another strategy would be for educators to create a supportive classroom climate or online chat room to promote sense of belonging between students (McLoughlin & Kane, 2006). Heightened student awareness of sense of belonging and perceived stress and educational strategies targeted to these concepts are needed to facilitate academic progress. Small group social discussions and supportive classroom climates are just a few ways to promote sense of belonging and reduce student perceived stress. Future research of the DNP students' experience at all levels is recommended.

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