Attention and Restoration in Post-RN Students

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ABSTRACT

**Background:** The impact of a restorative intervention using the natural environment on capacity to direct attention and issues that contribute to attention fatigue for diploma-prepared nursing students (Post-RN students) enrolled in a baccalaureate nursing program was examined.

**Methods:** This study used a quasi-experimental comparison group design. Subjective (Attentional Functional Index) and objective (Finding A’s Test and Symbol Digits Modalities Test) measures were employed.

**Results:** Thirty-two students at two universities participated. Results of the split-plot analysis revealed a within-subject effect on the Attentional Functional Index ($p < .05$), a significant within-subject effect on the Finding A’s Test ($p < .05$), and a significant within- and between-subject effect on the Symbol Digits Modalities Test ($p < .05$).

**Conclusion:** Recognizing and managing attention fatigue throughout the school year may enhance Post-RN students’ abilities to direct attention and contribute to an enhanced academic experience.

Diploma-prepared registered nurses who return to school to obtain their undergraduate degree (Post-RN students) are unique because they return to school to further their education in a profession in which they have previous recognition. Schoolwork necessitates periods of intense mental exertion requiring attention. Post-RN students, who often face competing demands for attention, may have difficulty when trying to maintain their concentration as they learn how to write papers, take notes, and adjust to new learning experiences.

Although all students face academic pressures, as mature learners Post-RN students often juggle multiple roles that may include being spouses, parents, caregivers, employees, and students. Several studies suggest that time demands, difficulty balancing home responsibilities, managing many roles, course commitments, scheduling, and finances may present difficulties (Lauder & Cuthbertson, 1998; Price, 2004; Shannahon, 2000; Thacker & Novak, 1991; Walls & McPhee, 2000). All of these activities require directed attention.

Directed attention is the capacity to inhibit distractions to concentrate or focus on needed information in the environment (Cimprich, 1992; Cimprich & Ronis, 2003; James, 1950; Kaplan, 1995). It permits individuals to think clearly and get on with goals or plans. Post-RN students have many potential demands on their capacity to direct attention. Many of these students must work either part-time or full-time in acute care settings where daily complex decisions need to be made. Over time, work and academic demands involving periods of intense conscious effort may lead to attention fatigue (Kaplan, 1995).

Attention fatigue, resulting from cumulative overuse of directed attention, is characterized by a decline in the capacity to attend and is evidenced through an increased difficulty in maintaining clarity of focus and effective functioning (Cimprich, 1992; Kaplan, 1995). No research studies were found on the capacity to direct attention in the Post-RN population. Attention restoration theory suggests using restorative environments, such as natural environments, to restore the capacity to direct attention and facilitate recovery from attention fatigue (Kaplan, 1995; Kaplan & Kaplan, 1991). Therefore, the purpose of this study was to examine the demands on attention and the link between a restorative experience and the capacity to direct attention by Post-RN students enrolled in baccalaureate nursing programs.

THEORETICAL FRAMEWORK

The theoretical framework used as the basis for this research was attention restoration theory, which was

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developed by Kaplan and Kaplan (1989). This theory includes three critical concepts: directed attention, attention fatigue, and restoration.

**Directed Attention**

Directed attention is the ability to voluntarily inhibit incoming information while the brain is occupied with something else. Kaplan (1995) stated directed attention is a capacity that “requires effort, plays a central role in achieving focus, is under voluntary control (at least some of the time), is susceptible to fatigue, and controls distraction through the use of inhibition” (p. 170). Directed attention is a key ingredient in human effectiveness and its fatigue can be a cause of human error (Kaplan, 1995). Life-altering events, mental effort, coping with hassles, and the demands of everyday living all fatigue one’s capacity to direct attention.

**Attention Fatigue**

Attention fatigue results from an overuse of the central brain mechanism that underlies the active (effortful) suppression or inhibition of competing environmental stimuli or distractions (Kaplan, 1995; Kaplan & Kaplan, 1982). This fatigue is manifested through increased distractibility or loss of focus and concentration, increased errors, irritability, and declining ability to problem-solve and make decisions.

**Restorative Environments**

Restorative environments, which promote rest and restoration of attention capacity, engage involuntary attention and rest the capacity to direct attention. These environments possess four fundamental characteristics: fascination, extent, compatibility, and being away.

Fascination holds one’s attention effortlessly and can be experienced on a continuum from hard to soft (Kaplan, 1995). Hard fascination, such as a rock concert, is intense, rivets one’s attention, and leaves little room for thinking or reflecting (Herzog, Black, Fountaine, & Knotts, 1997; Kaplan, 1995). Soft fascination, such as a natural setting, is esthetically pleasing (Herzog et al., 1997), effortlessly holds one’s attention, and allows reflection and a deeper level of restoration.

Extent refers to a setting with enough scope to allow exploration and sufficient coherence or connectedness to be understood (Kaplan & Kaplan, 1991). An example is a garden, which can constitute another world where pressures and problems are far removed and where life makes more sense (Kaplan & Kaplan, 1991).

Compatibility refers to the degree of fit between the environment and the individual’s purposes and inclinations (Kaplan & Kaplan, 1991). For some, a wilderness trip will be highly compatible; others may prefer a retreat or a cottage setting (Kaplan, 1988).

Being away refers to a sense of being someplace else, geographically or in one’s imagination (Kaplan & Kaplan, 1991). Being in a garden can give a sense of being somewhere else and of escape from everyday worries.

Restorative environments have the potential to help people recover their capacity to direct attention. This is particularly critical for Post-RN students who have various demands competing for their capacity to direct attention. These demands may contribute to attention fatigue. An intervention containing the four components of a restorative environment has the potential to restore capacity to direct attention. In this study, the demands for attention in Post-RN students and the link between a restorative experience and the capacity to direct attention was explored.

**RELATED RESEARCH**

**Post-RN Students**

Mature students are confronted with many challenges. Several nursing studies have examined the mature students’ experiences of returning to university (Lauder & Cuthbertson, 1998; Price, 2004; Shanahan, 2000; Thacker & Novack, 1991; Walls & McPhee, 2000). Students describe juggling many roles, feel their confidence is on a roller coaster, and have a sense of “been there, done that” because they have already studied nursing (Shanahan, 2000). Time demands, difficulty balancing home responsibilities and course commitments, poor access to library resources, and finances all present challenges (Price, 2004; Walls & McPhee, 2000).

In their survey of mature students (N = 58) undertaking the Diploma in Higher Education in the United Kingdom, Lauder and Cuthbertson found that 39.6% (n = 23) of research participants thought about leaving the course as a result of course-related, financial, domestic, and family problems. A qualitative analysis of 62 registered nurse students by Kearney (1994) revealed that the majority of them wanted flexibility with scheduling appointments for academic advising, program requirements, and campus services, and they wanted to be treated with respect as working adult learners who are also professionals. Real or perceived lack of flexibility and respect could place additional burdens and distractions on Post-RN students already struggling to cope with academic demands.

In a comparative study of the adult developmental patterns of 65 Post-RN and 95 direct-entry stu-
dents in a baccalaureate nursing program, King (1986) noted Post-RN students had visibly different adult responsibilities (e.g., married or previously married, or currently working and under financial constraints). Post-RN students’ motivations for enrolling varied, and they had different personal, work, and career issues. More recently, a grounded theory study by Price (2004) explored the kind of study support nurse learners obtain from sources other than those arrangements made through their university. After conducting 41 interviews, striking evidence was found by the researcher that families work hard, and sometimes unsuccessfully, to cope with the multiple demands of work and study. The issues (personal, family, and career) revealed in these studies can influence the capacity to direct attention.

Attention Research in Education

There has been little research on attention from within the framework of attention restoration theory in education. The most recent study tested the effects of several reflective activities on attention among graduate students (N = 56) completing courses through computer-conferencing technology (Andrusyszyn, Yankou, Davie, Weston, & Ostbye, 2002). Although researchers hypothesized that the degree of attention fatigue experienced in online environments would be reduced through reflective activities, they found no statistically significant differences either in attention scores between the intervention and control groups or in changes in attention among participants in the intervention group. Researchers explained that the majority of participants were already engaging in reflective activities on a regular basis. Students in the study were self-selected, motivated, and experienced learners with some computer expertise. However, although not graduate students, many Post-RN students are mature learners who enter university without recent prior knowledge of or familiarity with university-level academic experience. Gaining this knowledge and familiarity requires directed attention and is necessary for learning.

Nursing Research and Attention

Research in the nursing discipline has examined attention in different populations of women. The majority of studies have been completed in the past 10 years, focusing on women with breast cancer (Cimprich, 1992, 1995, 1999; Cimprich & Ronis, 2001, 2003; Lehto & Cimprich, 1999; Unruh, Smith, & Scammell, 2000). Results suggest that multiple factors related to cancer, its treatment, and the demands of a life-threat-ening illness increase the risk for loss of concentration and attention fatigue.

Two recent studies by Stark (2000, 2001) focused on attention and pregnancy. The first, a descriptive, repeated measures study, examined the changes in ability to concentrate among 57 women during the last trimester of pregnancy and first week postpartum. Women had the greatest difficulty focusing during the third trimester. In the second study, using a descriptive, correlational design with a sample of 57 pregnant women in their third trimester, Stark examined the relationship between the psychosocial tasks of pregnancy and the capacity to direct attention. As women had more conflict and anxiety with psychosocial tasks, they experienced more difficulty directing attention. This finding can be extrapolated to the current study because Post-RN students have multiple demands competing for their attention.

Restorative Experiences

Several studies have tested the impact of a restorative experience on the capacity to direct attention. Two field studies have been done to test the impact of experiences of varying duration in settings thought to have differing degrees of restoration (Hartig, Mang, & Evans, 1991). The first, using a nonequivalent control group quasi-experimental design, examined the effects of extended wilderness backpacking using a convenience sample of 68 experienced, physically fit backpackers. Pretest and posttest measures of affect and cognitive performance revealed that a prolonged wilderness experience had restorative effects (α = .10; p < .05). The second study, using an experimental design (Hartig et al., 1991) tested 34 college students randomly assigned to each of three conditions: a natural environment experience, an urban environment experience, and a passive relaxation experience. The natural setting, paralleled in the current study, was the most restorative and led to a more complete recovery from attention fatigue (p < .05) than the urban or relaxation settings.

Tennesen and Cimprich (1995) explored whether residents in university dormitories with more natural views from their windows would score better than those with less natural views on tests of directed attention. From a total sample of 72 volunteers, those who had natural views from their windows (n = 10) were better able to direct attention compared with those without a natural view.

In a pretest–posttest two-group design, Yankou (1996) studied the effects of a restorative environment on depression and directed attention fatigue in 57 Eng-
lish-speaking women 60 years and older. Although there were few statistically significant differences between the intervention and non-intervention groups, moderate, inverse relationships at pretest ($r = -.59; p = .00$) and posttest ($r = -.42; p = .00$) between attention capacity and depression were demonstrated. Differences between groups on attention following a restorative intervention may not have reached significance due to the sample size, the general positive well-being of the women in the study, and the fact that a majority of the participants in both groups were already engaged in restorative activities. Yankou recommended that future research include an activity that would fatigue the non-intervention group, a suggestion incorporated into the current study.

Herzog et al. (1997) explored which setting, natural or sports/entertainment, provided the best opportunity for promoting directed attention and reflection for a group of undergraduate students ($N = 187$). Participants were given scenarios involving attention recovery and reflection. They were then shown 52 color slides of three settings: ordinary natural settings, sports/entertainment settings, and everyday urban settings, and asked to rate them on how good the setting would be to promote or regain the ability to concentrate and think deeply about problems. Ordinary natural settings provided higher restorative potential and opportunity for reflection ($p < .001$).

Cimprich and Ronis (2003) tested the effects of a natural environment intervention aimed at restoring attention in women newly diagnosed as having breast cancer. The intervention involved a home-based program of exposure to a natural environment 120 minutes per week. The final sample ($N = 157$) consisted of 83 women in the intervention group, and 74 in the non-intervention group. Results of this longitudinal study demonstrated that the intervention group scored significantly better on measures of attention than the non-intervention group ($p < .05$).

**Summary**

There is no available research on the attentional function of Post-RN students; yet, it is clear from the literature that completing baccalaureate nursing education comes with multiple challenges. These may be related to personal, family, or professional responsibilities, such as caring for children or elders or maintaining a clinical role. It is reasonable to hypothesize that these increased demands would have an effect on their capacity to focus, concentrate, and direct attention. In addition, for Post-RN students who require attention to master the multiple demands of education, home, and work, exposure to the natural environment such as proposed for this investigation may have some beneficial effects.

**HYPOTHESES AND RATIONALE**

According to attention restoration theory, a restorative experience will rest directed attention and foster recovery from attention fatigue. Therefore, the hypotheses for this study were as follows. Post-RN students who participate in a restorative intervention will show: (1) a greater capacity to direct attention compared with those students who do not participate and (2) an increase in measures of attention following the intervention compared to baseline.

To gain an understanding into some of the demands for attention Post-RN students may have, the following research question was asked: What contributes to attention fatigue for Post-RN students?

**METHODS**

Design and Sample

A quasi-experimental comparison group design was used. Convenience sampling was used to recruit Post-RN students from Schools of Nursing at two different university sites in Ontario, Canada. The final sample ($N = 32$) had 14 students in the intervention group and 18 in the comparison group. Randomization to groups was not appropriate because both sites were not conducive to the intervention. Therefore, the intervention group comprised students from one university site and the comparison group comprised students from another university site.

**Instrumentation**

Four instruments to measure attention were used with permission. Participants also completed a researcher-designed demographic questionnaire. Two objective measures of attention were the Finding A's Test (Ekstrom, French, Harman, & Dermen, 1976) and the Symbol Digit Modalities Test (SDMT) (Smith, 2000). These measures required participants to perform an activity while blocking out other stimuli or impulses. Difficulty completing these tasks indicated struggles directing attention.

The Finding A's Test (Ekstrom et al., 1976), involves detecting words containing the letter “a” in multiple columns of words during two 2-minute timed intervals. Cronbach's alpha reliability coefficients are reported as .73 for males and .74 for females. For this sample, it was .75. When completing the SDMT (Smith, 2000), participants substitute the appropriate number for randomized presentations of geometric figures.
TABLE 1
DEMOGRAPHIC CHARACTERISTICS OF INTERVENTION AND COMPARISON GROUPS
(N = 32)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Intervention (n = 14)</th>
<th>Comparison (n = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College</td>
<td>12 (86.0%)</td>
<td>12 (67.0%)</td>
</tr>
<tr>
<td>Certificate</td>
<td>2 (14.2%)</td>
<td>5 (28.0%)</td>
</tr>
<tr>
<td>University</td>
<td>0 (0.0%)</td>
<td>1 (6.0%)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>11 (79.0%)</td>
<td>10 (56.0%)</td>
</tr>
<tr>
<td>Separated</td>
<td>1 (7.1%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>0 (0.0%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Never married</td>
<td>2 (14.2%)</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>0 (0.0%)</td>
<td>1 (6.0%)</td>
</tr>
<tr>
<td>Job status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>2 (14.2%)</td>
<td>12 (67.0%)</td>
</tr>
<tr>
<td>Part-time</td>
<td>36.0%</td>
<td>3 (17.0%)</td>
</tr>
<tr>
<td>Casual</td>
<td>2 (14.2%)</td>
<td>2 (11.1%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>4 (29.0%)</td>
<td>1 (6.0%)</td>
</tr>
<tr>
<td>Receiving financial aid</td>
<td>1 (7.1%)</td>
<td>1 (6.0%)</td>
</tr>
<tr>
<td>Responsibilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child care</td>
<td>2 (14.2%)</td>
<td>8 (44.4%)</td>
</tr>
<tr>
<td>Elder care</td>
<td>2 (14.2%)</td>
<td>4 (22.2%)</td>
</tr>
<tr>
<td>Volunteer</td>
<td>9 (64.2%)</td>
<td>8 (44.4%)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (36.0%)</td>
<td>3 (17.0%)</td>
</tr>
<tr>
<td>Influencing life events</td>
<td>11 (79.0%)</td>
<td>16 (88.0%)</td>
</tr>
<tr>
<td>Restorative activities</td>
<td>10 (71.4%)</td>
<td>12 (67.0%)</td>
</tr>
</tbody>
</table>

according to a specified key within a 90-second time period. A score is obtained by summing the total number of correctly identified pairs. Test-retest reliability correlation is reported as .80 for normal adults (Smith, 2000).

The subjective measure, Attentional Function Index (Cimprich, 1992), tested perceived effectiveness in purposeful activity. It consists of 16–100 mm linear analog scales with anchors labeled “not at all” and “extremely well.” Participants mark along the line indicating the point that best describes their judgment regarding their own effectiveness in purposeful activity on four dimensions, such as goal formation and planning, performing activities, and self-regulation of performance. An overall score is calculated based on summing and averaging each of the items (Cimprich, 1992, 1993). Internal consistencies range from .84 to .94 (Cimprich, 1992; 1993; Stark, 2000; Tenessee & Cimprich, 1995; Yankou, 1996). For this study, Cronbach’s alpha was .83.

Data Collection Procedures
Following receipt of ethical approval, participants who met eligibility criteria were scheduled, at their convenience, for data collection following 2- to 3-hour nursing classes. They met in a classroom on campus. Instruments were administered at pretest with the objective measure first. At posttest, to test the impact of the intervention, the objective measure was administered first, followed by the objective measures and the demographic questionnaire. Data collection at both time points combined with the intervention lasted approximately 90 minutes. Participants in the intervention group, after learning about restorative environments and experiences, went for a leisurely walk on a nature path for approximately 60 minutes. They were asked to keep conversation to a minimum during their walk. The researcher accompanied participants as a safety precaution when there was only one person. Participants in the comparison group either returned to class or remained in the classroom and worked on homework for approximately 60 minutes. The second data collection point was at the conclusion of the nature walk for students in the intervention group, and after the same time interval (60 minutes) for the comparison group. Data were collected at pre-intervention and post-intervention using the same format.

RESULTS
There were some similarities between the two groups. The average age of participants was 38 years, ranging from 23 to 51 years, in the intervention group and 39 years, ranging from 24 to 52 years, in the comparison group. Most were female. There were two males in the intervention group and one in the comparison group. There were also some noticeable demographic differences between groups. Fifty-seven percent of the intervention group were full-time students, fewer than half (43%) were part-time students, and only a few (14.2%) worked full-time. The comparison group consisted of part-time students, most of whom (67%) worked full-time. Descriptive statistics for demographic characteristics are in Table 1.

The only statistically significant difference between the intervention and comparison groups related to demographic variables was student status (Fisher’s exact test, p < .005). Independent samples t tests revealed no statistically significant differences (p > .005) between
Table 2: Means and Standard Deviations for Intervention and Comparison Groups at Pretest and Posttest

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Intervention (n = 14)</th>
<th>Comparison (n = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding A's Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>58.43 (16.54)</td>
<td>61.67 (12.71)</td>
</tr>
<tr>
<td>Posttest</td>
<td>68.86 (12.91)</td>
<td>65.39 (11.16)</td>
</tr>
<tr>
<td>Symbol Digits Modalities Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>59.57 (7.41)</td>
<td>51.78 (9.22)</td>
</tr>
<tr>
<td>Posttest</td>
<td>66.64 (8.56)</td>
<td>59.00 (11.12)</td>
</tr>
<tr>
<td>Attentional Functional Index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>64.13 (11.01)</td>
<td>69.03 (10.35)</td>
</tr>
<tr>
<td>Posttest</td>
<td>67.16 (11.48)</td>
<td>58.26 (15.18)</td>
</tr>
</tbody>
</table>

Figure. Graph of the between-group over time interaction effect for the Attentional Function Index.

Post-RN students who participate in a restorative intervention would show a greater capacity to direct attention compared with those students who do not participate. However, no significant interaction effects were found on the two objective attention measures (Finding A’s Test and SDMT) between the two groups over time. Although there was a significant difference between groups on the SDMT, this difference cannot be attributed to the intervention. Participants in both groups showed improvement on the objective measures at posttest, suggesting a testing effect.

The second hypothesis, that Post-RN students who participate in a restorative intervention will show an increase in measures of attention following the intervention compared to baseline, was supported because scores within the intervention group increased on the three attention measures following the intervention, and statistical significance was demonstrated over time on the two objective (Finding A’s Test and SDMT) and one subjective (Attentional Function Index) measures. This result should be interpreted with caution. The comparison group also showed an increase in scores on the two objective measures at posttest; therefore, the increase cannot be attributed to the intervention.

Content analysis was used to summarize and describe the data in response to the open-ended question. Participants were asked if there were any recent events in their lives that may have influenced their ability to concentrate. Seventy-nine percent of the intervention group (n = 11) and 88% of the comparison group (n = 16) experienced events they believed influenced their ability to concentrate. For the 12 who reported work as an influencing event, comments included starting a new job, increasing responsibility with an existing job, traveling time associated with work, working night shifts, and working opposite shifts from a spouse.

Participants also indicated whether they were doing activities that they considered to be restorative at least twice a week for 30 minutes (i.e., keeping a jour-
nual, meditation, yoga, gardening, working with animals, and listening to music). Seventy-one percent of the intervention group \((n = 10)\) and 67% of the comparison group \((n = 12)\) indicated they were. Fourteen participants \((44\%)\) identified exercise \(\) (weight-lifting and walking) as a restorative activity.

**DISCUSSION**

Some of the findings of this study corroborate previous studies that suggested that restorative experiences have a positive impact on attention (Cimprich & Ronis, 2003; Hartig et al., 1991; Herzog et al., 1997; Tennesen & Cimprich, 1995). There was a statistically significant difference between groups over time on the subjective perception of attentional functioning as measured by the Attentional Function Index. The intervention group improved on scores of attention over time and the comparison group declined. However, no significant differences between groups over time were shown on the objective measures \((\text{Focusing A's Test and SDMT)}\). Not finding significant interaction effects on the objective measures may be related to the instruments’ lack of sensitivity to pick up any differences in this sample. The interval between testing times may not have been long enough to show change. Both groups may have learned to do the tests better and improved enough to eliminate any differences that might have appeared. Finally, because participants had good scores on attentional function at pretest despite participants’ reporting events they felt would have affected their concentration, they may not have been sufficiently attentionally fatigued. In addition, most were already doing restorative activities.

**Limitations**

Although there was interest in the study, recruiting participants was challenging and the final sample size was smaller than calculated, increasing the chance of a Type II error. Locating a site with a sufficient pool of potential candidates for recruitment was difficult. In this study, it was necessary to use two program sites, one site providing the comparison group. It was not possible to randomly assign participants to the intervention and comparison groups, thus leaving a potential concern about the groups’ comparability and creating a threat to validity. In light of the lack of randomization, results must be interpreted with caution.

However, similarities in demographics suggest that the groups were generally homogeneous except for student status. Statistically, it was revealed that student status did not influence the three measures of attention. Additionally, the average scores on the attention measures at pretest for both groups indicate they were comparable. Notwithstanding sample size limitations, information gained about events occurring in the lives of Post-RN students and the restorative activities in which they engaged is important.

Several students declined participation because they were too busy with school and work commitments. Given their multiple roles and the multitude of influences on concentration reported by those who chose to participate, one can only wonder what is happening in the lives of those who chose not to participate. Thus, the sample in this study may not be representative of the Post-RN population.

**Implications for Nursing Education**

It is important for educators to be cognizant of and sensitive to the many additional responsibilities and events that can occur in the lives of Post-RN students. These responsibilities and events may affect their ability to concentrate. Teaching students the importance of maintaining effective directed attention may enhance academic success.

To manage attention fatigue, teachers can advise students on what a restorative activity or environment is, and the importance of incorporating it into their daily routine. The activity should be something easily done, within a person’s physical capabilities, and that involves little or no preparation. These may include sitting or walking in a backyard or park, watching clouds, tending gardens, sitting by water, observing birds, or playing with animals (Cimprich, 1993). Informed students of why inattention is happening and the manifestations of attention fatigue, such as reading the same paragraph over and over with little or no comprehension for what was just read, as well as ways to foster recovery of attention, may make writing papers and preparing for examinations a little easier and provide more effective use of study time.

Finally, given that a walk in nature improved the perception of attentional function for this group of participants, it may be important for universities to increase, or at least maintain, the amount and type of green space on campus to increase opportunities for restoration to occur. Providing greenery and water-scapes in libraries, planting trees and natural gardens around campuses, and making safe paths and benches with which to enjoy them available could do this. As enrollment increases and the corresponding need to build more classrooms increases, it is vital to be cognizant of the important role nature plays in maintaining and restoring attention.
REFERENCES