

## **Sound Health® Nursing Student Research**

### **The Relationship Between Background Music in the Classroom, Attitudes Toward Nursing Research and Academic Achievement**

**Marianne Flood, PhD, MA, RN**  
**Assistant Professor of Nursing**  
**Bloomfield College**

The fact that we are influenced by music comes as no surprise. Lovers use music to “put them in the mood”, athletes use music to “pump them up” and entertainers use music to “get the floor moving”. However, more recent studies have recognized the therapeutic effect of music on health and education as an alternative therapy. It can actually alter the physiology of our bodies and make us healthier, less stressed, and smarter (Davy, 2001; Pouliot, 1998; Tufts University Health and Nutrition Letter, 2001).

Music plays an important role in the lives of our students at Bloomfield College. They are constantly seen with earpieces listening to music of all varieties. They are conditioned to multi-tasking as they play music, read their homework assignments, and check e-mails on their computers. As educators, it is important to obtain information about the success of students related to music. Is there a positive relationship between the listening of Baroque style music and student test grades? Do the students have a better attitude towards the subject area when they are listening to music in the background?

Dr. Maya Ruvenshteyn and Dr. Leonard Parrino conducted a study at Essex County College last year studying the effects of Baroque style music on undergraduate student attitudes towards mathematics. They found a significant difference between two groups as follows: classes with the music in the background were more positive toward the subject matter, more cooperative, and easier to teach than classes without the background music. Preliminary results indicated an improvement in grades but further research is needed in this area.

Janine Pouliot (1998) examined the differences among the use of rock, New Age, and designer music related to heart rate and the immune system as measured by Immunoglobulin-A present in the saliva. She found a significant difference between the different kinds of music that were listened to in the study. The designer music, which consists of melodies to produce a desired effect, had the greatest increase in the production of salivary Immunoglobulin-A.

Other studies indicate the “Mozart Effect” which compared 36 undergraduates who listened to 10 minutes of Mozart’s Sonata for Two Pianos, K.448 and scored 8 to 9 points higher on the Stanford-Binet Intelligence Test compared with their scores after a period of silence or relaxation. Other research indicates music accelerates learning of foreign languages (Ostrander, 1994; Rose; 1997).

#### **Methods**

This past spring semester, 2006, research was conducted to extend the Ruvenshteyn and Parrino study by examining the differences between two classes of nursing research students that are exposed/not exposed to Baroque style background music during all of their classes and exams on their attitudes towards nursing research and academic achievement as measured by final test average in the course. The students were randomly registered for the two sections of Nursing Research that are offered in the spring semester 2006. The same professor teaches both sections of the class. Group one was randomly selected by the Division secretary to have the Sound Health® music produced by Advanced Brain Technologies playing in the background at a low level. This is the same music selection the researchers used at Essex County College. It is music designed to enhance concentration, thinking, learning, and creativity. Group two was taught the same content with the same teaching methodologies but there was no music playing in the background. Students who signed informed consents were asked to complete an 18-item likert scale evaluating the class environment and their attitude towards the course. The likert scale and debriefing statement were distributed to students after the final exam by the nursing laboratory assistant outside the classroom.

## Results

The two groups were compared on attitudes towards nursing research as well as final test scores in the course.

The Statistical Package for the Social Sciences (SPSS) was used to run independent samples t-tests on differences between the groups on test average, pre-NLN scores, Nursing 225 test grades (course taken immediately preceding nursing research course), attitude towards music, attitude towards research, and various demographic variables including gender, age, ethnicity, favorite music and favorite subject. The only significant finding between the group exposed to music and the group not exposed to music was the final test average in the nursing research course ( $t=2.5$ ;  $df=40$ ;  $p=.017$ ). The test average for section 1 (exposed to music) was 80; the test average for section 2 (not exposed to music) was 73.

The total sample of 42 students consisted of 26 students in section 1 and 16 students in section 2. There were 5 students who signed informed consents that did not complete the research forms at the end of the semester. Three of the five students who did not complete the forms failed the course.

The pre-NLN scores and NUR 225 final grades were compared for the two groups in an attempt to analyze equality of the groups in terms of achievement variability. There were no significant differences between the groups on pre-NLN scores ( $t=.021$ ;  $df=33$ ;  $p=.983$ ) or NUR 225 final grades ( $t=-.139$ ;  $df=38$ ;  $p=.891$ ). Even though there was no true random assignment to the two sections of nursing research because students registered at their convenience and chose the section they wanted, the groups were not significantly different on these two academic indicators of achievement.

A five-point likert scale was used to evaluate attitude towards nursing research. Four statements were selected from the 18 question scale to evaluate attitude towards nursing research. A group comparison of these four statements showed no significant differences ( $t=.326$ ;  $df=40$ ;  $p=.746$ ) between the group with music compared to the group without music. The four statements and their corresponding numbers used to evaluate attitude towards research were:

1. I like the class.
3. The class is boring.
4. I like the presentation.
13. The class is very interesting.

There were no significant differences between the groups on anxiety level at the completion of the course ( $t=.73$ ;  $df=40$ ;  $p=.47$ ). One statement from the likert scale was used to evaluate differences between the groups on anxiety:

18. I feel less tense in this class than I have in other college classes.

There were no significant differences in the two groups on the demographic variables of age, ethnicity, gender, favorite music and favorite subject. However, the total N may not have been large enough to detect differences ( $N=42$ ). The highest percentages of demographics are: 41.5 % of the students were between the ages of 18-22; 90% were female; 39% were African -American; 39% preferred Rap/Hip Hop music; and 46% chose science as their favorite subject.

## Discussion

It is promising that there was a significant difference between the two groups on test averages at the end of the semester. The group that was exposed to the baroque music throughout the semester had a significantly higher test average compared to the group that had no music in the classroom. Two academic variables including pre-NLN test scores and final grades in the previous nursing course taken at Bloomfield College (NUR 225) were compared in the two groups and no significant differences were found. The group that had the music met during the day hours; the group without music met during the evening. This may have been an extraneous variable which could have affected the test grades in the two classes. The students who met in the evening may have been fatigued. However, the evening class was significantly

smaller than the day class and students had more opportunity to discuss content and concepts with the professor one-on-one during the evening hours. The same office hours were available to all students from both sections.

There were no significant differences found between the two groups on attitudes towards nursing research.

The results of this study can be used tentatively in future classes in nursing. For example, one course in nursing involves drug calculations and important mathematical concepts. Since the preliminary results of this study indicated differences in test averages in the two groups, music may be a catalyst for better test scores and retention of mathematical concepts in future nursing courses. Further studies need to be done to increase the number of participants and to allow for higher level statistical analysis.

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Marianne Flood, PhD, MA, RN  
Assistant Professor of Nursing  
Bloomfield College  
Bloomfield, New Jersey 07003  
August 15, 2006  
[marianne\\_flood@bloomfield.edu](mailto:marianne_flood@bloomfield.edu)

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