

Impact of an Interdisciplinary Concert Series on Stress and Work–Life Balance in a Dental College

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Abstract

A piano concert series and jazz reception program was organized at the College of Dentistry at New York University, in 2007. An anonymous survey to assess the response of faculty, staff, and students to the concert series was conducted during 2010 to 2011. Overwhelmingly, the respondents recommend that music concerts in the dental college be continued. Support is apparent in the overall recommendation and in questions dealing with stress, productivity, music, the auditorium, and the community. Differences between groups defined by status (student, faculty, other, or unknown) and by previous music study (yes, no, or unknown) were small. Events such as a concert series organized at the College of Dentistry apparently can have positive influence on work–life balance.

Keywords

extracurricular activity, music and dentistry, relaxation, stress, work–life balance

Introduction

In recent decades, stress among the dental students has appeared to be a major concern for dental educators.¹ Stress is defined by Cox as “a stimulus, a response or the result of an interaction between the two, with the interaction described in terms of some imbalance between the person and the environment.”² Continued negative or harmful stress among the dental students may produce stress-related symptoms and may result in diminished efficiency and performance. The dental profession is considered to be one of the most stressful health professions.³ Past stress studies involving dental students focused on the following categories: academic performance, faculty relations, patient and clinic responsibilities, professional identity, and personal life issues. Stress-related illnesses diminish dentists’ ability to continue learning and progressing in their field and to retire early.⁴ Dentistry is both physically and emotionally strenuous, and this intense interaction between the dentist and patient could produce significant negative effects on clinical performance.

Dental students are most stressed by grades and performance on examinations. This is consistent with fear of failing a course of licensing examination.⁵ Students entering dental school are highly competitive and strive for excellence, thus placing high levels of stress on themselves to succeed. Dental students also have requirements to complete a number of treatment procedures in which inconsistency of feedback on

performance among different instructors produces intense stress and vulnerability to the dental education environment.⁵

Student and faculty stress in dental education may be reduced by listening to music. “Music listening has been described as ‘one of the oldest informal techniques of stress reduction.’”⁶ When used as a stress management technique by students and faculty, music listening has been found to be more effective than progressive muscle relaxation or focused

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imagery.⁷ Listening to music may help reduce stress and promote work–life balance by music’s effectiveness in lengthening and deepening breath, thus promoting physical relaxation and emotional self-regulation.⁸ Music facilitates feelings of life being more manageable, predictable, and meaningful, which are all factors associated with health.⁹ There is broad literature supporting the application of music therapy in relation to stress reduction. In a recent study, individuals in a hospital or in a dental environment responded positively to music.¹⁰ In addition, listening to music in a concert atmosphere or at cultural events had a surprising positive effect on health. A live concert event may stimulate specific regions of the brain, promoting favorable changes in hormone levels, immune function, and mortality.¹¹

There are numerous references in diverse areas of literature on music and stress reduction.¹² Some of these articles concern the impact of music on stress experienced by patients, whereas others address the impact of music on performance of surgeons and other professionals.

Recently, Lahmann et al¹³ reported on a randomized controlled clinical trial in which one treatment considered for relaxation of dental anxiety involved music. Lai et al¹⁴ focus on the effect of music on patients during root canal operations, and Kim et al¹⁵ report on the beneficial effect of music on patients during surgical extraction of an impacted mandibular third molar. Gfeller and colleagues¹⁶ report on musical distraction during dental procedures among both adults and adolescents. Corah et al¹⁷ contains earlier research on this topic.

Lai and Li¹⁸ report on a randomized controlled trial of the effect of music on first-line nurses. Marine et al¹⁹ concern occupational stress in health care workers and include discussion of the role of music. Makama and colleagues²⁰ present a study of the influence of music during operations. Hodge and Thompson,²¹ Allan and Blascovich,²² and Wong et al²³ report on music in the operating theater. Lesiuk²⁴ reports on the relationship of music listening to performance among air traffic controllers. Brennan and Charnetski²⁵ present a study on stress and immune system function in a newspaper’s newsroom.

Still other articles focus on the impact creative arts, including music, can have on health outcomes.^{26–30} Articles focusing on specific health areas such as cancer and cardiovascular disease are not reviewed here.

Dental students and faculty deal with high-stress situations including long hours of studying, lectures, laboratories, and clinical care. Stress and work–life balance issues may result in sleep disorders producing fatigue, tiredness, and depression. Listening to music can reduce sympathetic nervous system activity and thereby decrease anxiety, blood pressure, and respiratory rate. In turn, such a reaction can improve sleep quality in dental students and faculty. It has been demonstrated that relaxing classical music can help improve sleep quality and reduce sleep problems, thus helping with stress.³¹ Mind–body interventions as therapeutic techniques, which include listening to classical music, promote the connection between the mind and body and thereby improve a person’s ability to maintain health and withstand disease.³²

A piano concert series and jazz reception program was developed at New York University College of Dentistry (NYUCD), in 2007. The main auditorium at NYUCD was named after Dr Maurice Saklad, an NYUCD graduate and professor. In honor of Dr Saklad’s dedication and compassion to dental education, his dental patient Mr Frank Sinatra, the singer and musician, donated a Steinway grand piano to the great hall and auditorium in memory of his late dentist. This piano concert series is produced through collaboration between the College of Dentistry and the Steinhardt School of Culture, Education, and Human Development. The concert series is currently beginning its fifth season featuring 7 concerts per academic year, showcasing the piano, vocal, and jazz artists of the Steinhardt School. Monthly concerts are open to dental students, dental faculty, staff and administration, and to the public, including patients.

Approximately 2500 students, faculty, and staff have attended the concert series since the inception. An unknown number of individuals from the community have attended.

Since the pilot concert in April 2006, there has been a total of 35 concerts, all featuring classical piano. Twenty of the concerts were solo piano with 2 current Steinhardt students sharing each concert. Ten of the concerts featured chamber music with piano and 5 of the concerts were vocal performance with piano. A total number of 152 classical musicians from the Steinhardt School have performed in the NYUCD. The students who performed during the concerts ranged from PhD candidates to those at the master’s and undergraduate level. All performers were majoring in a musical degree and were full-time students at New York University.

There have been an equal number of jazz receptions following the piano performances. The jazz performers were also full-time students in the Steinhardt School. A total of 140 students from the jazz program have performed at the concert series.

Stress and anxiety may decrease the effectiveness of the dental student or faculty member. Attending regular monthly classical music concerts in the dental school may help improve the overall health and create a relaxing environment and subsequently stimulate physiologic relaxation.³³ Attending concerts and listening to music in the dental college promotes interaction of dental students and faculty in a nonthreatening, social environment without having grades, examinations, or evaluations of procedures. The concerts featuring the Steinhardt School musicians and artists serve as a medium to encourage students’ socialization and intervention via different modalities. Promoting students’ socialization could help build relationships within the dental college, create a less stressful, positive environment, and encourage a sense of being part of the wider New York University community. In a prospective study, the loss of opportunities for social and recreational activities contributed to higher stress levels, less overall academic success, and increased symptoms of depression in medical education.³⁴ Music may help students relax and to promote discussion of music with faculty, fellow students, and patients.

Listening to classical music in the dental college at a concert will not reduce stress levels to zero. The music intervention and

Table 1. Number of Respondents by Status Attending the Piano Concert, Jazz Reception, or Both

Status/attendance	Piano concert, n (%)	Jazz reception, n (%)	Both, n (%)	Do not know, n (%)	Total, n (%)
Student	37 (19)	38 (20)	42 (22)	8 (4)	125 (65)
Faculty	6 (3)	3 (2)	12 (6)	1 (1)	22 (12)
Other	7 (4)	2 (1)	16 (8)	1 (1)	26 (14)
Do not know	0 (0)	0 (0)	0 (0)	18 (9)	18 (9)
Total	50 (26)	43 (23)	70 (37)	28 (15)	191 (100)

socialization, however, may help decrease stress levels that are very high for some individuals. By avoiding stress-related detrimental effects on the achievements and scholarly work of the dental students and faculty, the concerts may ultimately benefit dental care for patients.

In many societies throughout the history of the world, music has allowed individuals to express their feelings and communicate with others. In addition to enabling people to express their emotions, music can alter people's emotions. In 1697, in *The Mourning Bride*, British dramatist William Congreve stated, "Musick has Charms to sooth a savage Breast, To soften Rocks, or bend a knotted Oak."¹¹

The purpose of the study was to determine whether easily accessible music concerts in the dental college help create a less stressful, positive environment, and encourage a sense of being a part of the New York University community. The study also aimed to measure whether music increased socialization and promoted discussion of music among faculty, students, and patients. The assumption being made is that participation in events and exposure to stimuli such as music concerts over time can decrease stress and help maintain work-life balance.

Materials and Methods

During the 2010 to 2011 performances of the NYUCD Music Series, an anonymous survey of faculty, students, and other attendees was conducted to assess the response to the interdisciplinary concert series. Questions ascertained respondent status (faculty, student, or other) and whether they previously studied music (piano, vocal, instrumental, jazz, etc) and, if so, which type and for how long. The surveys were completed at the conclusion of each piano concert and/or jazz concert during the 24th, 25th, and 26th performances. The sample included students and faculty that would be representative of the college as a whole.

Participants were asked whether, in their opinion, listening to piano and/or jazz has created a more relaxing environment in the dental college, whether the auditorium is a more relaxed atmosphere for examinations and lectures after attending a concert, and does music help the dental student or faculty member be more productive? In addition, attendees were asked whether music concerts at the dental college changed their appreciation for music, promoted positive feelings toward the dental college, or improved their focus and attention when returning to the auditorium. In terms of expected impact on behavior, they were asked whether they were more likely to discuss music

with dental school colleagues or listen to music in venues outside of New York University and whether they were better able to balance everyday stress of learning and teaching and improving work-life balance? Finally, they were asked, in their opinion, do they have a strengthened relationship with the University and with their colleagues as a result of collaboration between the dental college and the Steinhardt School of Culture, Education, and Human Development? The survey questionnaire can be found in the Appendix A.

A short announcement was given before the beginning of the piano or jazz performance regarding the survey and its anonymous nature. Participants then listened to the music performance, after which they were asked to complete a short survey at the conclusion of the piano concert, the jazz concert, or both. Participants were given a written consent form and asked to fill out the survey. No sensitive information and no identifiers were collected. Participants could choose to fill out the survey fully, partially, or not at all and place the form in a secure box in the auditorium. Participants had the option of placing a blank survey in the collection box. To participate in the survey, the participant had to attend a piano and/or jazz performance.

The survey was conducted at 3 consecutive monthly performances during November, December, and January. Of a total of 204 surveys distributed, 191 surveys were collected. Of the 13 surveys not filled out, 10 were returned blank. Three surveys were either taken home, not turned in, or thrown away. The questions were written and developed by the 5 authors in this article associated either with NYUCD or with NYU's Steinhardt School.

Responses are summarized in the results section by reporting the percentage of respondents that give each response to various questions. Separate results are given for students, which was the largest group. In order to compare groups, one can compute numerical scores (means) based on the responses coded as 1 to 5. Numerical scores can be used in 2-sample *t* tests for comparing groups, such as those with and without musical training.

Results

As reported in Table 1, 37% of the respondents attended both the piano concert and the jazz reception, 26% attended just the piano concert and 23% attended the jazz reception only. Fifteen percent did not indicate which event they attended. In all, 65% of the respondents were students, 12% were faculty, 14% were other, and 9% did not indicate a status.

Table 2. Responses to Questions About the Influence of the Concert and Reception on the Relationship of the Respondent to Music

Percentage	Missing	1 = Strongly disagree	2 = Disagree	3 = No opinion	4 = Agree	5 = Strongly agree	n (%)
Music appreciation changed (q06)	6%	3	5	16	21	50	191 (100)
More likely to discuss music (q10)	6	1	2	12	26	53	191 (100)
Encouraged me to listen at other venues (q13)	7	1	4	8	31	49	191 (100)

Table 3. Responses to Questions About Stress and Productivity

Percentage	Missing	1 = Strongly disagree	2 = Disagree	3 = No opinion	4 = Agree	5 = Strongly agree	n (%)
Created more relaxing environment (q03)	5%	1	1	3	12	79	191 (100)
Helped me become more productive and relaxed (q05)	10	1	1	9	26	54	191 (100)
Healthier, less stressful environment for students (q11)	3	1	0	3	18	75	191 (100)
Music helps balance everyday stress (q14)	4	1	1	2	21	72	191 (100)

Table 4. Responses to Questions About Subsequent Student Experience in the Auditorium

Percentage	Missing (%)	1 = Strongly disagree	2 = Disagree	3 = No opinion	4 = Agree	5 = Strongly agree	n (%)
Auditorium is a more relaxing atmosphere for exams (q04)	16	2	4	19	17	43	191 (100)
I was able to pay closer attention to lecture and review (q08)	17	2	4	28	18	32	191 (100)

Music and the Respondent

Three questions asked about the impact of the concerts on music and the respondent. As shown in Table 2, over 70% of the respondents said that they strongly agreed or agreed that the music concerts impacted their relationship with music. Less than 10% strongly disagreed or disagreed with these statements. Less than 25% of the respondents had no opinion or no response.

Music Concerts, Stress, Productivity, and Work–Life Balance

Four questions were about the impact of the music concerts on stress. Results are given in Table 3. For 3 of the questions, over 90% of the respondents said that they strongly agreed or agreed that the music concerts were beneficial in terms of stress. For the fifth question on the survey (the second row in the Table 3), 80% felt that the music concerts helped with productivity and relaxation.

One additional question (q09) asked about creativity and scholarly activity. In all, 75% of respondents strongly agreed and 18% agreed that music in the dental college had positive impacts on this dimension. In total, 3% had no opinion, 3% did not respond, and 1% strongly disagreed.

Subsequent Student Experience in the Auditorium

Two questions asked about (student) experience in the auditorium room after a concert experience there. In all, 60% strongly agreed or agreed with question 4 (the first row in Table 4) and 50% strongly agreed or agreed with question 8 (the second row in Table 4). Results for students alone are summarized below.

Impact on the Community

Table 5 contains numbers for 2 questions that asked about the relationship with the dental college and the community. In all, 88% strongly agree or agree that the music concert series has increased positive feelings for the dental college, and 81% strongly agree or agree that the music concert series strengthened collaboration between the dental college and the wider NYU community.

Variation in Responses Over Time

In general, there was little variation over time. Positive responses about the dental concert series were high in every month. Variation in responses by variable was not statistically significant, where statistical significance was examined using chi-square tests of association in collapsed tables for each variable. Tables created by cross-classifying survey response to an

Table 5. Responses to Questions on Perceived Impact on Community

Percentage	Missing (%)	1 = Strongly disagree	2 = Disagree	3 = No opinion	4 = Agree	5 = Strongly agree	n (%)
Increased positive feelings for the Dental College (q07)	4	1	3	4	26	62	191 (100)
Collaboration between the Dental College and the NYU Washington Square campus has been strengthened (q12)	8	1	1	8	19	62	191 (100)

Table 6. Student Responses to All Questions

Percentage	Missing (%)	1 = Strongly disagree or 2 = Disagree (%)	3 = No opinion (%)	4 = Agree (%)	5 = Strongly agree (%)	n (%)
Q03	2	2	2	14	81	125 (100)
Q04	5	7	21	19	48	125 (100)
Q05	2	1	8	29	60	125 (100)
Q06	2	7	13	25	53	125 (100)
Q07	2	5	5	29	60	125 (100)
Q08	6	7	33	21	34	125 (100)
Q09	1	2	6	19	72	125 (100)
Q10	2	4	14	25	55	125 (100)
Q11	2	1	3	20	74	125 (100)
Q12	6	2	10	22	60	125 (100)
Q13	4	4	9	34	50	125 (100)
Q14	3	2	1	22	73	125 (100)

individual question and month of survey were collapsed into either 2 or 3 levels of survey response; neither version of tests produced any significant differences at the .05 significance level.

Student Responses

One hundred twenty-five of the respondents were students. Their responses to the 12 opinion questions are presented in Table 6. In general, since students comprise 65% of the sample, the student proportion responding strongly agree and the other categories are quite close (generally within 5%) to the overall proportion for all questions. Students had higher proportions for strongly agree on 10 questions. The responses on questions 9 and 11 on stress, however, were still quite similar to the overall rates. On questions 4 and 8 that concern subsequent student experience in the auditorium, the percentage strongly agreeing with the positive impact of the music concert series was higher than in general. This is important for students because dental students spend at least 900 hours of the classes in the concert auditorium.

Numerical Scores

In order to compare groups, one can compute numerical scores (means) based on the responses coded as 1 to 5. For this analysis, the missing responses are excluded. Figure 1 shows the mean response by question. The first bar for each question is

the overall mean ($n = 159-185$). Bars 2 to 5 for each question are for the students ($n = 118-124$), faculty (13-22), other status ($n = 11-24$), and unknown status ($n = 16-18$). Except for students, sample sizes are rather small by group. Figure 2 shows the mean response by question with bars 2 to 4 representing respondents with previous music study ($n = 54-63$), no previous music study ($n = 22-25$), and unknown history of music study ($n = 82-97$). As can be seen, responses by group are quite similar.

If one conducts paired 2-sample t tests for comparing groups, then one does not find many significant differences. There are 6 pairs of groups by status (students, faculty, other, and unknown) and 3 pairs of groups by previous music study (yes, no, and unknown). Of the 108 possible tests ($12 \times 9 = 108$), 8 are statistically significant at the $\alpha = .05$ level. Even if there were absolutely no group differences at all, one would expect to find about this many significant results just by chance. Therefore, there appears to be little evidence of any statistically significant group differences in terms of opinion of the dental college interdisciplinary music concert series.

Satisfaction

Overwhelmingly, the respondents recommend that music concerts in the dental college be continued. Of the 63 respondents who had previously studied music before attending dental school, 62 recommended that the concerts be continued and

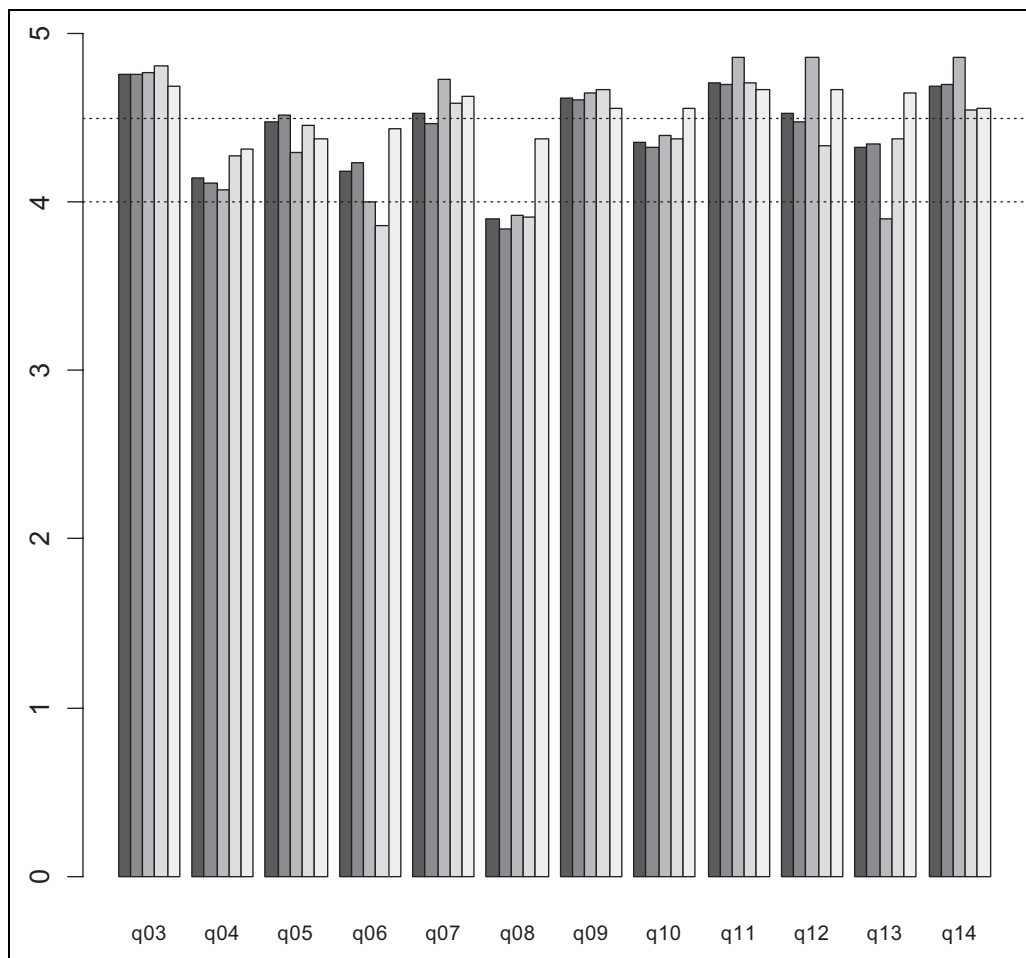


Figure 1. Mean response for 12 questions. Bars for each question give means overall (darkest bars) and by status (students, faculty, other, and unknown). Except for students, sample sizes are rather small by group. Horizontal lines (dotted) are at 4 and 4.5.

only 1 gave no opinion. Of the 25 who had not previously studied music, 24 recommended that the concerts be continued and only 1 did not respond. Of the 103 who did not answer the question about previous music study, 48 recommended continuing the concerts and 55 did not respond. No one said the music concerts should be discontinued.

Discussion

A piano concert series and jazz reception program was organized at the College of Dentistry at New York University, in 2007. Responses to an anonymous survey of faculty, staff, and student attendees during 2010 to 2011 were very strongly supportive of this interdisciplinary collaboration. Overwhelmingly, the respondents recommend that music concerts in the dental college be continued. Support is apparent in the overall recommendation and in questions dealing with stress, productivity, music, the auditorium, and the community. Differences between groups defined by status (student, faculty, other, or unknown) and by previous music study (yes, no, or unknown) were small. Differences across survey months also were very small, which could be anticipated due to the overall high level

of positive response. Events such as a concert series organized at the College of Dentistry apparently can have positive influence on work–life balance.

Stress among dental students is a major concern for dental educators. Negative or harmful stress among the dental students may result in diminished efficiency and performance. Harmful stress may adversely affect academic performance, faculty relations, patient and clinic responsibilities, professional identity, and personal life issues. A broad literature has documented benefits of music listening among patients, professionals, and in regard to public health of the population in general.

When used as a stress management technique by dental students and faculty, music listening has been found to be an effective component of overall approach. Music could have its effect in part through lengthening and deepening breath, thus promoting physical relaxation and emotional self-regulation. Listening to live music can have a positive effect on health by stimulating specific regions of the brain, promoting favorable changes in hormone levels, and enhancing immune function.

A future study could seek to correlate measures of work–life balance and participation in extracurricular activities such as

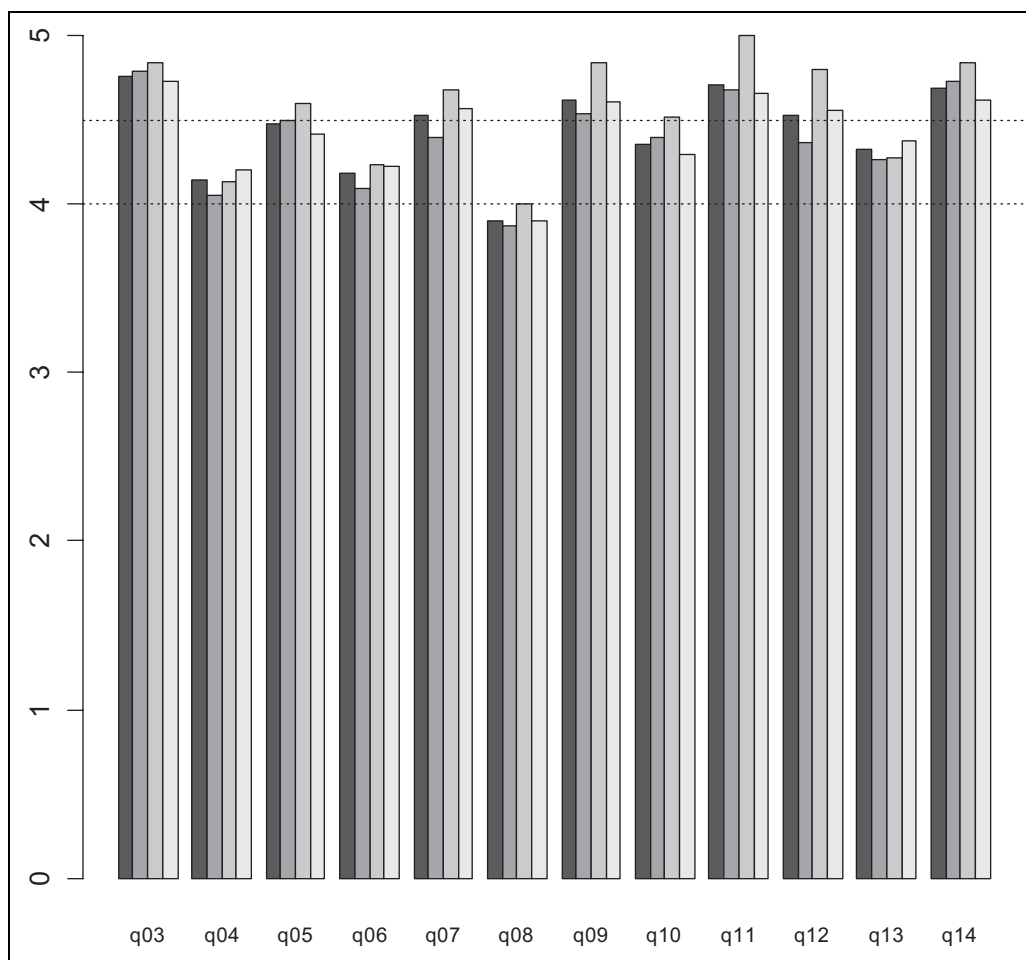


Figure 2. Mean response for 12 questions. Bars for each question give means overall (darkest bar) and by previous music study (yes, no, and unknown). Horizontal lines (dotted) are at 4 and 4.5.

attending the music concert series with performance in and opinion about school. If the survey were to be repeated, efforts could be made to redesign the survey form to encourage a higher response rate to the first 2 questions about status and attendance. It is hypothesized that because these 2 questions were above the 5-point scale questions, they were skipped more often than other questions. Questions could be considered that ask about attendance at other cultural events (eg, how often?) and how the respondent became aware of the music concert series. Furthermore, the wording of questions focused on student experience can be reworded to be more pertinent to faculty or staff experience as well. Alternatively, a section of questions particularly for students could be offset.

A limitation of this study is that a comparison sample from the general population is not presently available. A random sample of the general population for a cross-sectional survey would require resources beyond those currently available. Linking individuals over time, following-up with individuals

at a later date, or collecting laboratory measurements of health and well-being would be cost prohibitive for the preliminary study and also require different protocols for protecting confidentiality and privacy. Future study could be designed to address these and additional concerns and interests. The present study and questions that it raises could be used as a preliminary study to motivate a broader evaluation of stress and the dental community and the role of music and creative arts in health among students, staff, faculty, and patients.

Conclusion

Although based on self-report and not prospective in nature, the survey following the NYU College of Dentistry Dental College Music Series indicates that the series seems to be having a substantially positive impact on many aspects of the experience and performance of dental students and faculty.

Appendix A

Survey instrument. Note that the question numbers (q03-q14) were not included in the original survey form. They are included here for ease of reference.

I am a (Circle one of the following): Student Faculty Other: _____

I attended (Circle one of the following): Piano Concert Jazz Reception Both

Five Point Agreement Scale:

5 = strongly agree, 4 = agree, 3 = no opinion, 2 = disagree, 1 = strongly disagree

Listening to piano and/or jazz has created a more relaxing environment for me at the Dental College. (q03)

5 4 3 2 1

The Auditorium is a more relaxing atmosphere for exams since I have attended music concerts here. (q04)

5 4 3 2 1

Music has helped me become a more productive and relaxed dental student or dental faculty. (q05)

5 4 3 2 1

My appreciation of music has changed as a result of the concerts. (q06)

5 4 3 2 1

The Concert Series has increased positive feelings toward the Dental College. (q07)

5 4 3 2 1

When I returned to the concert auditorium, I was able to pay closer attention to lecture and review sessions. (q08)

5 4 3 2 1

Music in the Dental College contributes to a unique environment and encourages creativity and scholarly activity as part of the practice of dentistry. (q09)

5 4 3 2 1

After a concert, I was more likely than before to discuss music with my colleagues. (q10)

5 4 3 2 1

Five Point Agreement Scale:

5 = strongly agree, 4 = agree, 3 = no opinion, 2 = disagree, 1 = strongly disagree

Offering musical concerts within the Dental School promotes a healthier, less stressful environment for students. (q11)

5 4 3 2 1

Collaboration between the Dental College and the NYU Washington Square campus has been strengthened by the Concert Series. (q12)

5 4 3 2 1

Listening to piano and/or jazz music in the Dental College has encouraged me to listen to music at other venues outside the NYU campus. (q13)

5 4 3 2 1

I feel that music is important to dental students, dental faculty and helps balance the everyday stress of learning and teaching. (q14)

5 4 3 2 1

I previously studied music (piano, vocal, instrumental, jazz, etc.) before attending dental school. If so, which type of music? How long?

I recommend that the music concerts in the Dental College be continued (Yes, No, No opinion). (if Yes) Why do you think that they should be continued?

Please give any suggestions for making the concerts better.

THANK YOU and PLEASE PLACE SURVEY IN DROP BOX BY AUDITORIUM ENTRANCE.

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