



## THE EFFECT OF MAJOR AND MINOR MUSIC ON THE LEVELS OF PERCEIVED STRESS AMONG FINAL YEAR POST GRADUATE STUDENTS

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### Abstract

The current study investigates the effect of major and minor music on the levels of perceived stress among final year post graduate students. Method: 30 college going young adults (17=Female; 13=Male) were selected for the study using purposive sampling and were randomly divided into experimental and control group. The Perceived Stress Scale was administered on the subjects following which the members of the experimental group were subjected to two weeks, one hour each day, of major and minor music while the control group was subjected to no music for the same two week period. Results and Conclusion: The study revealed that there is a significant difference in the levels of perceived stress among the members of the experimental group that listened to minor music. There was no significant difference seen in the levels of stress among the members of the experimental group that listened to major music or those of the control group when compared to those of the experimental group.

**Keywords:** major music, minor music, perceived stress, young adults.

### Introduction

Stress is an individual's physiological response to a situation that serves an adaptive function (Franken, 1994), and perceived stress is the degree to which one judges a situation to be stressful. It incorporates feelings about the uncontrollability and unpredictability of one's life, how often one has to deal with irritating hassles, how much change is occurring in one's life as well as the confidence in one's ability to deal with problems or difficulties. It is not measuring the types or frequencies of stressful events which have happened to a person, but rather how an individual feels about the general stressfulness of their life and their ability to handle such stress.

It has been found that the perceived stress levels among college students in particular is extremely high, keeping in mind the workload as well as the kind of lifestyle led by them. However, the well-established finding that music relieves much of our tension and soothes our minds still prevails. Stress, anxiety and tension have always been buffered against by music and hence, music therapy has been widely popular among the normal as well as the clinical population.

The following study measures the perceived stress among college students using the Perceived Stress Scale (Cohen, Kamarck and Mermelstein, 1983) that is based on the transactional stress model (Lazarus, 1991, Lazarus and Folkman, 1984, Methany and McCarthy, 2001). The model portrays stress as an imbalance between perceived stressors or demands and the perceived resources of the individual. Demands that are extremely over burdening and exceeding the individuals perceived resources can trigger stress responses in the individual.

The perceived stress level and the way of coping with them will determine the life satisfaction of individuals (Methany et. al, 2002). The measurement of coping strategies is the single most important factor in predicting stress (Hobfoll, 1989). Coping resources moderate the influence of perceived stress on life satisfaction (Matheny, 2002).

The way in which an individual responds to situations voluntarily and consciously, is referred to as coping (Lazarus and Folkman, 1984). These coping mechanisms which individuals adopt have been broadly conceptualized and categorized as problem focussed-emotion focussed (Folkman and Lazarus, 1980), engagement-disengagement coping (Tobin et al, 1989), approach-avoidance coping (Suls and Fletcher, 1985), task-oriented emotion oriented-avoidance oriented (Endler and Parker, 1990, 1994). The coping strategies adopted by individuals will depend on their perceived internal as well as external resources which are available to them. Individuals who adopt more adaptive coping strategies will have better predictors of reduced stress levels.

The human race has always been astounded by the art of music; hence, they have always sought to play and enjoy music, thus making music an indispensable part of every culture. There is hardly anyone who has never been captivated by the power of music. Music can alter our minds, transform our emotions and can even unlock concealed ideas from within us. However, playing music and even the mere act of appreciating it, fundamentally involves a wide array of brain functions. Some of the several cognitive processes which underlies music making includes, the working memory, learning, visuo-spatial functions, emotions etc. And this array of processes makes the study of the functionality of the human brain possible through the study of their musical expertise.

The Oxford Dictionary defines Music as vocal or instrumental sounds (or both) combined in such a way as to produce beauty of form, harmony, and expression of emotion. However, following the subjective argument which has gained a lot of momentum today, it can be said that what might be music to one individual may not be the same to another. Nevertheless, despite the variability in what might constitute 'music', there is general agreement that musicality is a universal trait of humankind (Blacking, 1995, Merriam, 1964).

Various research studies indicate the impact and magnitude of music in various fields of psychology. Certain developmental studies indicate infants are surprisingly sensitive to various musical properties (Krumhansl, 2002). He also pointed out that studies of patients with brain damage find they may react to the emotional content of music. Such

findings indicate that emotions are strongly integrated in the experience of music. RaiBahadurBisanSwarup has rightly said that a music artist has a more difficult task to perform than other artists, painters, poets or architects, because, while the latter present their work in a tangible shape with feelings expressed, the musician has to do more than that as he stimulates the imagination of his audience and thereby engenders in them those feelings, to make himself and his art to be understood (Swami Prajnanananda, 1979).

Music is highly significant and has diverse functions and this can be indicated by the extent to which people listen and make music. The power of music is predominantly emotional. Emotions are discerned in music in two distinct ways: expression of emotion and induction of emotion. Professor Theodore Fenney says that according to the Spenserian theory, music is an extension of the primitive desire to communicate, and, consequently, its whole artistic function is related to the communication of the human emotions and passions (Swami Prajnanananda, 1979). Furthermore, there are two positions in the psychology of musical experience – the cognitivist and the emotivist positions. The cognitivists believe that we understand music by matching the expressed emotional state in music with the existing schema or cognitions we possess. The emotivist's in contrast, believe that the music causes emotional state in the listener through physiological responses (Tan, Pfordresher and Harré, 2010).

It is believed that when Pythagoras, the famous Greek intellectual visited India, he took with him many ideals and materials of fine arts, science, medicine, including music and therefore it is said that Greek music as well as the music of other foreign nations were enriched with the materials borrowed from India. It is important to note then, that Music in India existed long before the dawn of civilization in other countries (Swami Prajnanananda, 1979). Thus, it can be said that music genres that originate in the West predominantly comprise of elements of music whose origin can be traced back to India.

Expectations about the nature of music play a crucial role in the experience of emotion (Meyer, 1956). The cognitive appraisal of bodily experiences is central to the emotion felt on being exposed to music (Mandler, 1984). According to him, the experience of negative emotions and positive emotions will be the result of mismatch or match respectively, between the musical information and existing cognitive schemata of an individual.

Factors such as complexity, familiarity and novelty play an important role in determining whether the experience of music will be pleasurable or uncomfortable (Berlyne, 1971). For instance, when the music is new to a listener, its hedonistic value is low for him or her but with increasing familiarity its value rises only to fall again when the music becomes totally well known to the listener. Furthermore, in line with Mandler's arousal theory of emotion in music, Berlyne concluded that musical preference is based on the preference of the individual to maintain the level of preferred arousal constant. Music preference simply refers to the extent to which a person prefers, or likes, a particular kind of music over another (Scherer and Zentner, 2001). This may in turn influence the effect it can have on the individual in stressful situations.

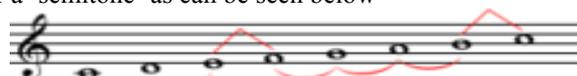
William Congreve, centuries ago, said that "Music has charms to soothe the savage beast", a saying that studies now confirm having proven the relationship between music and its ability to reduce stress levels. Researchers have found that music alters the stress hormone cortisol that is released by the body. In one study, patients undergoing a stressful diagnostic procedure were allowed to select background music to accompany the procedure. Their levels of cortisol were seen to have been significantly lower than the control group which heard no music during the procedure (Schneider and Becker, 2011). Another study done using renowned sitarist Ravi Shankar's music, which was chosen for its meditative nature and lack of strong rhythm which is very similar to Western Classical Music, produced similar results.

Music in itself has been further subcategorized into several different genres of music such as Rock, Pop, Metal, Indian Classical as well as Western Classical music to name a few. Classical music has been rooted in the traditions of Western music encompassing a broad period from roughly around the 11<sup>th</sup> century to present times although the term "classical music" did not appear until about the 19<sup>th</sup> century. Western music generally divides the octave, which is a combination of eight notes put together, into a series of 12 notes that might be included in a piece of music; and mainly follows the system of major-minor tonality.

Western Classical music has been used as a tool for relaxation and stress reduction, resulting in self-reported, behavioural, and physiological changes, all related to reduced stress levels (Hanser, 1985). For example, listening to classical music was associated with reductions in autonomic activity and self-reported tension and improved performance of surgeons (Allen and Blaskovich, 1994). Similarly, listening to classical music in another study reduced self-reported fatigue, sadness, and tension (McCraty, 1998). Physiological changes associated with listening to classical music and related to reduced stress included significant decreases in endorphin following one session of a combined progressive relaxation, classical music, and guided imagery condition (McKinney, 1997a).

Having now explained how classical music in general helps in the reduction of stress, let us now delve deeper into the two different aspects of western classical music, namely major and minor based music.

Music that is 'major' is overtly based or constructed using major scales. The 'Major scale' or the 'Ionian scale' is one of the most commonly used scales and is also a part of the diatonic scales. A major scale, like most other scales, is made up of seven consecutive notes with the eighth duplicating the first in order to form a higher octave of the same note. This 'Major scale' had a lot of importance in European music, particularly in popular music, due to the many number of chords that can be formed from it. A 'Major scale' is formed using a particular sequence of intervals between each note of the scale; the sequence being 'whole, whole, half, whole, whole, whole, half' where 'whole' stands for a 'whole tone' and 'half' stands for a 'semitone' as can be seen below-



'Mary had a little lamb' for example, is a nursery rhyme we have all heard, that is based primarily on a Major scale; the Major scale being based on any of the eight keys namely A, B, C, D, E, F or G. The intervals used to form the Major scale that is used to play the rhyme and make it sound as happy and cheerful as it does, are different from that which

would be used in a minor scale.

Music that is 'Minor' is overtly based or constructed using 'Minor scales'. A minor scale, like most other scales including the major scale, is made up of seven consecutive notes with the eighth note duplicating the first in order to form a higher octave of the same note. It is formed using a particular sequence of intervals between each note of the scale; the sequence being 'whole, half, whole, whole, half, whole, whole' as can be seen below-



'Für Elise' by Beethoven is a very common example of a piece based on a minor scale, the minor scale being 'A minor'. The intervals used to form the Minor scale that is used to play the piece, make the listener feel sad, even depressed to an extent, lonely, afraid and other such emotions, which are different from that which would be used in a minor scale.

Music that is overtly based on major scales has been said to have a higher effect on the reduction of stress levels than music that is overtly based on minor scales. This is said to be mainly due to the "happier tones" that are said to exist within these major scales which are said to account for the reduction of stress levels, while the "sadder tones" that exist within minor scales are said to have a lower effect on the levels of stress reduction among individuals.

There are abundant studies done on the effects of music on the reduction of stress levels which would thus result in a generalization of these enhanced effects on stress levels. Building on this finding, the present study seeks to address the specific kind of music that leads to a higher reduction of stress levels, when compared to the rest; major and minor western classical music, being the two main kinds of music being looked at in this study. The present study is also an attempt to bridge the gap in the existing literature on music and the levels of stress reduction by looking specifically into the particular kind of music that leads to a higher reduction of stress levels between major and minor based music, as well as by looking at its effects in India keeping in mind that very few studies have been done on it.

## Methodology

The aim of this research was to study the effect of major and minor music on the levels of perceived stress among final year post graduate students.

### Research Objectives

To assess the levels of perceived stress among final year post graduate students within the age range of 20-25 years.

To assess the effect of major based music on the reduction of the levels of perceived stress among final year post graduate students within the age range of 20-25 years.

To assess the effect of minor based music on the reduction of the levels of perceived stress among final year post graduate students within the age range of 20-25 years.

### Hypothesis

HO: Major music has no effect on perceived stress among final year post graduate students.

HO: Minor music has no effect on perceived stress among final year post graduate students.

### Sample

The sample for the study consisted of groups of final year postgraduate students. The experimental group was composed of 15 final year postgraduate students (both male and female), while the control group was also composed of 15 final year postgraduate students (both male and female).

Purposive sampling method was employed to select the experimental group, because the sample chosen was a specific pre-defined group fulfilling definite inclusion criteria as well as so that the targeted sample could be reached quickly. This was also used in order to select the control group. Both the groups were selected from Bangalore. The experimental and control group sample were matched for their age and education in their respective fields.

### Inclusion Criteria for the experimental and control group

Final year post graduate students must be studying in Bangalore.

Final year post graduate students must be in the age range of 20-25 years.

### Exclusion Criteria for the experimental and control group

Final year postgraduate students who have a habit of consuming alcohol or any other drugs.

Final year postgraduate students who practice relaxation exercises of any sort, such as yoga.

### Variables

There are two variables involved in this study: music and stress; stress being the dependent variable and music i.e. major and minor music being the independent variables.

### Research design

The research design being used is the quantitative experimental design. The sample consists of two groups i.e. the experimental and the control group; the experimental group being further divided into two. The pre-test consists of the Perceived Stress Scale being administered on both the experimental as well as control group, followed by a two week period of listening to major Western Classical instrumental music for one experimental group and minor Western Classical instrumental music for the second experimental group for a period of fifteen minutes a day, while the control group will not be made to listen to any form of Western Classical instrumental music. After this two week period, the

post-test is conducted where the Perceived Stress Scale will again be administered on both the experimental groups as well as the control group.

### Tools for data collection

**The Perceived Stress Scale (PSS).** The selected participants are administered the Perceived Stress Scale (Sheldon Cohen, 1988). The PSS is the most widely used psychological instrument for measuring the perception of stress. It is the measure of the degree to which situations in one's life are appraised as stressful. Items are designed to tap how unpredictable, uncontrollable and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed to be used with community samples with at least a junior high school education. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group.

Internal reliability: Coefficient alpha of .78 (Cohen and Williamson, 1988, p.55).

Evidence for validity: Higher PSS scores were associated with failure to quit smoking, failure among diabetics to control blood sugar levels, greater vulnerability to stressful life events and more colds.

**Socio demographic data collection.** The selected participants will be required to fill out a questionnaire required to collect their socio demographic data.

### Procedure

The experimental group was selected after the screening procedure of administration of a questionnaire which contains questions on the demographic variables of individuals. The sample was chosen based on the inclusion and exclusion criteria. The chosen sample was then requested to read and sign a consent form as an agreement of participation in the research.

The Perceived Stress Scale (Sheldon Cohen, 1988) was given to the subjects and their stress levels were assessed. The experimental group was selected from colleges in Bangalore and were also approached individually. The individuals of the control group were chosen on a similar basis. The venues chosen for the test administration were calm and most convenient for the administration of the tools. The entire administration per participant took an average of fifteen to twenty minutes every day over a two week period and varied from participant to participant depending on their individual differences, extraneous factors as well as their motivation levels.

### Data Analysis

Descriptive statistics will be used to analyse the socio demographic data of the participants and Wilcoxon Signed Rank test and Mann Whitney U test will be used to prove the hypothesis and analyze the data.

### Results

The present study explored the effect of major and minor music on the levels of perceived stress among final year post graduate students. It employed four hypotheses for this purpose and all the hypotheses were based on theoretical as well as empirical evidence. A sample of 30 was used in the study, all of whom were final year post graduate students who were not trained in relaxation methods of any sort and did not resort to smoking or drinking under any circumstances. This chapter provides a detailed account of the outcome of the various analyses which were done to check the hypotheses proposed. The data analysis was done using the 16<sup>th</sup> version of the SPSS software.

### Sample description

A total sample of 30 was chosen for this study; the experimental and the control group consisting of 15 members each. The members were all chosen from different college across Bangalore as well as through personal connections. Both groups consisted of members of the age group of 20-25, all of whom were completing their final year of post-graduation in different fields. The following tables show the demographic data of the members of the experimental and the control group respectively.

Table 1: Demographic data of the members of the experimental group

Experimental group	Major	Minor
Gender		
Male	3	3
Female	4	5
Age	20-25	20-25
Education	Final year post graduation	Final year post graduation
Accommodation		
Alone	0	3
P.G	7	2
Family	0	3

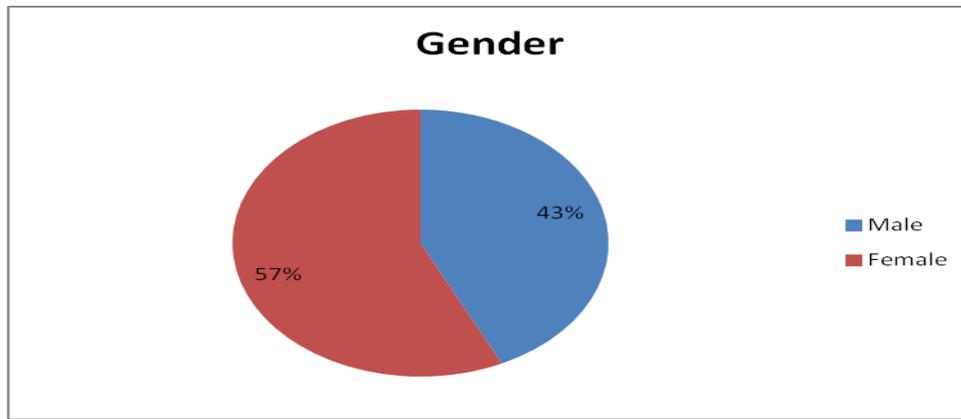


Figure 1:Pie chart showing the gender of the members of the major experimental group

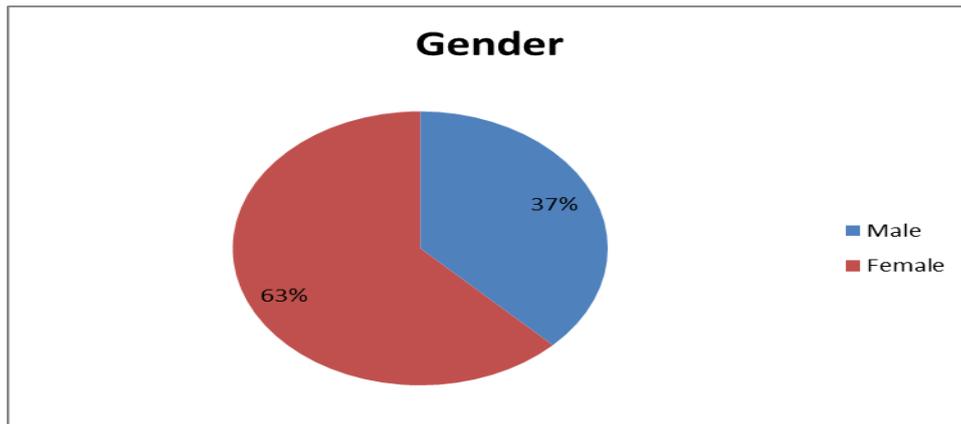


Figure 2:Pie chart showing the gender of the members of the minor experimental group

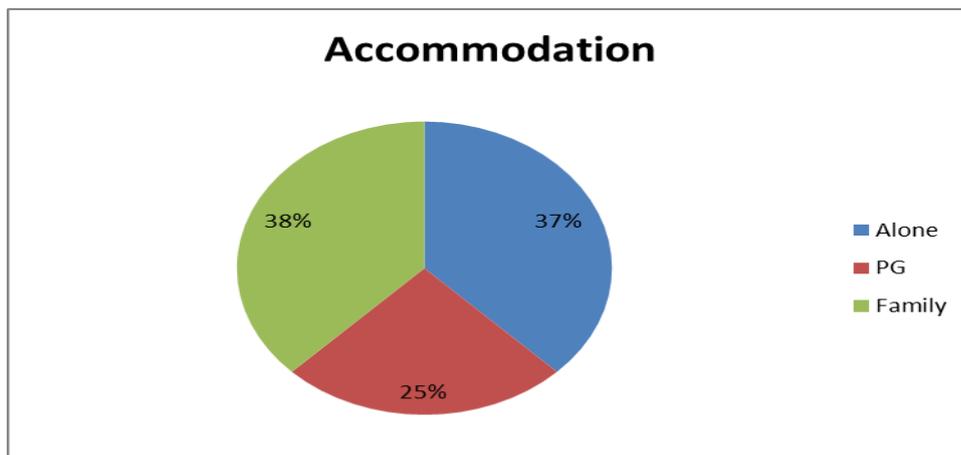


Figure 3:Pie chart showing the accommodation of the members of the minor experimental group

Table 2:Demographic data of the members of the control group

	Gender	N
Male	7	
Female	8	

Table 3:Demographic data of the members of the control group

Accommodation	N
Alone	2
PG	4
Family	9

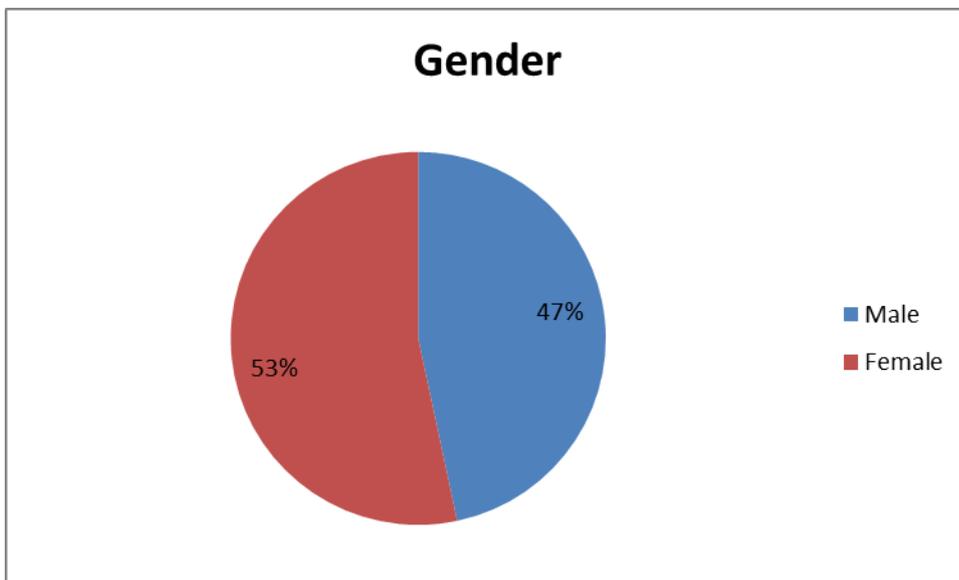


Figure 4: Pie chart showing the gender of the members of the control group

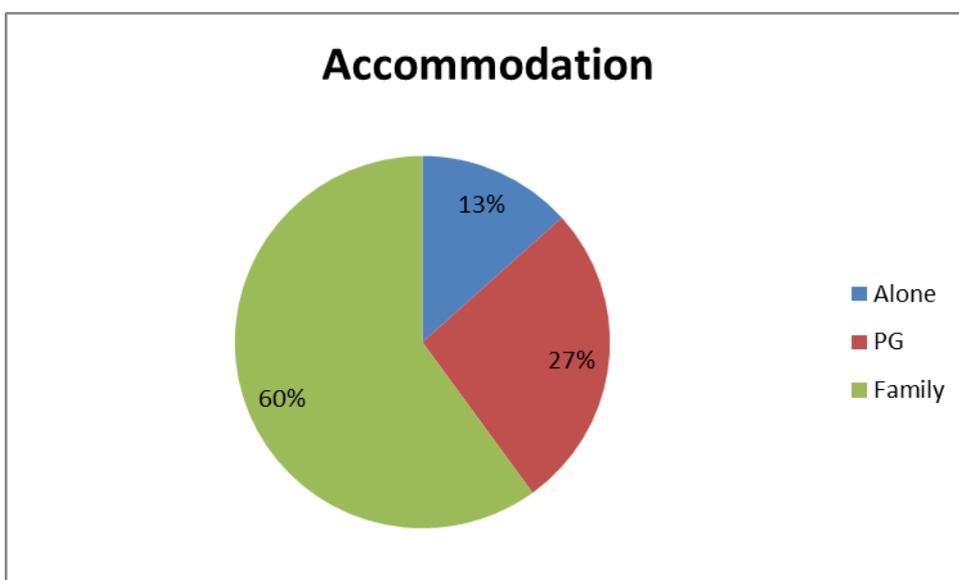


Figure 5: Pie chart showing the break-up of the accommodation of the members of the control group

Variables	N	Mean	Std. Deviation	Wilcoxon (z)	Sig.
Minor music pre	8	17.6250	8.50105		
Minor music post	8	14.5000	7.65320	- 2.316	0.021

It was hypothesized that minor music has no effect on the levels of perceived stress among final year post graduate students. The results showed that there was a significant difference in the levels of perceived stress among those in the experimental group that listened to minor music, as indicated by the Wilcoxon Z value -2.316 as well as the value of significance of 0.021. Therefore, the hypothesis has been disproved, showing that minor music does have a significant effect on the level of perceived stress among final year post graduate students.

Variables	N	Mean	Std. Deviation	Wilcoxon (z)	Sig.
Major music pre	7	21.0000	6.55744		
Major music post	7	15.8571	3.38765	-1.892	0.058

It was hypothesized that major music has no effect on the levels of perceived stress among final year post graduate students. The results showed that there was no significant difference in the levels of perceived stress among those in the experimental group that listened to major music, as indicated by the Wilcoxon Z value of -1.892 as well as the value of significance of 0.058. Therefore, the hypothesis has been proved, showing that major music does not have a significant effect on the level of perceived stress among final year post graduate students.

Post control (minor)	N	Mean	Std. Deviation	Mann Whitney	Sig.
Post experimental	8	14.5000	7.65320		
Post control	8	21.0000	7.05084	14.500	0.065

It was hypothesized that there would be a difference in the levels of perceived stress between the experimental group listening to minor music as well as the control group, i.e. the experimental group would have a lower level of perceived stress when compared to the control group, after having listened to minor music for a period of two weeks. The results show that there is no significant difference in the perceived stress levels between the post experimental group and the post control group, as indicated by the Mann Whitney value of 14.500 and a significance level of 0.065. Thus, the hypothesis was not proved showing that there is no significance.

Post control (major)	N	Mean	Std. Deviation	Mann Whitney	Sig.
Post experimental	7	15.8571	3.38765		
Post control	7	19.0000	7.43864	16.000	0.275

It was hypothesized that there would be a difference in the levels of perceived stress between the experimental group listening to major music as well as the control group, i.e. the experimental group would have a lower level of perceived stress when compared to the control group, after having listened to major music for a period of two weeks. The results show that there is no significant difference in the perceived stress levels between the post experimental group and the post control group, as indicated by the Mann Whitney value of -16.000 and a significance level of 0.275. Thus, the hypothesis was not proved showing there is not significance.

## Discussion

The aim of this research was to study the effect of major and minor music on the levels of perceived stress among final year post graduate students. It was hypothesized that minor music has no effect on the levels of perceived stress among final year post graduate students; that major music has no effect on the levels of perceived stress among final year post graduate students; but there would be a significant difference in the levels of perceived stress between the members of the control group and the experimental group.

The results of this study indicate that there is a significant difference in the levels of perceived stress among the members of the experimental group that listened to minor music over a two week period, before and after which their stress levels were assessed using the perceived stress scale. This shows that the minor music that the members of this group listened to, had a significant impact on their stress levels, irrespective of whether their stress levels were high or low to begin with. These results are congruent with the study done by Lesiuk (2008) which showed that music listening, guided imagery and music as well as progressive muscle relaxation to music are three of the music techniques most frequently employed for stress management and that all three bring about an immense amount of improvement in the state of relaxation, mood, as well as thoughts.

There was no significant difference seen in the levels of perceived stress among the members of the experimental group that listened to major music over a two week period, before and after which their stress levels were assessed using the perceived stress scale. This shows that the major music that the members of this group listened to, had no significant impact on their stress levels, irrespective of whether they had high or low levels of stress to begin with. These results are not congruent with the study conducted by Webster and Weir (2005) where various aspects of music were explored individually as single musical elements (such as mode, texture, tempo, harmony and melody) and it was found that they can be associated with emotional responses to music (of happiness and sadness) where major keys, non-harmonized melodies and faster tempos were associated with happier responses; higher levels of happiness being related to lower levels of stress.

It was hypothesized that there would be a significant difference in the levels of perceived stress between the experimental group listening to minor music as well as the control group, i.e. the experimental group would have a lower level of perceived stress after having listened to minor music for a period of two weeks, when compared to the control group. The results show that there is no significant difference in the perceived stress levels between the post experimental group and the post control group, showing that the music listened to have no significant impact on the levels of stress among the members of the experimental group. These results are not in congruence with the study conducted by Elise Labbe, Nicholas Schmidt, Jonathan Babin, Martha Pharr (2007) on the effect that different types of music have on college students who have experienced a stressful test, which found that self-selected and classical music had a higher effect on lowering the levels of stress as opposed to heavy metal as well as not listening to any music at all.

It was hypothesized that there would be a difference in the levels of perceived stress between the experimental group listening to major music as well as the control group, i.e. the experimental group would have a lower level of perceived stress after having listened to major music for a period of two weeks, when compared to the control group. The results show that there is no significant difference in the perceived stress levels between the post experimental group and the post control group, showing that the music listened to have no significant impact on the levels of stress among the members of the experimental group. These results are not in congruence with the study conducted by Schneider and Becker (2011) in which patients undergoing cerebral angiography were studied. The patients undergoing this stressful diagnostic procedure were allowed to select background music to accompany the procedure, and their levels of cortisol were seen to have been significantly lower than the control group which heard no music during the procedure.

It is clear however that further and extensive research is required to grasp the complete effect of major and minor

music on the levels of perceived stress among final year post graduate students.

## Summary and Conclusion

The aim of the present study was to determine the effect of major and minor music on the levels of perceived stress among final year post graduate students. 30 students from colleges all over Bangalore were selected. There were 13 males and 17 females within the age group of 20-25 years who were selected using the purposive sampling technique. The research was quantitative in nature with the independent variable being the presence of major and minor music and the dependent variable being the perceived stress levels of the subjects.

### The objectives of the study were:

To determine the perceived stress levels among final year post graduate students.

To assess the effect of major music on the levels of perceived stress among final year post graduate students.

To assess the effect of minor music on the levels of perceived stress among final year post graduate students.

To determine whether major and minor western classical music played a key role in reducing the levels of perceived stress among final year post graduate students.

### Major findings in the study:

The data analysis in the study was done using Wilcoxon signed rank test and Mann Whitney U test. The results indicated that there was a significant difference in the perceived stress levels of the subjects of the experimental group that listened to minor music and there was no significant difference in the perceived stress levels of the subjects that listened to major music.

There was also no significant difference in the perceived stress levels of the subjects of the experimental group when compared to the perceived stress levels of the subjects of the control group.

## Limitations

The study has a few limitations:

The most important limitation was the sample size of the study. The sample studied was very small and it was obtained using the purposive sampling method. Therefore, generalization of the results cannot be done. A larger sample would yield results that are more accurate.

Due to time constraints and environmental factors, several other variables could not be accounted for. Thus, a more large scale study is required to be done in order to obtain more significant results.

There was no equal division of male and female subjects in either the experimental or the control group and there were more female than male subjects. There could thus be a bias in results based on gender differences.

## Implications

To help provide new methods of relaxation using music.

To help bring about awareness about the relation between the reduction of stress using major or minor western classical music in particular.

To add to the field of music therapy as an intervention form in regular counseling practices.

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