An Experiment To Show Weather The Tempo (speed) Of A Piece Of Background Music Can Affect The Performance Of a Task

CONTENTS

ABSTRACT

According to the study conducted by xxxxx (19xx)
The aim of the present study was
The method used was
The result was……..(probability)
The conclusion was

Background

Music is a factor which could affect the performance of a task. Music in some way has affected everybody, whether good or bad at some point. It is only recently that music has become seriously analysed and tested in different situations in order to recognise its true effects. Most people relate a piece of music to a event, and by hearing the music you are reminded of the event, for example, if you had a certain piece of music played at your wedding, that song when played would remind you of the day. Also different cultures have different types of music and can be stereotyped into that type of music, e.g. Scottish people are assumed to play the bagpipes. So music is a big factor in culture also. Music therapy is now being used by psychiatrists to relax and help patients.

With music as a topic, there are many possible ideas in what to test, but the idea that seemed most important to explore was that, how different types of music would affect the performance of a person performing a task. I was interested to find out what sort of music affects the amount of work produced and the quality of the work produced. I was interested to see if music could be used to peoples advantage when working, and what type of music should be used if it is an advantage. Wallace (1994) found that a simple repetitive melody increased memory of text when tested. According to Turner et al. (1996), the amplitude of a melody is important for task performance. They discovered that lower amplitude elicited a slower response time to unexpected visual events.

The basis of this study is a similar a study tested by Mayfield and Moss (1989), who asked students to perform a task with fast, then slow tempo music playing in the background. The students recorded that the fast music acted as a stress stimulator, although it sometimes made them perform the

task quicker. Some subjects recorded that slower music relaxed them, which affected them by slowing down the speed of their work. My study will take into account the quantity of work produced and lightly the quality, Stough et al. (1994) performed IQ tests on subjects, with the first group having Mozart playing in the while the other performing it in silence. Here, the slow relaxing music had no effect on the results, arguing the case that music has no effect on a person's performance of a task.

Based on the research shown above my study aims to test whether music affects the performance of a task.

Hypothesis

There will be a significant difference between the scores subjects get on the word search depending on whether they were in the condition where slow or fast music was played.

Null hypotheses: There will be no significant difference between the scores subjects get on the test, whether they were in the condition where fast or slow music was played.

Method

A random / opportunity was used for the subjects to rule out any order effects. The targeted subjects were 6th form members at Kingsmead Technology Collage, the people chosen were aged 16- 18 , they were chosen by selecting every 5th person from the schools register, when 30 had been selected, they were randomly split into three groups, slow, fast and no music. This was done by manually selecting names out of a box blindly. This made the sample of students chosen academic subjects fairly random, which helped with the results. A lab experiment was used in which all other variables apart from the independent and the dependant were fixed. Performance was tested by using a word search, the subjects would find the words within the word search and circle/ cross out the word they had found. There was a random mix of short and long words travelling in all directions.

I chose a word search as they can be frustrating and you have to concentrate to find the answer. At one point one subject stated, '' Its hard to concentrate, you know the words are in there but they are hard to find.''

A time limit of one minute was decided upon in which to try and complete the word search. The independent variable was the music. One group had slow music playing (Guns N Roses – Don't Cry) in the background and another group had fast dance music played (Terence – Maniac). A control group was used in order to compare the results of those who performed the task with music to a group with no independent variables to affect their performance. Both pieces of music were played at the same volume, -50.00 decibels. The dependant variable was the amount of words found by the subject on the word search test.

Materials

Materials used consisted of:

- Participants – 30 students from Kingsmead technology collage
- Word searches – 30 identical words searches
- Standard instruction sheet (if needed)
- Kenwood stereo – Two speakers
- Stop watch – Slazenger make
- Two CD's with songs listed below:

  Slow Music – Guns and Roses Greatest Hits – Track 07 (1995)
  Fast Music – Club Land – Terrance – Maniac - Track 05 (2001)

Procedure

The three randomly assigned groups of ten subjects were shown to separate classrooms within the school. Here the instructions, listed in the instructions section, were read to all subjects. The word search sheets (one allocated to each subject) were already lying face down in front of the seating positions accompanied by a piece of writing equipment (pen). The participants were asked to be seated and make themselves as comfortable. The participants were then told to ensure their names were not to be written anywhere on the paper for ethical reasons, and were then instructed to start. Here, the music for the two groups that required it were started. After one minute the music

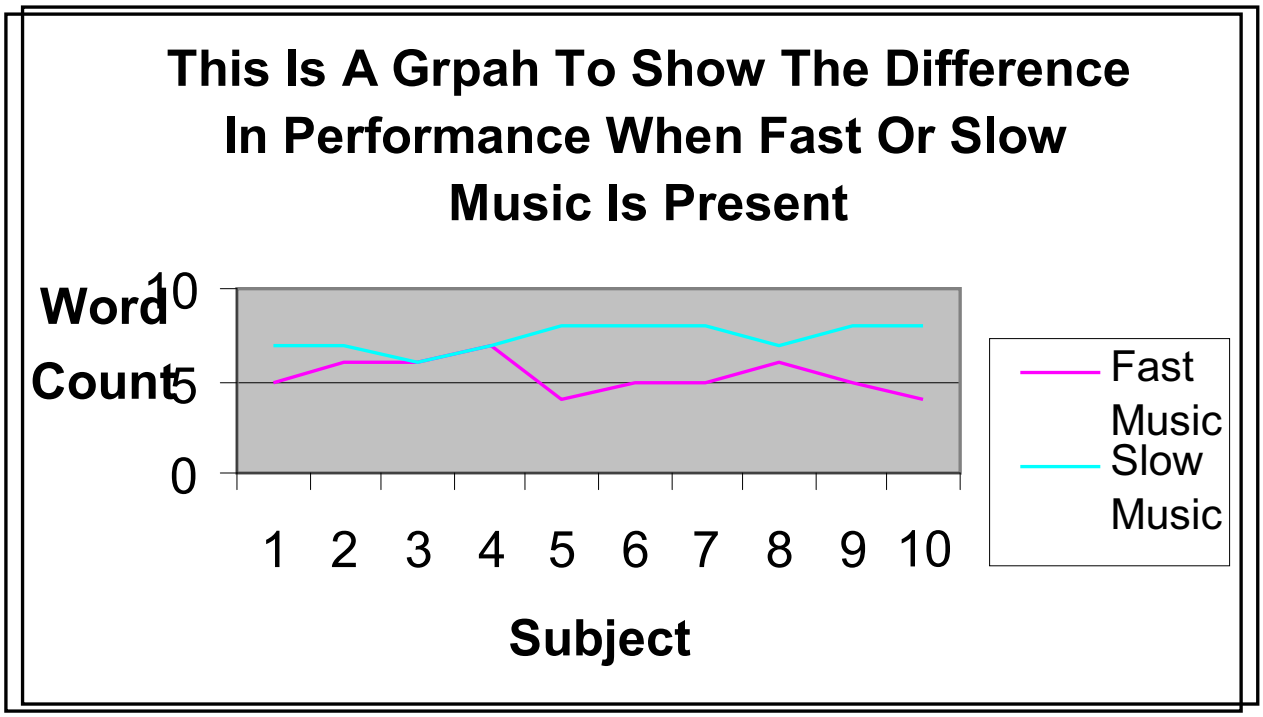
was stopped and the participants were instructed to stop writing and hand their results to the researcher (me) who then added up the results. Throughout the experiment, participants were not allowed to confer and could only talk once all the papers had been handed in. The participants were then debriefed, shown the answer sheet, and free to leave, after the researcher made it clear that none of the other subjects yet to be tested be told of the aims of the experiment or what it entailed.

Results

The following table illustrates the differences in results between the groups who had slow music and fast music in the background:

FAST	RESULT	SLOW	RESULT	+ , - , O
1	5	1	7	+
2	6	2	7	+
3	6	3	6	O
4	7	4	7	O
5	4	5	8	+
6	5	6	8	+
7	5	7	8	+
8	6	8	7	+
9	5	9	8	+
10	4	10	8	+

Table one shows that there was an evident difference between performances of the two groups, suggesting that having slow music playing in the background enhances performance, compared to fast music.

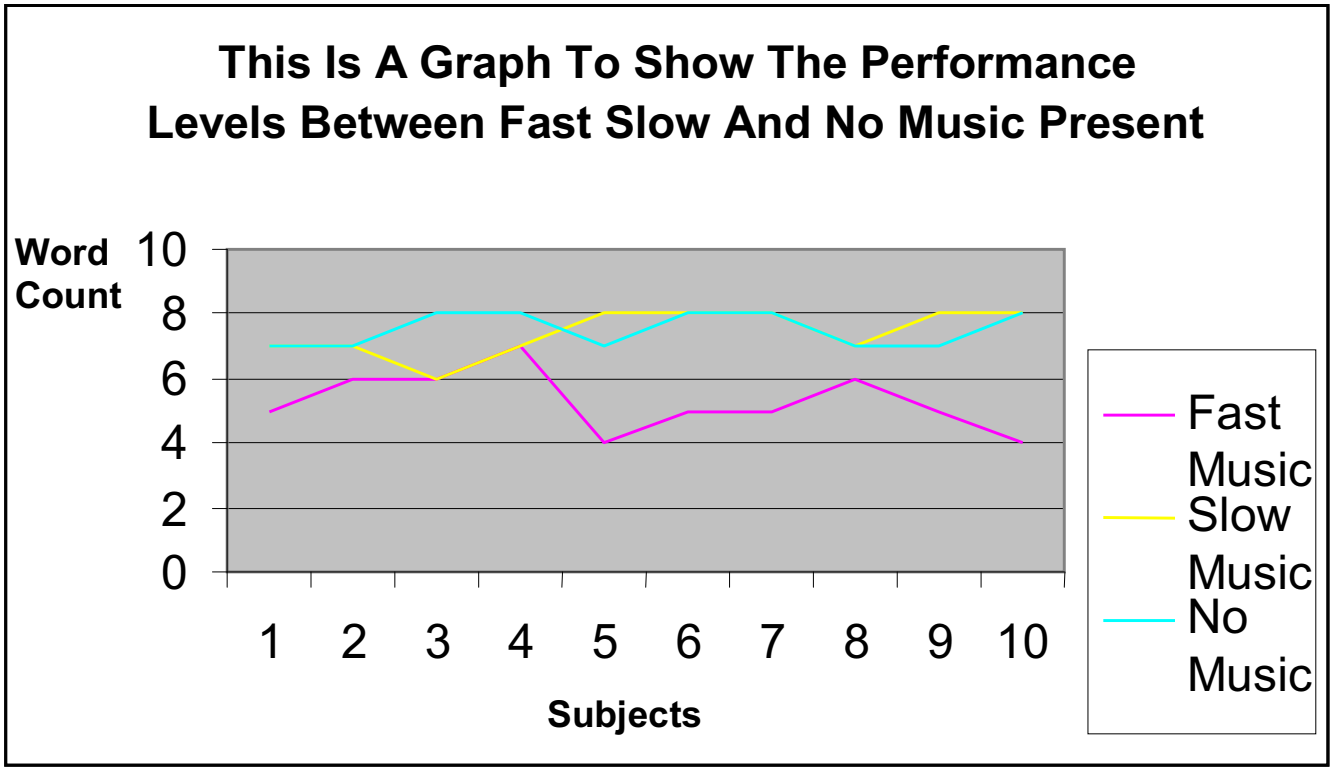


Here is a table to show the results of the controlled study (no music)

NO MUSIC	RESULT
1	7
2	7
3	8
4	8
5	7
6	8
7	8
8	7
9	7
10	8

Table two shows that there was a small difference between performance of the two groups, suggesting that having no music playing in the background at all slightly enhances performance of a task, compared to having fast music playing.

The results clearly show that having slow music being played in the background dose not improve performance of a task as the average for slow music between the subjects was, 5.4 words, where as the slow music which was thought to relax the subjects average was, 7.4 words. Where no music was present the average was 7.5 words. The aim was to find out whether performance was affected by music, these results shows music is a factor in the concentration on performance of a task in a negative way. But the results show the difference between slow relaxing music and silence is not a big difference. It shows a wider gap between slow music and fast music as the slow music has a higher word count average than fast music.



Discussion

The aim of the investigation was to find out what effect music had on a task.. The results show that different kinds of music have a different effect on the subject. Slow music increased the number of words found on the word search test and fast music had a negative effect when compared to having no music at all.

In the hypothesis, the effect of the two types of music was evident. In fact, the difference in test performance between the two variables was the largest of the three sets of results. This clearly demonstrates the effect of the music tempos on the subjects. Table one shows that those with slow music being played had a mean average of two more words those listening to fast music.

Research did not seem to show any difference in performance of a task, if any at all, between fast and slow music. The null hypothesis, that there will be no wide gap difference, is rejected.
Not only did fast music not improve performance, but in fact decreased the output of the performer, having a negative effect. As Graph two shows with no music played in the background have a higher result than those with fast music in the background. The Average difference between fast music and no music being played is 2.1 words. This may not seem a lot, but the test scores being 2.1 words different in one minute would be a lot bigger if spread over a bigger time period. For example if this test was timed by 60 to present an hourly score of 126 words different. This shows a work rate drop when fast music is present. Not only were the mean and total scores close together, but they also did not score as many as I expected. Considering all scores were out of 15, scores between four and 8 were being produced. This may have been due to the competition and time limit putting pressure on the subjects.

My study was not based on just one piece of research, but many associated studies. So naturally my results cannot be directly compared with those of another study, they can be linked to several studies for example Mayfield and Moss (1989) found that fast music acted as a stressor to subjects while slow music relaxed them, allowing them to perform the task quicker. When debriefing the participants, however, the group with the fast music did not believe it affected their performance, .an addition to the studies by Triplett (1898) and Allport (1920), the low scores themselves may indicate the

opposite to this; social loafing. This idea suggests that the presence of others in a group performing the same task makes a worse performance. However, to test this properly the participants must be tested individually to compare the scores, which is not what I set out to find out.
Stough et al.(1994), found that classical music relaxed the performers and they were more relaxed and actually scored a higher test on there IQ test, my experiment shows that music being present whether fast or slow decreases performance levels
The limitations of my study could be that some people are better than others at word searches and may have just produced a better result due to being better at the task. This is why by choosing every five students from the register gave a wide range of students taking a wide range of subjects from P : E to Drama. There is always a problem with this type of test as you cannot be sure if you are testing the intelligence of the subject or the factors which effect performance. You could improve the study and take more subjects than firstly done, to get a wider range of results, as by having 100 participants would get a wider and more accurate result average than testing 30 subjects. Another way would be to use the same students for all three tests, but this would be pointless as they would know where the answers were located for the second and third tests, and changing the word search would affect the results as it needs to be fair and always the same test to produce a result.
Only having small groups I thought the test results would not show much of a difference as small numbers were being used, I was surprised to find a wider difference than expected between fast and slow music being present when performing the task.
Ecological validity was also a limitation during the test, as even though it was the students school the test was being carried out in, it was not there usual class room and may have made the subject feel out of place and thus could have affected the result. To solve this music would have to be introduced into the classrooms as the subjects would be in there normal lessons in a natural environment and this would solve the ecological validity problem.
I am pleased with the results and the way the experiment was carried out, everybody co-operated and there was no problems during the method or results recording process. A good range of results were found, the aim of the experiment, to find out weather the presence of fast or slow music affects a task was found, and the results are clear to understand.
There are many directions to go with follow up studies, whether focusing on music or not. A possible future study following on from this could focus on

social facilitation as an influencing factor. The test could be carried out in different ways to decrease the pressure factor and competition factor between the students, as with a time limit the students feel pressured, and one participant stated '' I don't want to be the person with the least amount of words found'' even though being told there names and results would not be shown, it still seemed a big factor to the participants. By individually performing the task on there owns may take away some competition factors. You could also remove the minute time limit and just record the time in which the participant finishes the word search, this would remove the stress level to get as many words found in a minute and a more relaxed subject may give more realistic results. Another limitation may be that the song being played in the back ground may be well known, and the subjects may be thinking of the words rather than the task in hand.

Overall, the results of my study show that slow music can slightly improve the performance of a task and fast music can worsen the performance.

TOTAL WORD COUNT = 2555

REFERENCES

(Background study) as quoted in (Source Book – author, title, date, publisher, page reference)
(Background study) as quoted in (Source Book – author, title, date, publisher, page reference)
(Background material) at Website address

APPENDICES

Materials
Results
Test workings