

EFFECTS OF MUSIC ON TASK PERFORMANCE

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INTRODUCTION

Music can serve many different purposes. Some of these operate at the level of the individual; others are an integral part of our social lives. For the individual, music can provide an outlet for emotional expression, enable mood change, facilitate relaxation, provide stimulation and be a source of comfort. It can also be used in therapy. Music can entertain, provide aesthetic enjoyment and enhance the impact of the other arts.

This term paper examines the various effects of music on humans, and whether there is a positive or negative effect of music on a person's performance of a task.

Research was conducted through traditional and electronic searches from textbooks, articles, and the World Wide Web.

EFFECTS OF MUSIC ON HUMANS

Physiological Functioning

Considerable time and effort has been spent exploring the physiological effects of music. The effects on heart rate, skin conductivity, respiration rates, blood pressure, muscular tension, motor and postural responses, finger and peripheral skin temperature, blood volume, and stomach contractions have all been investigated.

The effects of music on these measures show no clear trend. While most studies indicate that stimulating music leads to an increased response in most physiological measures, not all do. Similarly, calming music does not always lead to a reduction in physiological response. The effects of calming music can also be cumulative, increasing over time as the music takes effect. Although it is not entirely clear, taken together, the evidence suggests that music influences physiological arousal in the expected direction, i.e. exciting music leads to increased arousal, calming music the reverse.

Individual cognitive responses to music may mediate physiological responses and explain some of the variability in findings. Differences may also depend on how often the individual listens to music, whether they are musically trained, whether they like the kind of music played, how they interpret the music, their personality and their typical level of physiological arousal.

Motor Effects

Most of us, at some time, will have found ourselves tapping our feet to music or having the urge to get up and dance to music that we find particularly stimulating. Scientific observations of the behavior of young children when lively music is playing indicate that they become more active suggesting that this is a 'natural' response.

Athletes report using music to help them in training, but laboratory studies do not show consistent positive effects of music on performance. This has led some to suggest that the effects are indirect in that the music distracts the individual from any discomfort they are feeling, providing them with an external focus which enables them to increase their fitness endurance. The multitude of various factors which influence reactions to music

in an area like this make valid and reliable scientific investigation very difficult, but appropriately selected musical accompaniment to exercise and sports-related activity may enhance the enjoyment and motivation levels of participants even if it has no impact on their actual performance.

Personal reports that music helps us to relax are supported by evidence showing that listening to quiet, sedative music can reduce muscular tension.

Mood, Arousal and Emotion

Generally, music that is slow and quiet tends to encourage relaxation and reduce anxiety, while stimulating music tends to increase our arousal levels. The characteristics of music that induce different moods seem to relate to three main dimensions: pleasure – displeasure, arousal – non-arousal, and dominance – submissiveness. It has proven very difficult to specify with any degree of accuracy which musical structures evoke particular moods. There is some evidence that firm rhythm tends to evoke feelings of dignified and vigorous character, and flowing rhythm to evoke happy feelings. Specific reactions to music, e.g. shivers down the spine, laughter, tears and lump in the throat, may be related to particular musical structures.

Beyond these rather general trends, the evidence with regard to the effects of particular types of music on the mood and emotions of particular groups of people is mixed. Exploration of gender, age or social class differences has revealed no clear patterns. Nevertheless, there is some evidence that music can affect our moods, emotions and physiological responses whether we like the music or not. In one study, favorite music of whatever type lowered feelings of tension, while physiological responses were greater during exciting music regardless of whether the listeners liked it. Similar effects have been found with young children undertaking a writing task. While they enjoyed writing with exciting background music playing, their task performance was better when the music was quiet and classical.

Behavior

As we have seen, music can affect our behavior without our conscious awareness. An extreme example of the effect of music on behavior relates to altered states of consciousness. Music is a component in creating trance-like states, although the actual relationship depends on the specific culture. Rhythmic patterns appear to be particularly important.

Many people listen to music while driving and value the privacy this offers. Generally, music appears to improve concentration, particularly when it is moderately complex and played at a moderate volume. Music that is too stimulating distracts the driver.

Music, which we have not personally chosen to listen to, can have a powerful effect on our emotions and subsequent behavior. Depending on its level of intrusiveness it may be merely irritating or create great distress. It can lead to complaints, legal proceedings and in some cases violence. The use of headphones has reduced the level of intrusion of individual listening in public spaces.

EFFECTS OF MUSIC ON TASK PERFORMANCE

Depending on the effects certain types of music might have on a particular individual the various impacts to their physiology, motor effects, mood, arousal, emotion and behavior will determine whether there is a positive or negative result in task performance. In general it appears that music has a positive effect on task performance. Various studies have shown such positive outcomes. For example:

The management consultancy company, Case and Company, carried out a test of the effects of music on productivity at the Brooklyn factory of the American Machine Foundry Co.. The production factors studied indicated a 2.8 percent rise in the efficiency of the test department, a 4.1 percent increase in the efficiency of 40 workers whose performance could be minutely measured and a 31.2 percent increase in the promptness of those workers.

Another test at a Black & Decker plant at Hampstead in Maryland produced a net figure of 2.8 per cent increase in overall production efficiency.

These figures are supported by large amounts of academic evidence in which researchers have reached the same type of conclusion.

Source: Dave Grayston, Music While You Work, Industrial Management.⁶

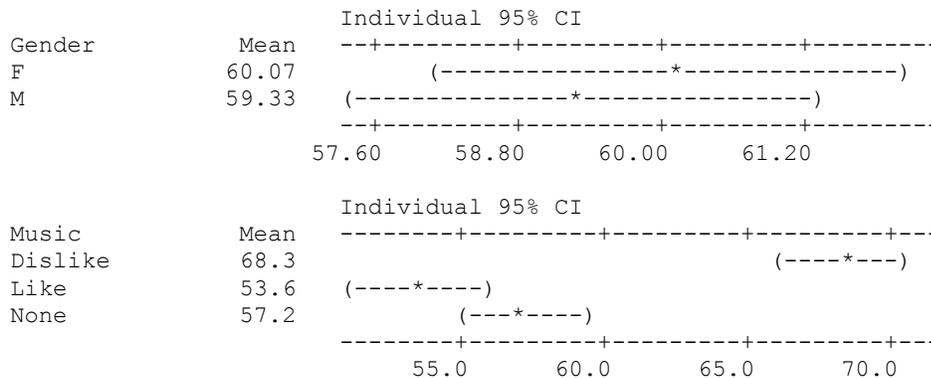
In conjunction with another California State University Dominguez Hills Quality Assurance course, QAS 514 – Advanced Design of Experiments, I performed a study of my own on the effects of music on task performance and put to the test that music does indeed have a positive effect.

DESIGN OF EXPERIMENT

A test was performed to determine the effects of music on task performance. It is hypothesized that people who listen to music of their choice outperforms others. For the purposes of my study, data was collected from thirty participants (fifteen male and fifteen female) all over the age of twenty-one years old recruited at my place of employment for convenience purposes. To the best of my ability, all races and ethnic groups were represented. The experiment used a single variable test design. The independent variable was music. The three levels of the independent variable were: no music, music of the participant's choice, and music that the participant dislikes. The response for the study was the time, in seconds, to perform a task. Utilizing an old, simple, nine piece Star Wars kids' puzzle, sets of five male and five female participants were randomly selected and given the task to put the puzzle together under one of the independent variable conditions (no music, music of choice, and disliked music). The environment (location, lighting conditions, seating arrangement, etc.), aside from the independent variable, was uniform for all the participants to perform the task.

DOE RESULTS

Analysis of Variance for Time					
Source	DF	SS	MS	F	P
Music	2	1174.2	587.1	43.28	0.000
Gender	1	4.0	4.0	0.30	0.591
Interaction	2	18.5	9.2	0.68	0.516
Error	24	325.6	13.6		
Total	29	1522.3			



My study shows that there are no significant differences between males and females or the interaction between a person’s gender and the type of music; however, similar to other studies that were reviewed on the World Wide Web, my study concludes that there is a definite difference in response to the different levels in music (no music, music of choice, and disliked music). Results show that people who listened to music of their own selection were able to perform better than those with no music who performed better than those who listened to music they disliked.

CONCLUSION

This term paper examined the various effects of music on humans, and whether there was a positive or negative effect of music on a person’s performance of a task. Based on the general trends mentioned in the Effects Of Music On Humans, it maintains that there are so many variables that it is difficult to ascertain whether a positive or negative outcome will prevail in the performance of a task. The only certainty is that music does have an effect on humans, and as a result, on their performance of a task. In general, my research and the test I performed imply that music has a positive effect on task performance.

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