

THE MOZART EFFECT: AN ARTIFACT OF PREFERENCE

Written by: Kristen M. Nantais and E. Glenn Schellenberg

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ABSTRACT

- Nantais and Schellenberg questioned Rauscher, Shaw and Ky's findings on the "Mozart Effect" indicating that "spatial-temporal abilities are enhanced after listening to music composed by Mozart.."
- They performed two different experiments, one to determine if spatial-temporal tasks were performed better after listening to Mozart or Schubert than after sitting in silence.
- In the second experiment, rather than the control being a period of silence it became a short story. The experimenters wanted to determine if performance was better after the listener's preference of the audible (music or story).

INTRODUCTION

- Claims that music composed by Mozart improves spatial-temporal abilities
- Implications: listening to music to help pilots and structural engineers with performance
- Spatial-temporal performance is temporary (10-15 minutes)
 - Reported that long-term has been seen with music lessons
- Purpose of the study: provide more complete explanation of short-term phenomenon
- Trion Model: exposure to the complex musical compositions excites cortical firing patterns similar to those that one would use in spatial-temporal reasoning
- Basics of this is similar to that of transfer or priming BUT varies when looked at more closely



INTRODUCTION

EXPERIMENT 1

- Goal: replicate and expand findings from Rauscher et al.
- Completely computer controlled to test performance on tasks
 - Conditions: sitting in silence or listening to music
 - Half listened to Mozart
 - Half listened to Schubert

EXPERIMENT 2

- Goal: test if Mozart effect is a consequence of preference for a condition
- Participants should perform better for their preferred condition
- Multiple replications done with different conditions
- Rauscher&Shaw, 1998 did Mozart music versus a taped story

*many failed to replicate this study
Believed effect is only attainable with spatial-temporal tasks vs. others

METHODS

The Setup:

- Two experiments with two different control groups conducted
- Participants sat in a sound booth and listened to the first 10 minutes of a Mozart song ("Sonata for Two Pianos in D Major") over headphones prior to taking the spatial-temporal test
- The test consisted of 34 items -- 20 from the Stanford-Binet Intelligence Scale and 14 created purposely for the experiment
- Each student in the experiments participated in two condition groups (control and music) on separate days within a space of two weeks
- At the end of the experiments, participants were asked which condition (music, story, or silence) they preferred and which they thought was more interesting

METHODS

EXPERIMENT 1

- Control group sat in silence 10 minutes prior to testing
- Tested to compare the effects of listening to Mozart to the effects of sitting in silence for 10 minutes

EXPERIMENT 2

- Control group listened to an audiocassette of a short story ("The Last Rung on the Ladder")\
- Tested to compare the effects of listening to a short story (something selected to be an equally engaging stimulus similar to listening to Mozart without being overly aroused)

RESULTS

EXPERIMENT I

- Performance as a function of condition: Music or Silence
 - The subjects in the Music Condition scored higher on the Spatial-Temporal Task
 - $F(1, 52) = 15.16, p < .001$
- Classical Composer: Mozart or Schubert
 - No significant effect or interactions were found, meaning The Mozart Effect was successfully replicated with the music of both composers.
- Improvement due to testing order
 - Scores improved across conditions between the first and second testing session.
 - $F(1, 52) = 6.20, p = .016$

RESULTS

EXPERIMENT 2

- Performance as a function of condition: Preference
 - Subjects performed better on the task within their preferred condition, $t(27)=2.94, p=.035$
 - ANOVA with three factors: condition, testing order, and preference, $F(1, 24)= 5.02, p=.035$
 - This shows that preference interacted with condition
 - Preferred condition ($M=13.57 SD=3.07$); non-preferred condition ($M=12.36 SD= 3.07$)
 - Subjects who preferred Mozart, $t(12)= 3.77, p<.001$
 - Subjects who preferred the story, $t(14)= 1.49, p=.079$
- Improvement due to testing order
 - $F(1, 26)= 4.31, p=.048$

DISCUSSION

This study examined exposure to music on presented spatial-temporal task.

Experiment 1: the performance measured was better after participants listened to music combined by Mozart or Schubert than after they sat in silence.

- Found that the Mozart effect had minimal to no direct correlation to Mozart, but it seemed more plausible that the effect would generalize to wider variety of enjoyable music.

Experiment 2: Instead of participants sitting in silence, participants listened to a story as the control condition.

- Found no difference between listening to a story vs. Music.
- Only difference was shown when the task was tested after their preferred condition.

Overall, two determinations were made:

1. Performance on spatial-temporal tasks may be enhanced following passive listening to a pleasant auditory stimulus.
2. Performance was decreased when exposed to boring or unpleasant auditory stimulus.

LIMITATIONS

- Lack of quantitative measure of mood or arousal
- Due to this, the measure of arousal is primarily speculation
- Positive or negative moods could have effected the outcome. (Positive mood due to the pleasant music could have increased task performance, adversely negative mood due to silence could have decreased task performance.)
- Music is often used to change moods