MUSIC AND MEMORY

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INTRODUCTION

• **Purpose:** Does listening to music while studying affect recall ability?
• **Independent Variable:** music condition
  • Quiet, Pop, or Classical
• **Dependent Variable:** word recall
  • Number of words correctly recalled and written
• 1. Participants will correctly recall more word in the no music condition, compared to both classical and pop music.

• 2. Participants will correctly recall more words in the classical music condition than pop music condition.
PREVIOUS RESEARCH

• (1) Fraser, C., & Bradford, J.A. (2013). Music to your brain: Background music changes are processed first, reducing ad message recall. Psychology & Marketing, 30(1), 62-75. doi:10.1002/mar.20580

• **Purpose** – to assess the impact of changes in background music on advertisement recall

• **IV** – music type and ad type; **DV** – ad and message recall

  • background noise, pop/rock music, classical music

• **Procedure** – Viewed ad based on assigned condition; recorded any messages or ads that they recalled

• **Results** – message recall from ads with background music was significantly lower than ads from with sound effects or no music
PREVIOUS RESEARCH


  - **Purpose** – How does music with and without lyrics affect human attention?
  - **IV** – music type; **DV** – attention performance
  - **Procedure** – used randomized control trial study using music with and without lyrics to test participant’s attention performance
  - **Results** – background music with lyrics had significant negative affects on concentration and attention
  - **Conclusion** – if background music is played in the work environment it should not contain lyrics

- **Purpose** – How does music with lyrics affect junior high students’ reading comprehension?
- **IV** – music type (music from top hit songs listed in Billboard Magazine or no music)
- **DV** – reading comprehension (measured with the Gates-MacGinitie Reading Tests, fourth edition)
- **Procedure** –
  - *No music condition* – treated like a normal study hall
  - *Music condition* - nine songs were played for a total of 35 minutes while students studied
- **Results** – listening to music while studying takes away from the student’s reading performance

- **Purpose** – Does background music influence verbal learning?
- **IV** – background stimulation (learning with or without it) and music type (in-tune fast, in-tune slow, out-of-tune fast, out-of-tune slow, and noise)
- **DV** - the number of words that participants learned
  - Verbal learning was measured through the Verbaler Lerntest
- **Procedure** – All participants were assigned to one condition for background stimulation and music type while learning the new words
- **Results** – Learning was neither enhanced nor decreased during the background music conditions
PARTICIPANTS

- 50 total participants
- Collected by a sample of convenience
- Females: 35 Total
  - M = 20.57, SD = 1.60
- Males: 15 Total
  - M = 21.33, SD = 4.01
- Ages ranged from 18-32
  - M = 20.8, SD = 2.55
MATERIALS

- Stopwatch
- Pencil/Writing Utensil
- Blank Sheet of Paper
- Music
  - No Music
  - Pop Music: “Cheap Thrills” by Sia
  - Classical Music: “The Best of Classical Music Playlist Mix”
- Word List
  - Randomly Generated
  - Ex: Gorilla, Father, Square, Cultural, etc.
PROCEDURE

• One Independent Variable Multi-level Between Groups Design
  • Independent Variable: Music Type (none, pop, classical)
  • Dependent Variable: Accuracy on Word Recall (amount correct)
• Participants in each condition were timed for 60 seconds where they memorized as many of the words on the list as they could. After the 60 seconds was up, participants had 90 seconds to recall as many words as they could from the list.
RESULTS

• There is an overall significant effect of music condition on participants’ recall of a random word list, $F (2, 47) = 3.17, p=.05$

• Significant Difference ($p=.02$) – participants in the no music condition were able to correctly recall more words than those in the pop music condition
  • Pop: M=7.38, SE=4.95
  • None: M=9, SE=4.95

• No Significant Difference ($p=.09$) – in recall between no music and classical music
  • Pop: M=7.38, SE=4.95
  • Classical: M=7.67, SE=.59
• No Significant Difference ($p=0.70$) — in word recall between pop music and classical music conditions
  • Pop: $M=7.38$, $SE=.445$
  • Classical: $M=7.67$, $SE=.59$
Table 1

*Music Condition Means*

<table>
<thead>
<tr>
<th>Music Condition</th>
<th>Mean and Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Music</td>
<td>M=9.0, SE=.495</td>
</tr>
<tr>
<td>Pop Music</td>
<td>M=7.38, SE=.445</td>
</tr>
<tr>
<td>Classical Music</td>
<td>M=7.67, SE=.589</td>
</tr>
</tbody>
</table>

*Note:* Table 1 shows the mean number and the standard error of the amount of correctly recalled words in each music condition.
Mean number of words recalled

Conditions

- No music
- Pop music
- Classical music
DISCUSSION

• Hypothesis 1 – Partially supported
  • Participants recalled more words in the no music condition compared to the pop music condition, but not when compared to the classical music condition

• Hypothesis 2 – Not supported
  • There is no significant difference in word recall in the pop and classical conditions
LIMITATIONS

- Word list format – *may change study abilities*
- Convenience sample – *not as representative*
  - Lack of male participants
- Potential background noise – *may interfere with studying*
- Individual differences were not taken into account
- Could have tested more genres of music – *may have different effects*
FUTURE RESEARCH

- Try a within-groups design to account for individual differences
- Find a broader, more random sample to represent the population
- Control the environment to completely eliminate all other background noise
- **Significance:** It is important to continue this research to help people understand the best study and work habits in order to know how they will affect their learning and ability to recall