

Magill Lamarre, Barnard Department of Neuroscience  
 Dr. Nim Tottenham, Columbia Department of Psychology,  
 Paul A. Bloom, Columbia Department of Psychology

## Introduction

- Parent study to this analysis aims to understand the effects of familiar music exposure on deliberate retrieval of remote episodic and semantic memories in healthy aging adults
- Familiar music can evoke both emotions and spontaneous memory recall in both healthy aging adults and dementia patients<sup>1,2</sup>
- Unknown whether familiar music can enhance deliberate recall
- Unknown whether familiar music that elicits an emotional response effects deliberate recall

### Primary question:

*Is there an association between music valence (emotional response) and deliberate retrieval of episodic memories in healthy aging adults?*

## Data Collection

Data was collected in the pilot trial for the Autobiographical Memory and Familiar Music study (AMFM)

- N = 7 in pilot study, target N = 75 for full study
- Participant criteria: 65-80 years old, English-speaking, no known neurological or hearing conditions, access to internet, a computer, and privacy, sufficient memory of early life events and musical artists between 1946 - 1983
- Data collected in three counterbalanced interviews

### Prescreening

Music and memory prompts are selected during prescreening, to avoid overlap of prompted memory and spontaneous memories elicited by music

| Session 1:   | Session 2:  | Session 3:   |
|--|---|--|
| Familiar music   | Unfamiliar music  | No music   |
| Participant-specific songs selected from Billboard Hot 100 lists (1946-1983) based on artists indicated as most listened to before the age of 25 during prescreening | Participant-specific songs are selected by matching sonic qualities of those in the familiar music condition to songs released after 2000 by artists with <500k streams | Non-music sound clips such as weather reports, instructional videos, etc. are selected to act as the control as they are neutral in valence and not suggestive of any particular time period |

## Methods

Interview memory transcripts are scored using Autobiographical Interview procedures, specifically for **internal** vs. **external** details<sup>3</sup>

**Internal details**  
 Details related to prompted memory

**External details**  
 Details unrelated to prompted memory

### Variables used for analysis:

Music valence score (how the song made the participant feel on a scale of 1-7)

Total internal details for each memory (one score per musical prompt/memory recall)

Music valence absolute value (how intense was the emotion/distance from neutral (4))

### Primary analyses:

Bayesian multilevel linear regression models

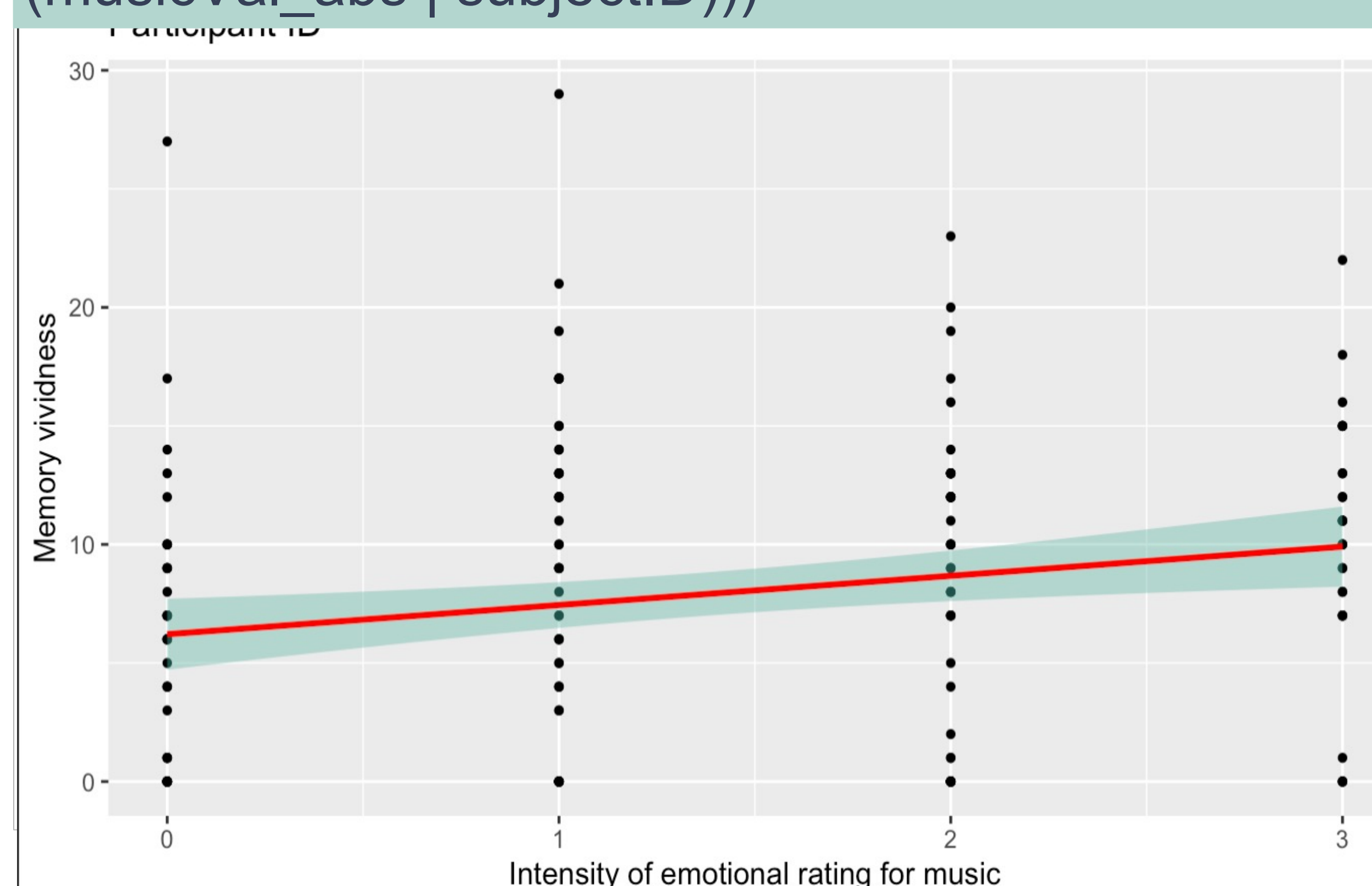
- Effect of music valence absolute value on total internal details
- Effect of music valence score on total internal details

## Results

Due to a small sample size in the initial analyses using the pilot data, **no relationship was found** between the music valence scores and the total internal detail scores.

**Hypothesis 1:** Songs that elicit a more intense emotional response will result in more vivid recall.

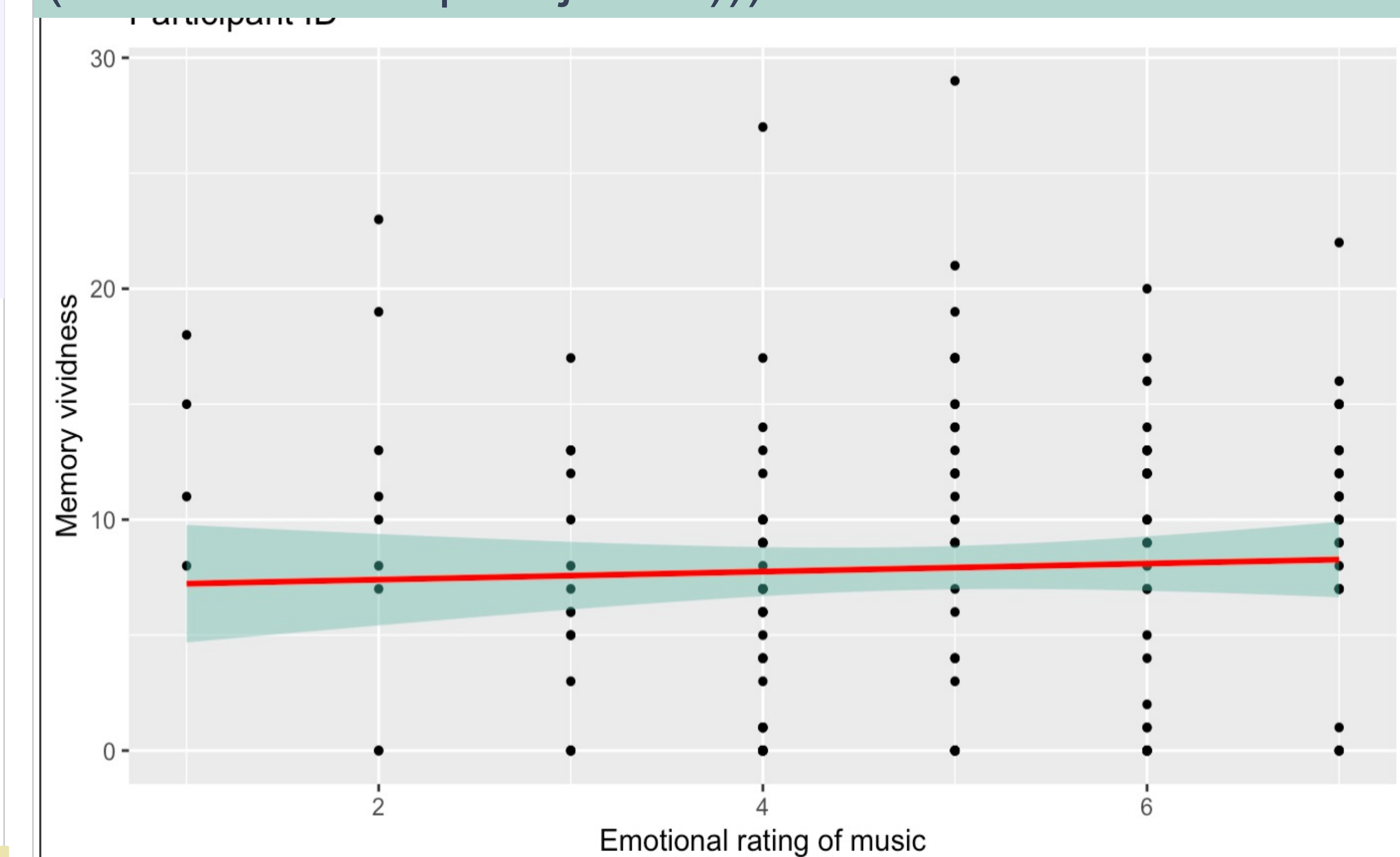
Music valence intensity as a predictor of number of internal details (sum\_internal ~ musicVal\_abs + (musicVal\_abs | subjectID))



## Results cont.

**Hypothesis 2:** Songs that elicit a more positive emotional response will result in more vivid recall.

Music valence score as a predictor of number of internal details (sum\_internal ~ musicValence + (musicValence | subjectID))



## Future Direction

- Although the preliminary results yielded no conclusive evidence, these analyses will be updated and run on the full data set at the conclusion of the AMFM study
- Look at relationship between memory valence and internal details
- Run the analysis using only the valence scores from familiar music, compare that outcome to those from unfamiliar condition

## References

1. Jakubowski, K., & Ghosh, A. (2021). Music-evoked autobiographical memories in everyday life. *Psychology of Music*, 49(3), 649–666. <https://doi.org/10.1177/0305735619888803>
2. Baird, A., Brancatisano, O., Gelding, R., & Thompson, W. F. (2020). Music evoked autobiographical memories in people with behavioural variant frontotemporal dementia. *Memory (Hove, England)*, 28(3), 323–336. <https://doi.org/10.1080/09658211.2020.1713379>
3. Levine, B., Svoboda, E., Hay, J. F., Winocur, G., & Moscovitch, M. (2002). Aging and Autobiographical Memory: Dissociating Episodic From Semantic Retrieval. *Psychology and Aging*, 17(4), 677–689. <https://doi.org/10.1037/0882-7974.17.4.677>
4. Moreno-Morales C, Calero R, Moreno-Morales P and Pintado C (2020) Music Therapy in the Treatment of Dementia: A Systematic Review and Meta-Analysis. *Front. Med.* 7:160. doi: 10.3389/fmed.2020.00160

## Contact Info

[mkl2165@barnard.edu](mailto:mkl2165@barnard.edu) [github.com/mkl2165](https://github.com/mkl2165)

<https://www.linkedin.com/in/magill-lamarre-47a480177/>