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Background

Exposure to stimuli (e.g. music) during childhood is associated with behavioral preference for those stimuli and better emotion regulation in adulthood (specifically under conditions of stress) in both rodent models and humans¹⁻²

Hypothesis

We hypothesize that familiar music will more strongly enhance episodic recall for memories occurring in childhood, consistent with work finding a 'sensitive period' for musical stimuli during middle childhood

Research Question:

Are there developmentally specific effects of familiar music released during childhood (ages 5-9), adolescence (ages 14-18), and early adulthood (ages 20-25) on deliberate autobiographical memory recall in healthy aging individuals?

Music Selection

Familiar Music

Music chosen from Billboard Top 100 charts from 1946-1983 by artists participants rated having listened to often before the age of 25.

Unfamiliar Music

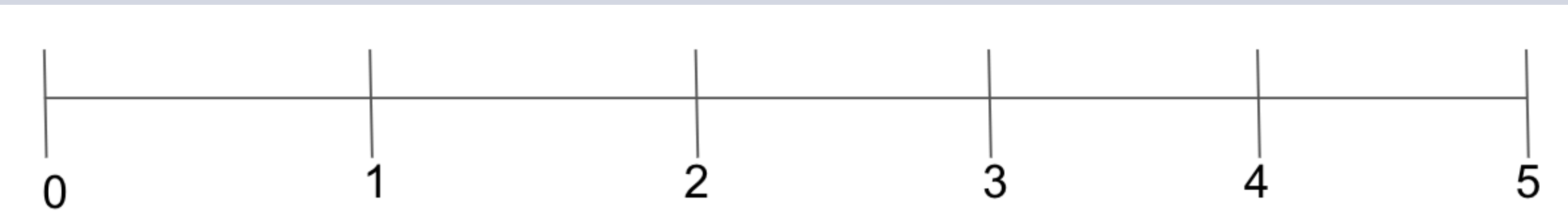
Music chosen from Billboard Top 100 chart from 1946-1983 by artists participants rated rarely having listened to before the age of 25.

No Music

Silence for almost all the pilot participants (N=4) but that was changed to neutral in valence audio clips (ex. weather clips)



How often did you listen to ___ before the age of 25?
From 0-5



0 = 'never heard of this artist', 1 = 'barely listened' to 5 = 'very frequently'
The cut-off for a familiar song was 2

Memory Prompt Selection

During the prescreening

Participants were asked whether they can remember a specific event from a list of events they were read.

Ex. "A time in the playground"

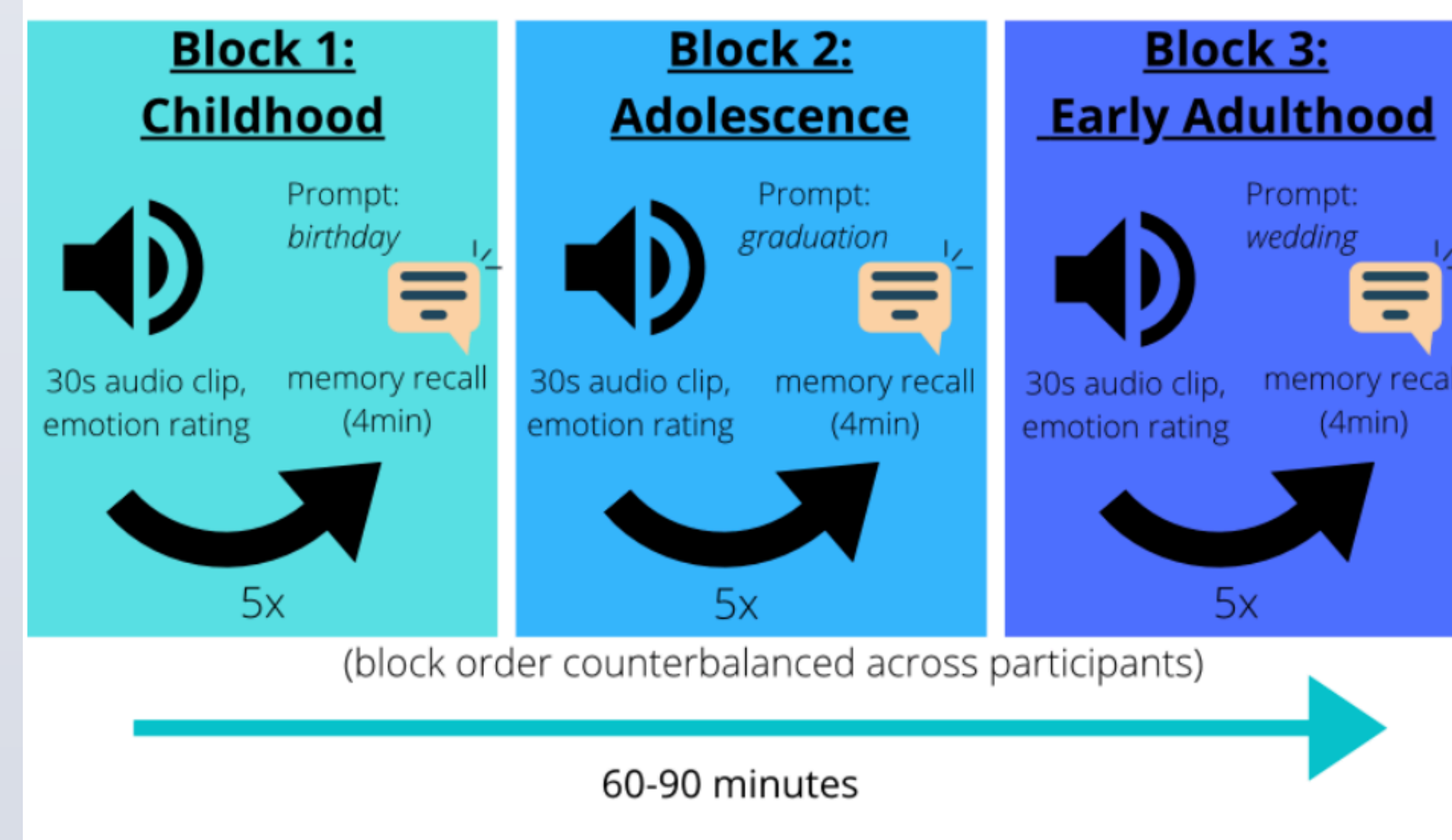
The music and memory prompt selection took place at least a week before the first session

Music and Memory Interview Sessions



At least one week between sessions
Session order counterbalanced across participants
15 trials/session (45 total trials)

Example Session



The Autobiographical Interview procedures³ will be used to score memories for internal and external details

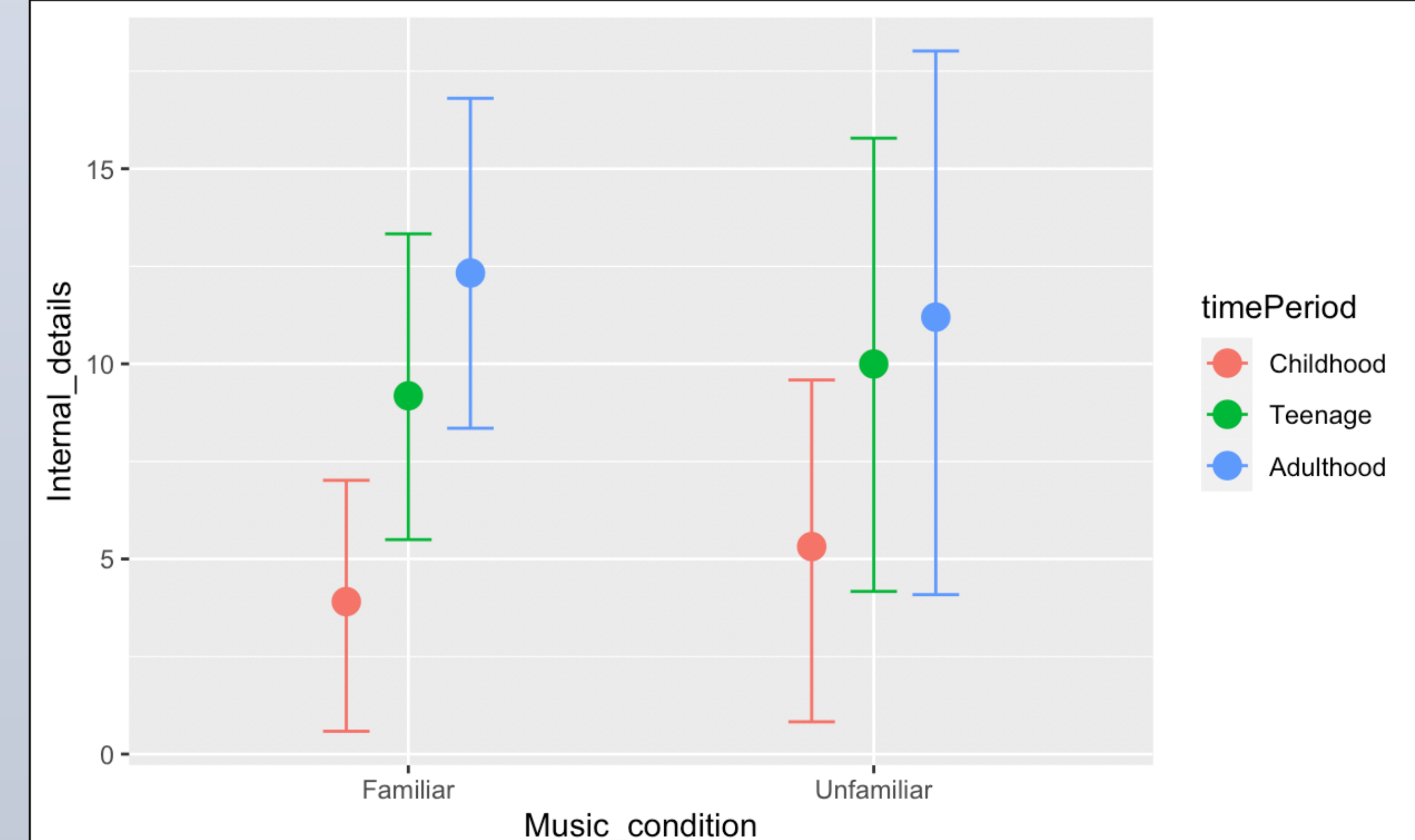
Internal details: Episodic details, directly related back to the memory prompt

External: Details that are not specific to the particular memory being prompted

Participants

- N = 6
- Ages 66-80 (M = 71)
- MoCA score ≥ 21
- 5 female and 1 male
- No reported neurological conditions

Pilot Results



Interpretation

No Interactions
Fewer internal details regardless of music condition

Limitations

Small number of participants
Exploratory, conclusive results are not being made

Future Directions

- Getting data from the full study (N=75), a registered report is available: <https://psyarxiv.com/tejb4/>
- We hope our results will contribute to the understanding of developmental trends in encoding and sensitivity to environmental musical stimuli

References

1. Gabard-Durnam, L. J., Hensch, T. K., & Tottenham, N. (2018). Music reveals medial prefrontal cortex sensitive period in childhood. *bioRxiv*, 412007.
2. Yang, Eun-Jin, Eric W. Lin, and Takao K. Hensch. "Critical period for acoustic preference in mice." *Proceedings of the National Academy of Sciences* 109.Supplement 2 (2012): 17213-17220. Web. 22 Mar. 2021.
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>

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