

Improving Memory in Older Adults with Mild Memory Difficulties: Enhancing Encoding Through Music and Metacognition

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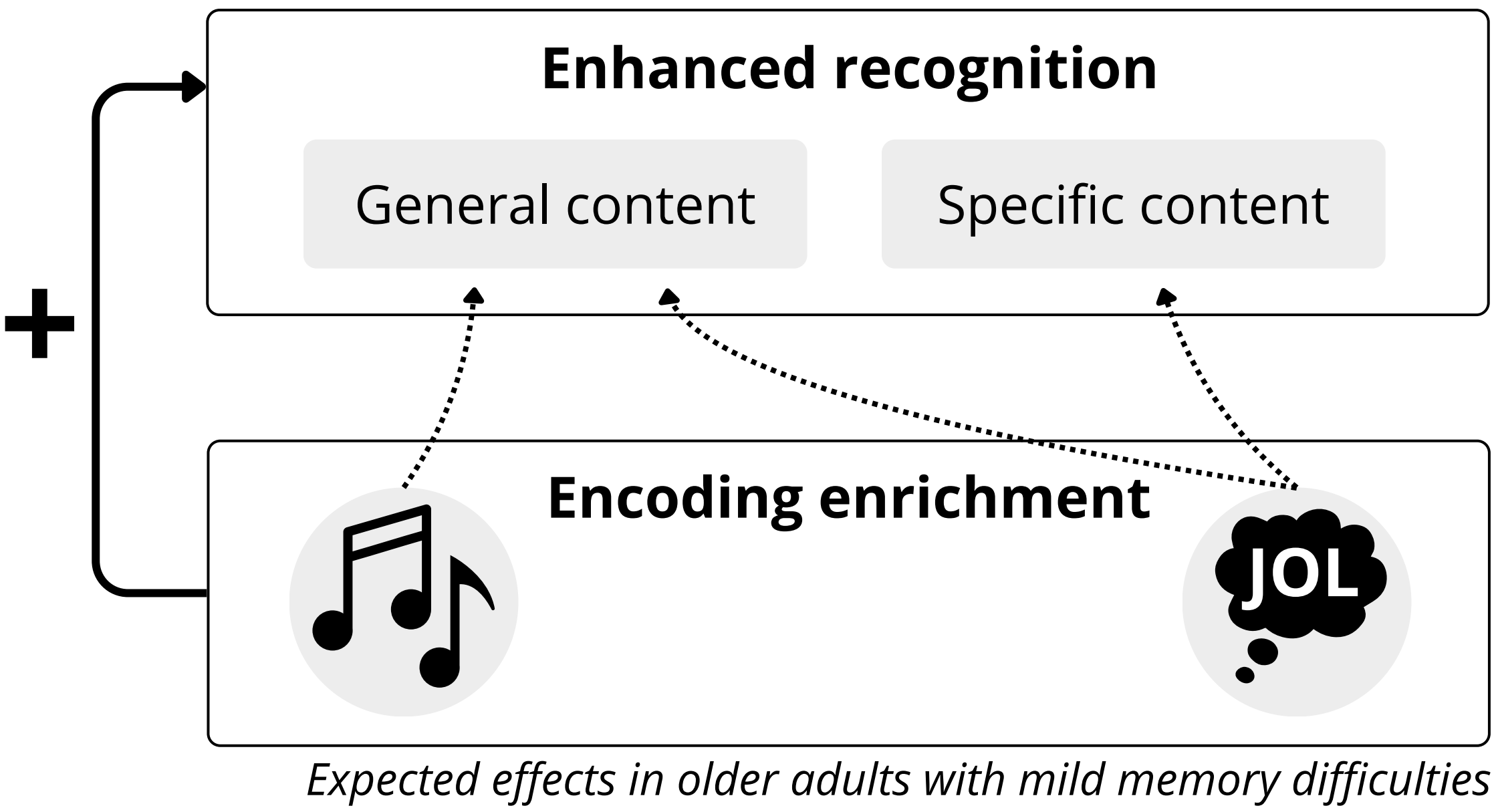
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Introduction

Memory decline is one of the earliest signs of Alzheimer's disease, often emerging subtly years before diagnosis. These early manifestations, observed in Mild Cognitive Impairment (MCI), highlight the need for timely and accessible cognitive interventions.

Music seems to enhance long-term memory. While 8 out of 9 studies show benefits of music in Alzheimer's disease [1], their effects remain unexplored at prodromal stages. Musical encoding tends to improve recognition of general information by increasing familiarity, but has limited impact on specific details [2].

Adding a **metacognitive judgment**, such as a Judgment of Learning (JOL), may help overcome this limitation by promoting deeper encoding and enhancing detailed recall [3]. Together, these strategies could improve memory for general and specific information in older adults with mild memory impairment.



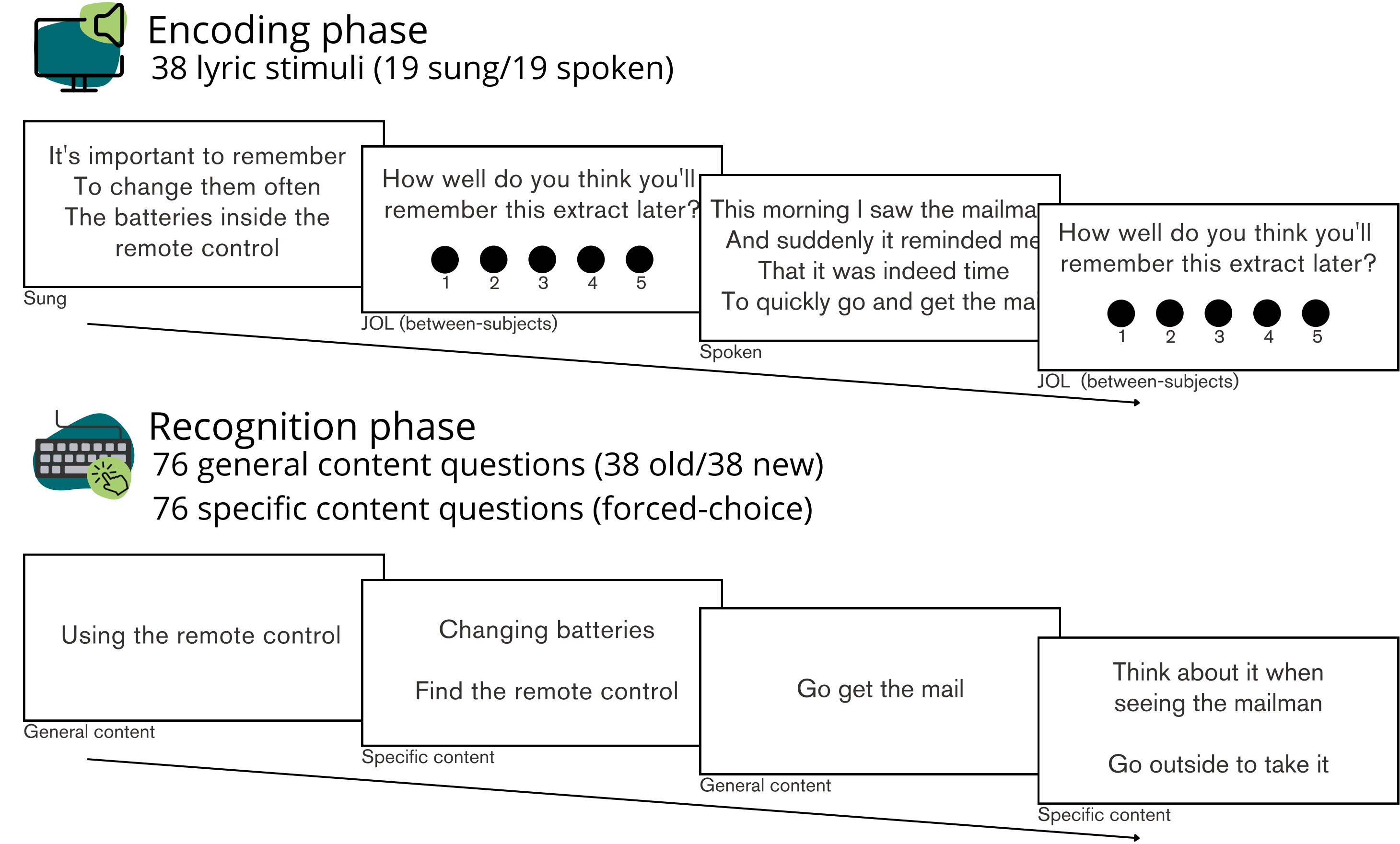
Methods

Participants

Mean (SD)	Controls (N=40)	Patients (N=33)
Age	72.1 (6.29)	70.5 (6.75)
Years of education	14.4 (3.09)	14.5 (3.05)
MoCA (/30)	26.3 (2.61)	23.3 (3.58)*
Delayed recall RI48 (/48)	29.2 (5.14)	19.3 (8.51)*

* p<.001 t-tests

Experimental task



Discussion

In line with our hypotheses and previous findings [2], our preliminary results confirm that music-based encoding enhances the recognition of general information in aMCI patients.

This effect appears slightly stronger in the JOL condition ($M = 0.713$, $SD = 0.453$) than in the No-JOL condition ($M = 0.694$, $SD = 0.462$), although this difference is not statistically significant.

In conclusion, music has a positive impact on general content recognition in older adults with mild memory deficits. More broadly, its benefits appear to increase with the severity of memory difficulties. By contrast, the effect of metacognitive strategies appears weaker than expected.

Extending this study with a larger sample will help better determine the respective and combined contributions of music and metacognitive strategies on memory in aMCI.

References

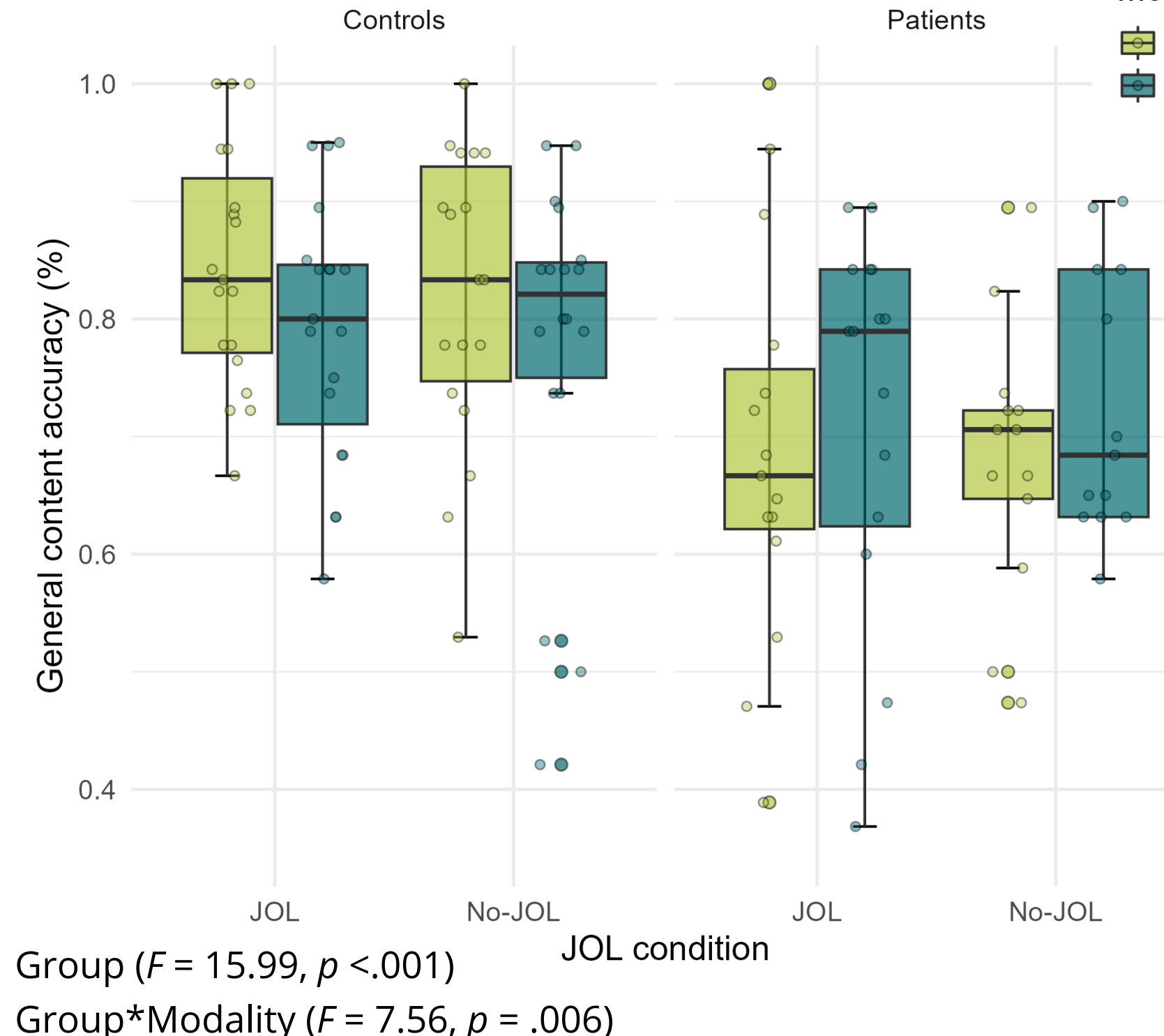
- [1] Derks-Dijkman et al. (2023). *Neuropsychology Review*.
- [2] Simmons-Stern et al. (2012). *Neuropsychologia*.
- [3] Zheng et al. (2024). *Metacognition and Learning*.

Preliminary results

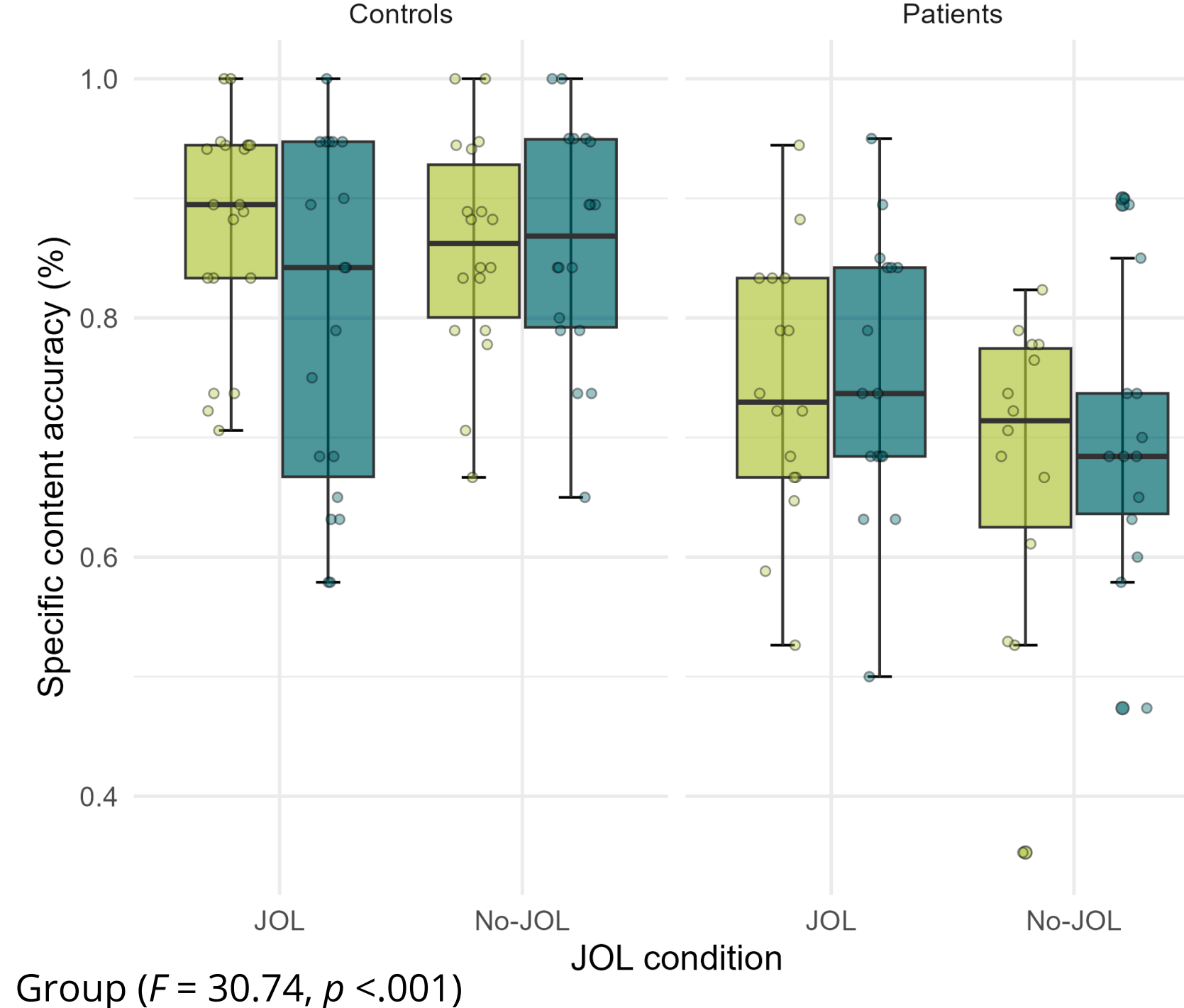
Mixed Models

Fixed effects: group, modality, JOL
Random effects: participant, general theme

General Content Recognition

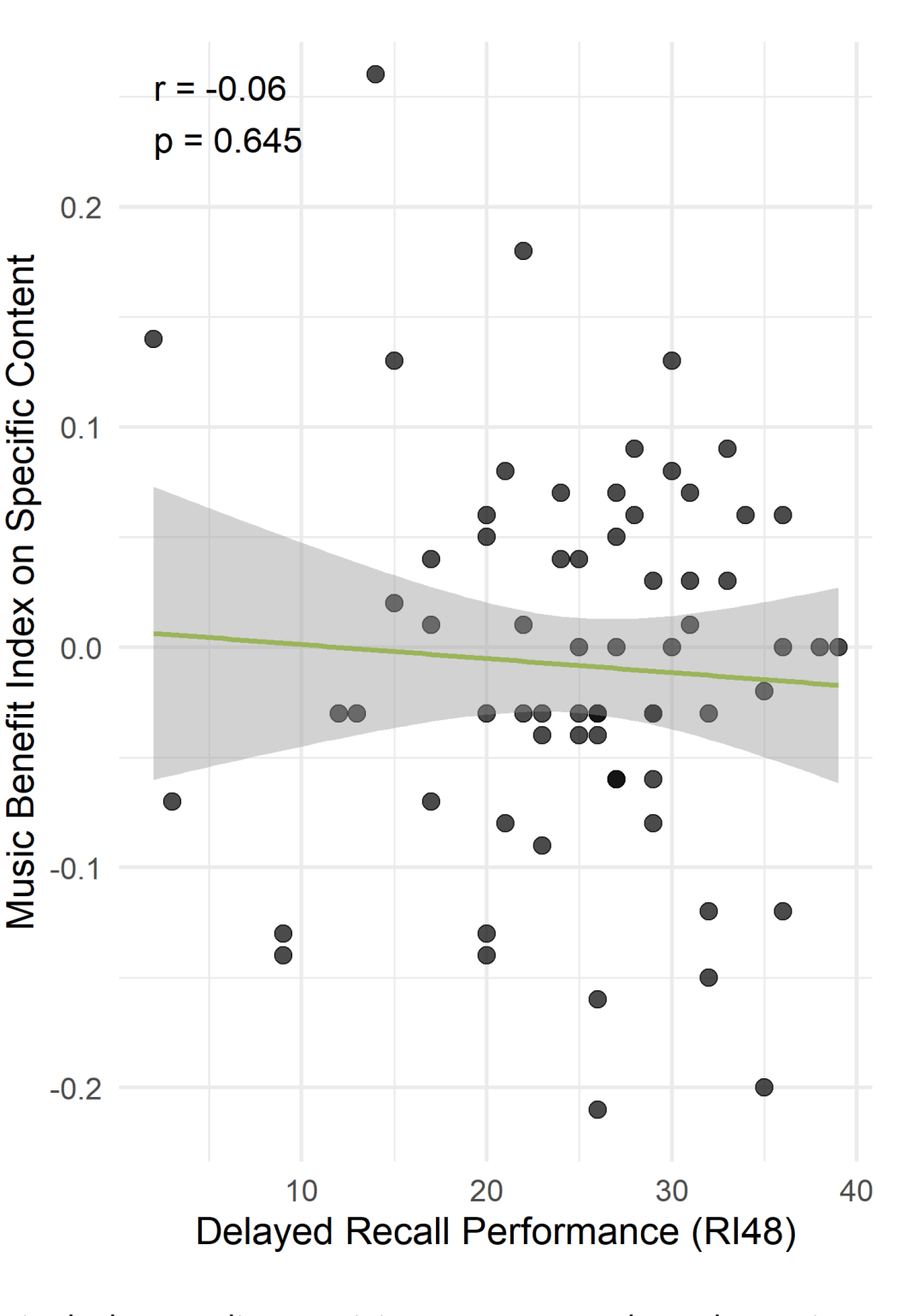
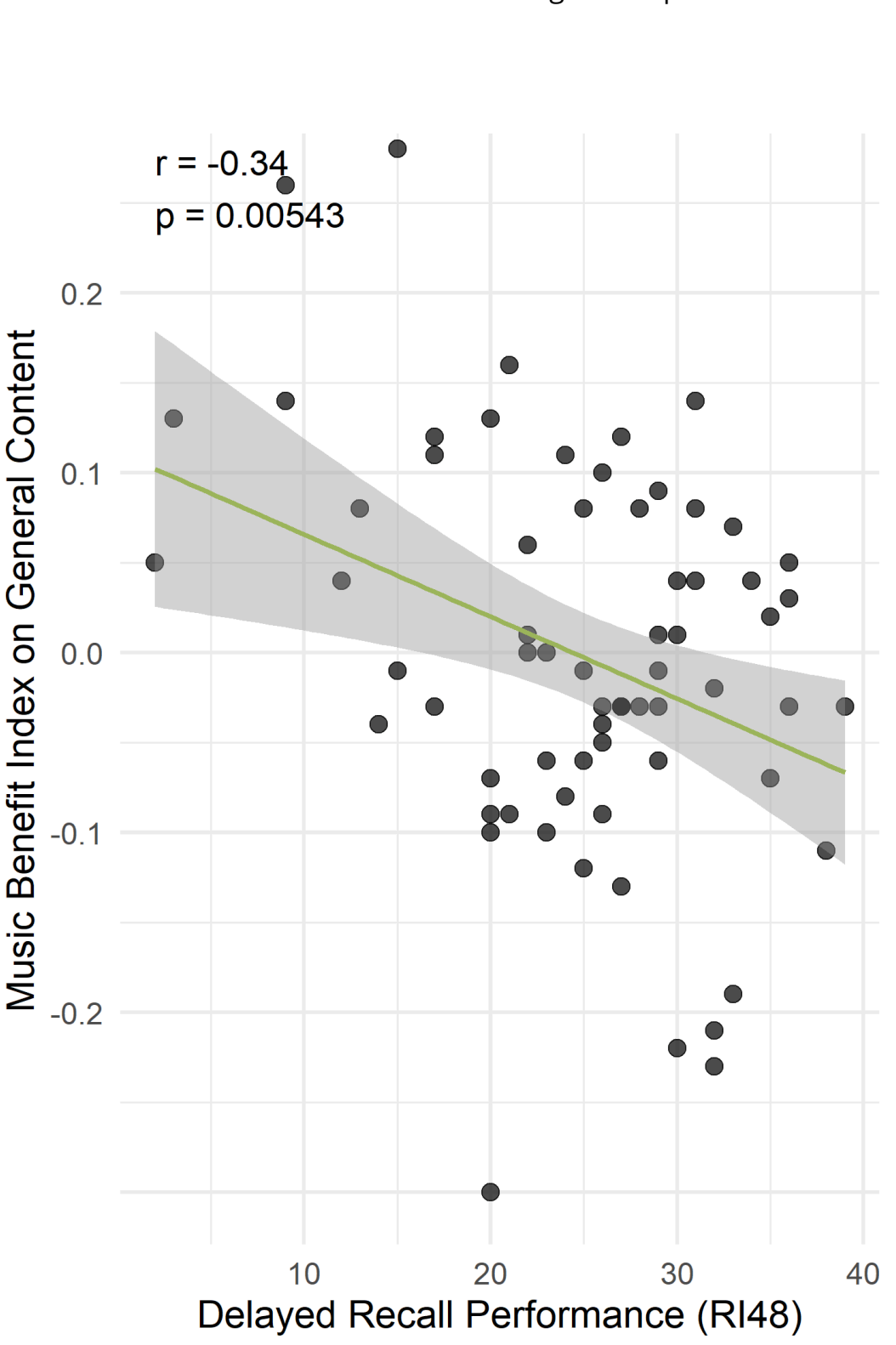


Specific Content Recognition



Pearson Correlations

RI48 delayed recall performance
Music benefit index : $\left(\frac{\text{sung hits} - \text{spoken hits}}{\text{sung hits} + \text{spoken hits}} \right)$



Note: Does not include 5 outlier participants (3 controls and 2 patients).

