Age as a Predictor of Working Memory Performance

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Age as a Predictor of Working Memory Performance

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INTRODUCTION

- Working memory is a retention of a small amount of information in an easily accessible way; it is essential in the execution of numerous daily tasks[1].
- Digit Span Test is often used in clinical practice to assess working memory[2].

Our aim

- **To assess individuals' working memory and its relation with age.**
  - We examined if there are differences in working memory between the age groups.
  - Further we analyzed if those differences would remain when controlling the effects of state-anxiety[3,4].
  - Moreover, we intended to assess if age is predictive of working memory performance.

METHODS

Participants

- We collected a sample of 39 participants (M_{age} = 41.67, *SD* = 20.52).
  - 21 females (53,8%) and 18 males (46,2%).
  - We divided the sample in three groups based on age: Group 1 (18-29); Group 2 (30-59); Group 3 (60+).

Materials

- *Self-Evaluation Questionnaire* (*STAI-Y2*)[5].
- *Digit Span Test* (from *WAIS-III*)[2] in forward and backward orders.

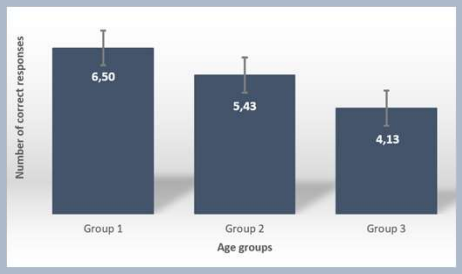
Item 1	1 - 3 7 - 5
Item 2	6 - 9 - 2 1 - 4 - 3
...	...

RESULTS

The results showed statistically significant differences in the scores between all the age groups in the forward order.

- $F(2, 36) = 18.59$, $p < .001$; $\eta p^2 = .51$

Group 1 showed better performance than Groups 2 ($p < .05$) and 3 ($p < .001$). Group 2 performed better than Group 3 ($p < .05$).



The effect of age in the individuals' performance remained when controlling for the effect of state-anxiety.

- $F(2,35) = 18.97$, $p < .001$; $\eta p^2 = .52$

The regression analyses revealed that age is a statistically significant predictor of performance in the backward order.

- $\beta = -.71$, $p < .001$ $R^2 = .50$ $F(1,37) = 36.98$, $p < .001$

DISCUSSION AND CONCLUSIONS

- This study supports the existing literature that emphasizes age as a predictor of working memory performance[6].
- We concluded that as age increases performance in working memory decreases, even when considering the effect of state-anxiety.
- Pointedly, aging is associated with deterioration of working memory capacities and psychological flexibility.

[1]Baddeley, A. (1992). Working memory. *Science*, *255*(5044), 556-559.
[2] Wechsler, D. (2008). *WAIS-III: Escala de Inteligência de Wechsler para Adultos* [WAIS-III: Wechsler Adult Intelligence Scale] (3rd ed.). Cegoc.
[3] Moran, T. P. (2016). Anxiety and working memory capacity: A meta-analysis and narrative review. *Psychological Bulletin*, *142*(8), 831–864. https://doi.org/10.1037/bul0000051
[4]Lukasik, K. M., Waris, O., Soveri, A., Lehtonen, M., & Laine, M. (2019). The relationship of anxiety and stress with working memory performance in a large non-depressed sample. *Frontiers in psychology*, *10*, 4.
[5] Silva, D. R., & Spielberger, C. D. (2007). *Manual do Inventário de Estado Traço de Ansiedade* (STAI) [Manual of the State-Trait Anxiety Inventory]. Mind Garden, Inc.
[6]Sambataro, F., Murty, V. P., Callicott, J. H., Tan, H. Y., Das, S., Weinberger, D. R., & Mattay, V. S. (2010). Age-related alterations in default mode network: impact on working memory performance. *Neurobiology of aging*, *31*(5), 839-852.

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