

LONGITUDINAL DECLINE IN MEMORY IN 1991 GULF WAR VETERANS: WHERE YOU START MATTERS.



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INTRODUCTION

- Veterans deployed between 1990-1991 were exposed to various neurotoxicants. These exposures have been found to play a significant role in the myriad of health symptoms experienced by GW veterans.^{1,2}
- The Ft. Devens Cohort (FDC) is the longest running population-based cohort of GW veterans, who have been surveyed at multiple timepoints since their return from deployment in 1991. (Figure 1) This longitudinal data makes the FDC an ideal sample in examining memory decline.
- Memory complaints have been a concern of Gulf War veterans (GWV) since their return from the war in 1991, which was observed in the FDC, showing diminished memory and mood compared to controls.³
- A follow up study was conducted to examine neuropsychological assessments and mood.

Figure 2. Demographics

Demographics	Baseline (n=247)	Time 1 (n=176)	Time 2 (n=52)	Study Sample (n = 38)
Age, years	32.3	34.56	58.62	59.3
Male, n (%)	87.4	54.5	71.2	63.2

RESULTS

- Comparisons were run for all neuropsychological data. In our sample, the only significant findings were in CVLT and VRP.
- Statistically significant change of 1 SD for CVLT, suggesting decline in verbal memory. (Figure 3)
- Clinically significant change in VRP, decreasing by at least 1.5 SD suggesting decline in visual memory. (Figure 4)
- There were no statistically significant changes in cognitive measures within the domains of attention or executive function.

Figure 3.

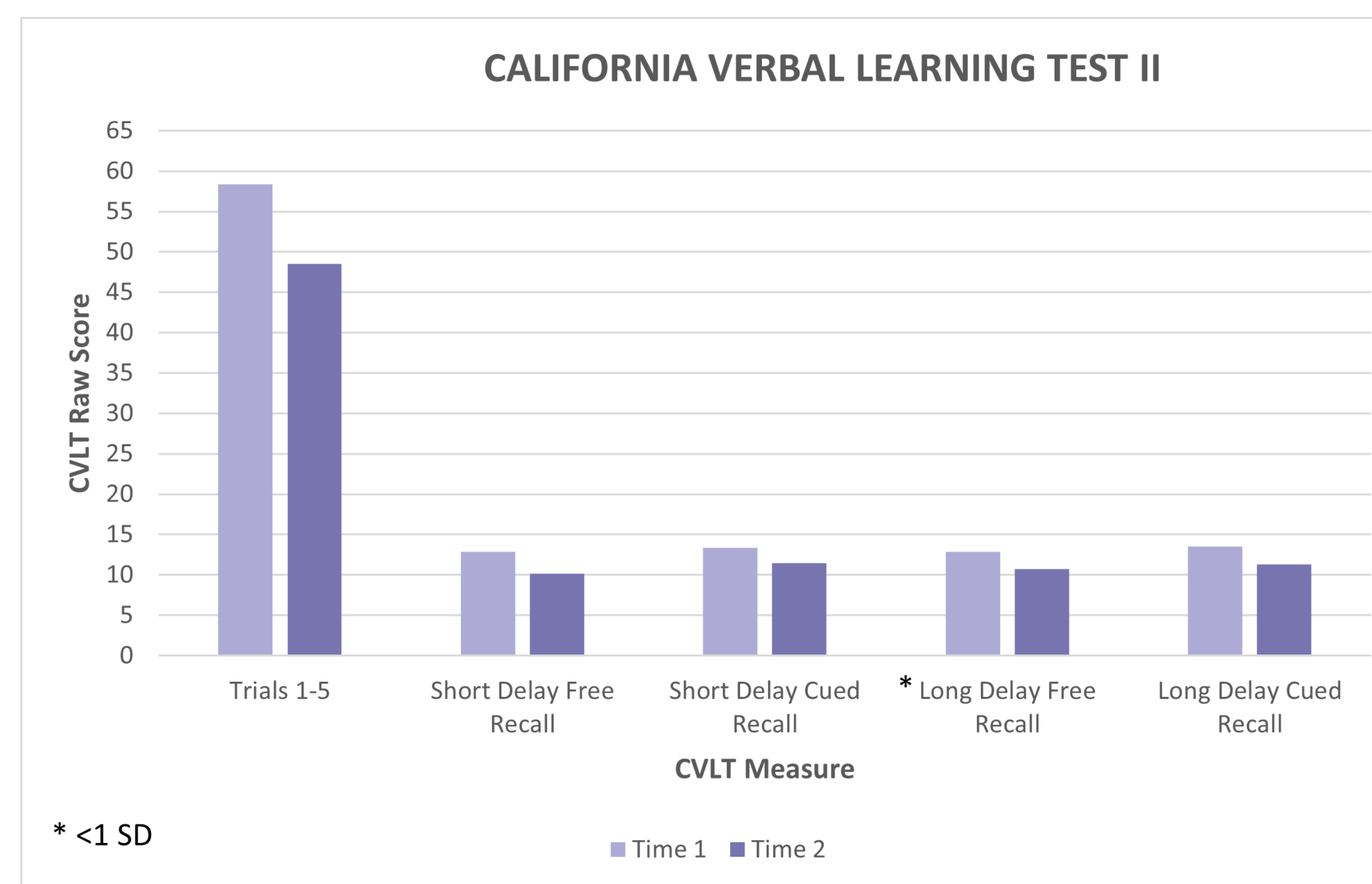
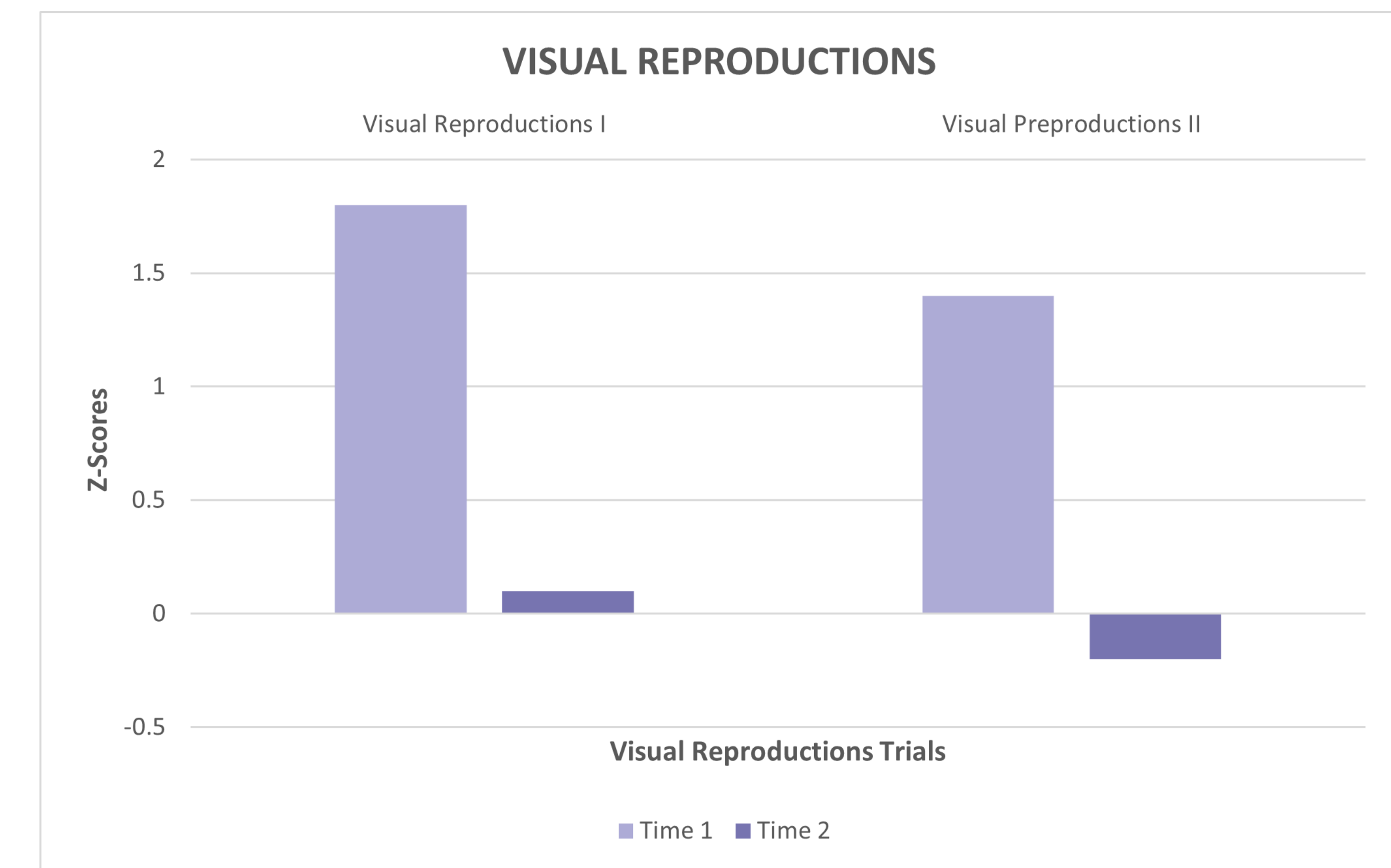


Figure 4.



METHODS

- This study utilized a subset of the FDC (n=38) who completed the California Verbal Learning Test-II (CVLT) and the WMS-1 and WMS-R Visual Reproductions (VRP) in 1997-1998 and again in 2019-2022. (Figure 2)
- Mean scores for each CVLT section were compared between Time 1 and Time 2.
- Given the differences in administration between the WMS-1 at Time 1 and WMS-R at Time 2, the participant means for Visual Reproductions Immediate and Delay were converted to z-scores. Z-scores were then compared.

Figure 1. Timeline



DISCUSSION

- Assessment of memory at a single timepoint is insufficient in identifying decline. Simply looking at our scores from Time 2, results falls within the average range.
- However, in comparison to scores from Time 1, fell below where they were previously, revealing significant decrements in verbal and visual memory.
- One limitation of our study is sample size, due to the small sample (n=38), statistically significant changes within varying cognitive domains were not observed.
- Additionally, this study was limited in the most recent timepoint (Time 2) by COVID-19, requiring neuropsychological batteries to be conducted via video conferencing.
- Future research on memory would benefit from longitudinal studies to better identify subtle changes and account for possible affects of aging.
- Additional research regarding the applicability of neuropsychological assessments done via video conferencing compared to in person assessment would be advantageous.

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