

PERCEIVED AND MEASURED CHRONIC COGNITIVE FUNCTION AFTER SPINAL CORD INJURY: INSIGHTS FROM A SURVEY AND TESTING APPROACH

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INTRODUCTION

Spinal cord injury (SCI) survivors are 13 times more likely to develop chronic cognitive dysfunction (CCD)¹.

- Issues with memory, learning & executive function².
- Impact on quality of life³.

Currently, no clinical guideline to address CCD.

- Recognition and reporting falls on SCI individuals and carers.

CAN SCI INDIVIDUALS ACCURATELY PERCEIVE CCD?

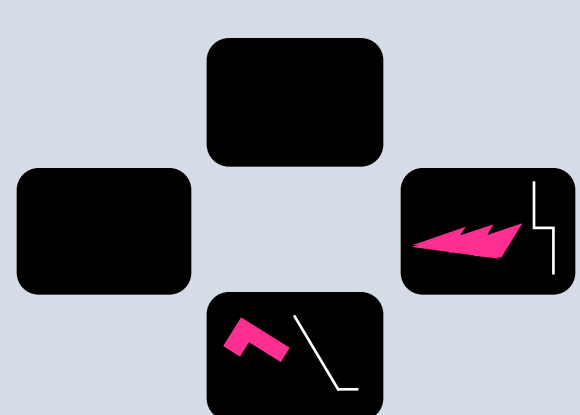
METHODOLOGY

- 1 Traumatic SCI individuals who met the inclusion criteria were recruited (n=44).
 - ≥ 18 years of age
 - ≥ 1 year with traumatic SCI
 - No severe brain disorders, learning disability, visual or motor impairment that limits participation.

- 2 Online survey:
 - Demographic information
 - CCD awareness/self-perception

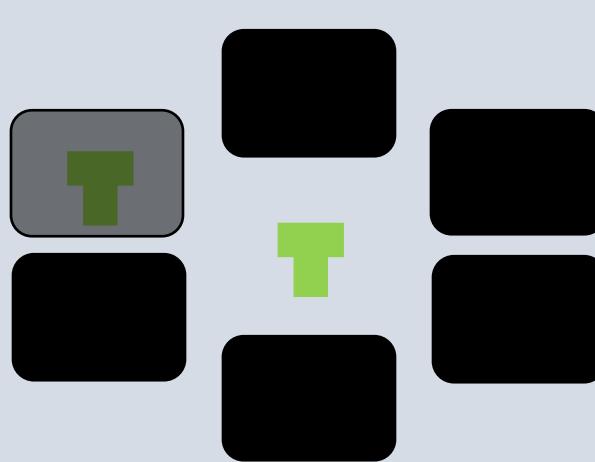
- 3 Cambridge Neuropsychological Test Automated Battery (CANTAB)

INTRA-EXTRA DIMENSIONAL SET SHIFT TEST (IED) : ATTENTIONAL SHIFT, RULE ACQUISITION & REVERSAL



Participant use feedback to select the correct stimulus, navigating intra-dimensional and extra-dimensional rule change.

PAIRED ASSOCIATES LEARNING TEST (PAL): VISUAL MEMORY AND NEW LEARNING



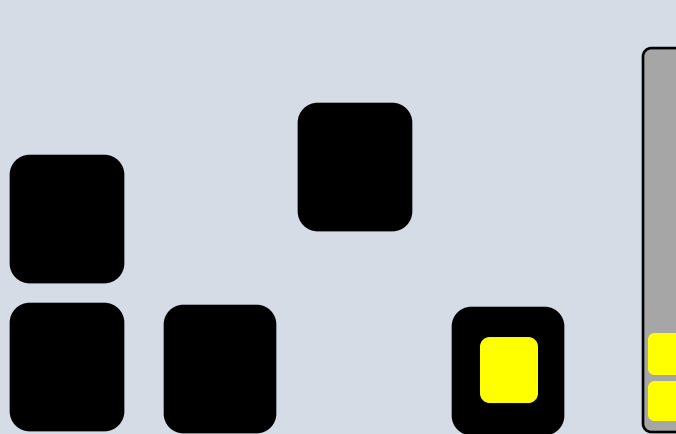
Boxes hiding shapes are opened randomly. Participant must select the box hiding the shape when that shape is shown in the centre.

PATTERN RECOGNITION MEMORY TEST (PRM): VISUAL PATTERN RECOGNITION



Participants must identify previously seen patterns as they appear one at a time.

SPATIAL WORKING MEMORY TEST (SWM): STRATEGY AND WORKING MEMORY ERRORS



Participants must find yellow token hidden in coloured boxes using process of elimination. The colour and position will change to prevent repetitive strategies.

- 4 Statistical analysis: Cognitive scores presented as z-scores (≤ -1.5 = cognitive dysfunction) & descriptive analysis on DataGrip (2023.1.2).

KEY FINDINGS

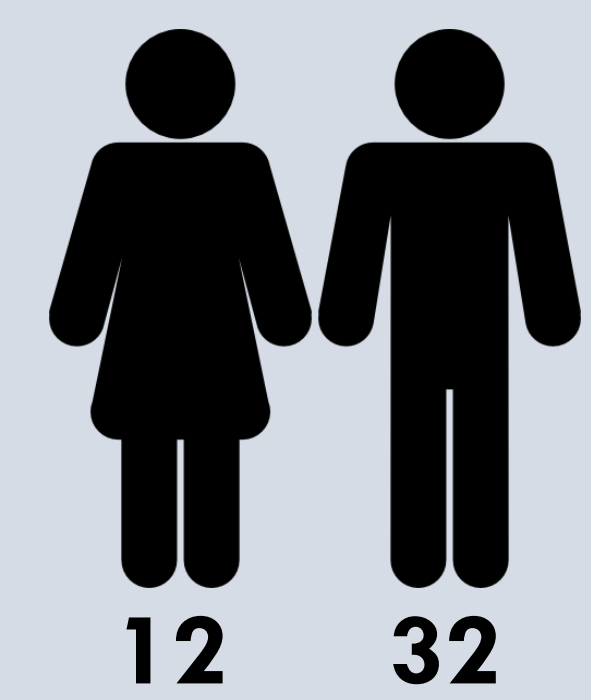
PARTICIPANT CHARACTERISTICS



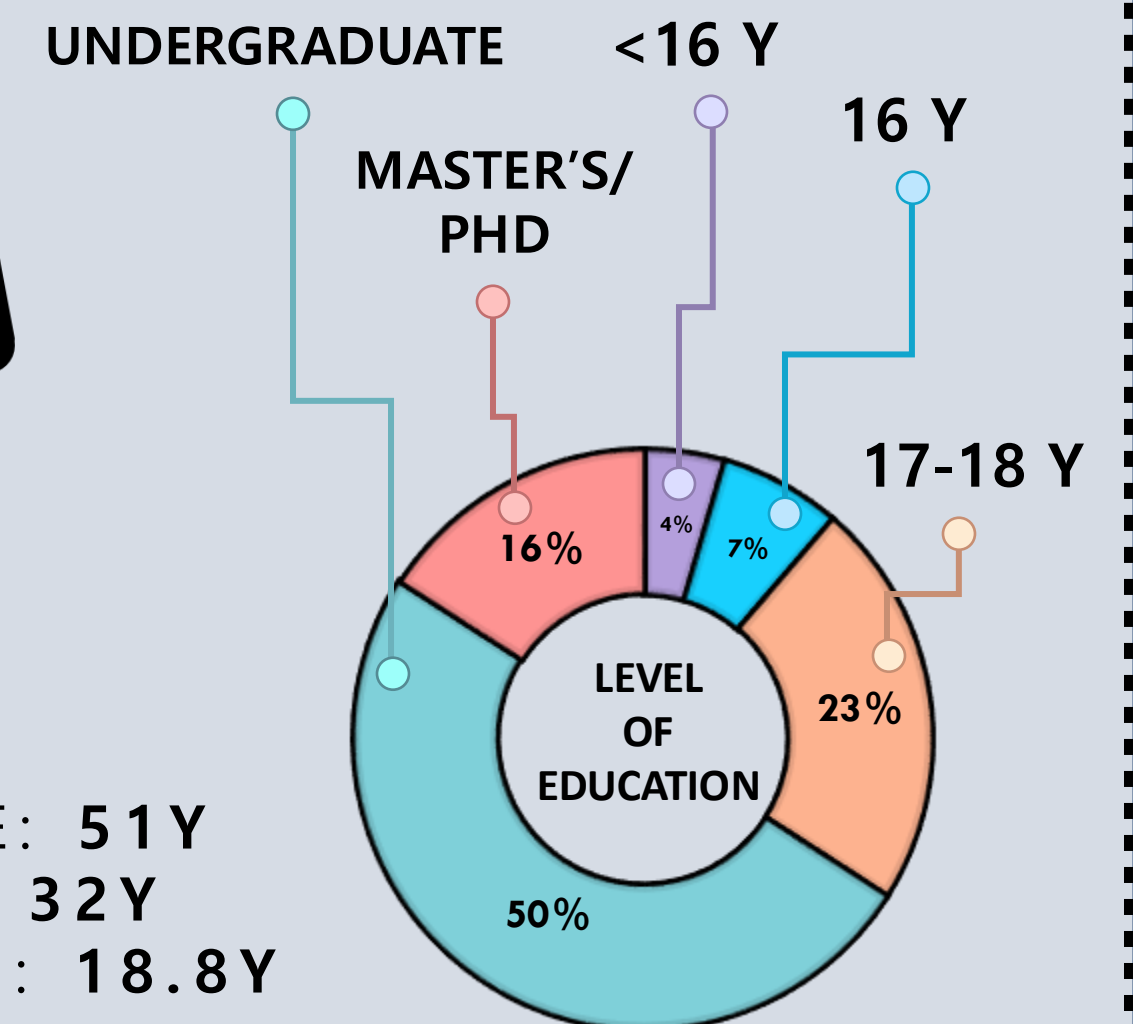
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COMPLETE 20
(GRADE A)

INCOMPLETE 24
(GRADES B, C & D)



AVG CURRENT AGE: 51Y
AVG AGE AT SCI: 32Y
AVG TIME SINCE SCI: 18.8Y



LACK OF AWARENESS & POOR SELF-PERCEPTION OF COGNITION POST SCI

55% UNAWARE OF CCD POST SCI
66% NOT CLINICALLY ASSESSED FOR CCD

SELF-PERCEPTION POST SCI

50% EXPERIENCED REDUCED COGNITIVE FUNCTION
68% REPORT IMPACT ON QoL
46% NO CHANGES TO COGNITION
4% IMPROVED COGNITION

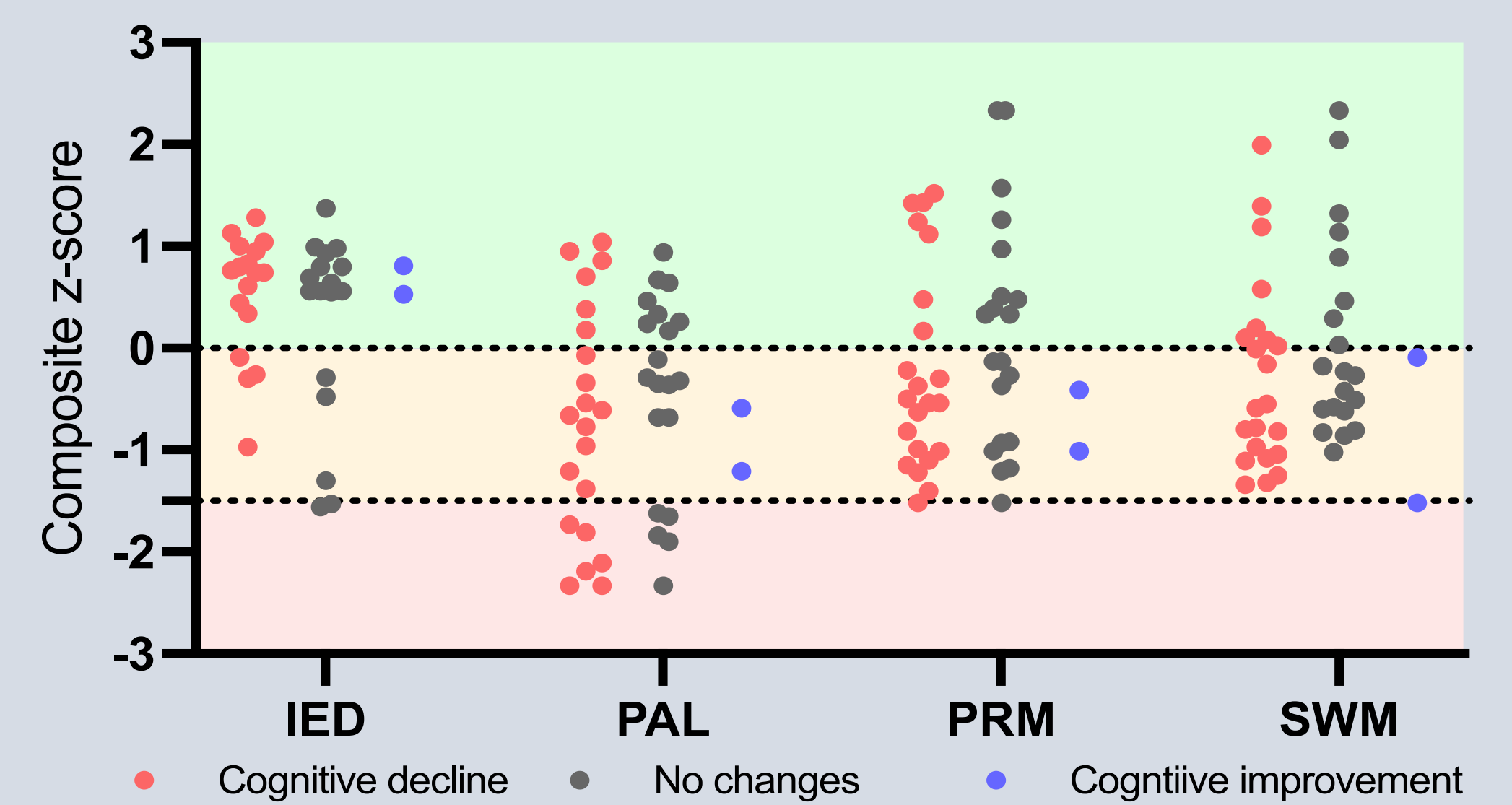


Figure 1: CCD (z-score ≤ -1.5) was identified in 27% of those who self-reported reduced cognitive function, 45% of those reporting no change, and all of those reporting improvement post SCI.

PRONOUNCED COGNITIVE CHANGE IN VISUAL MEMORY & NEW LEARNING

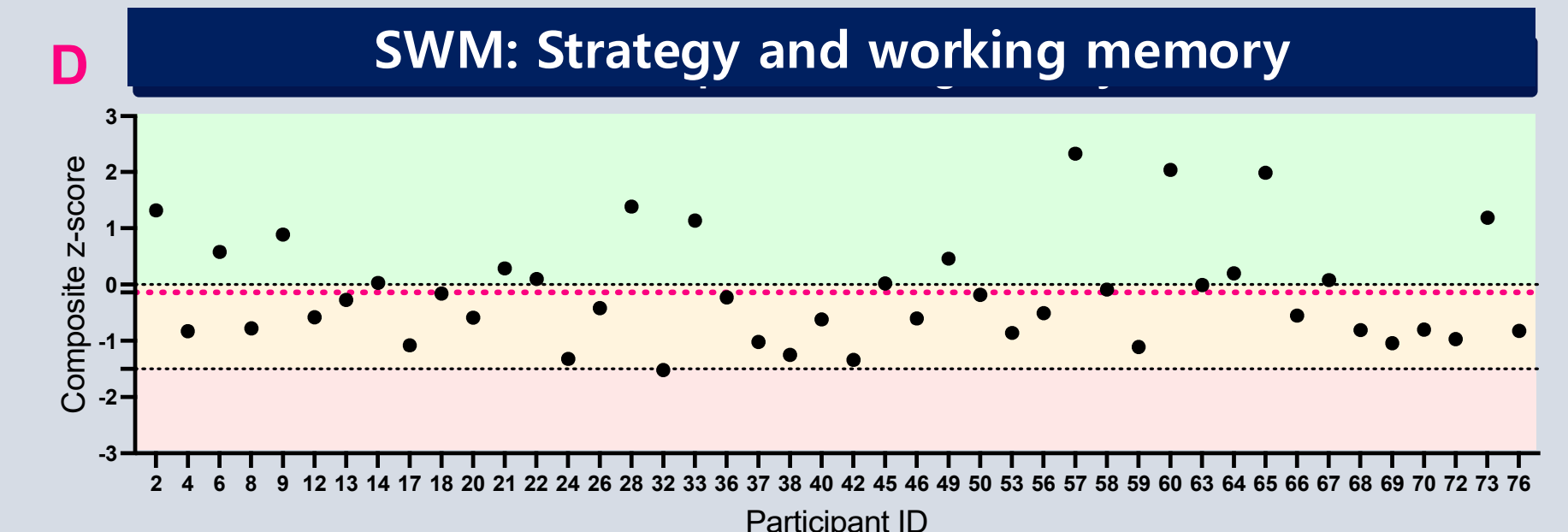
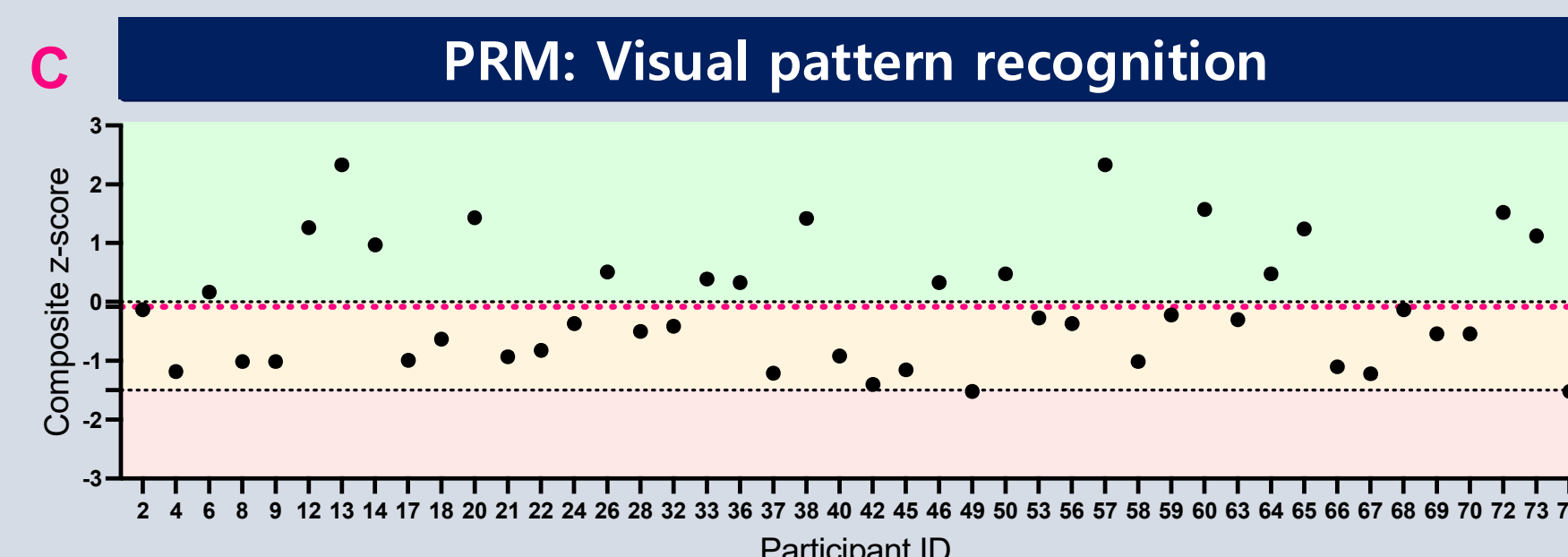
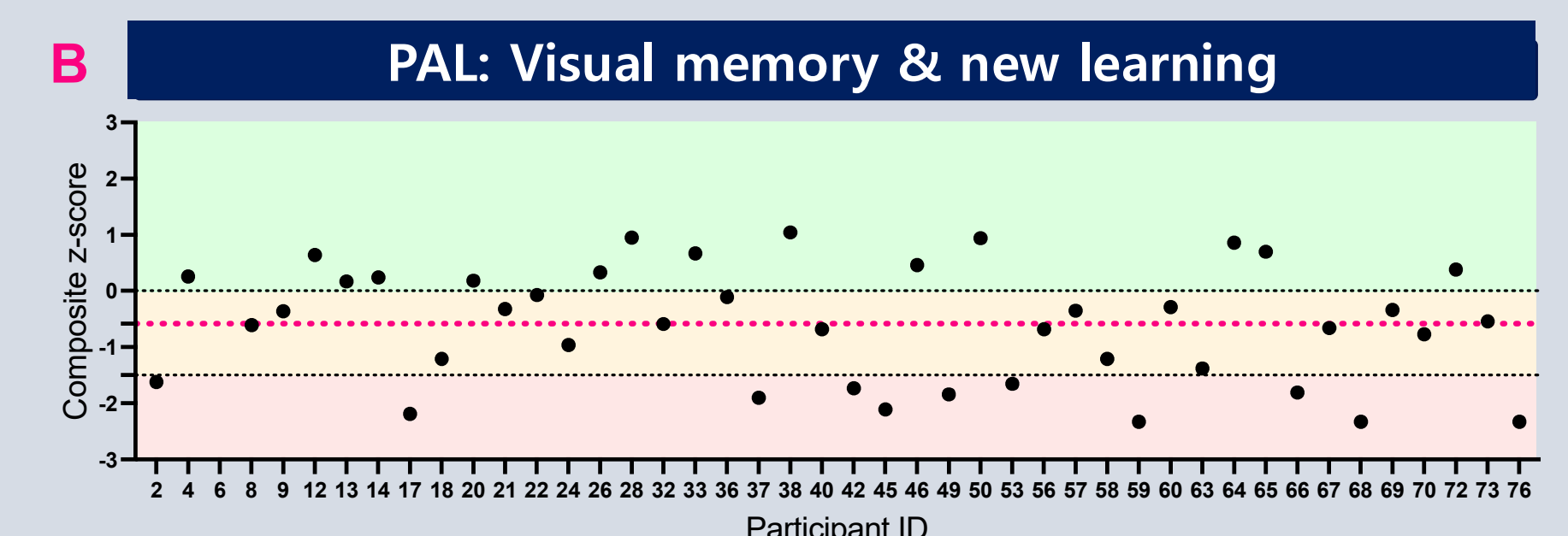
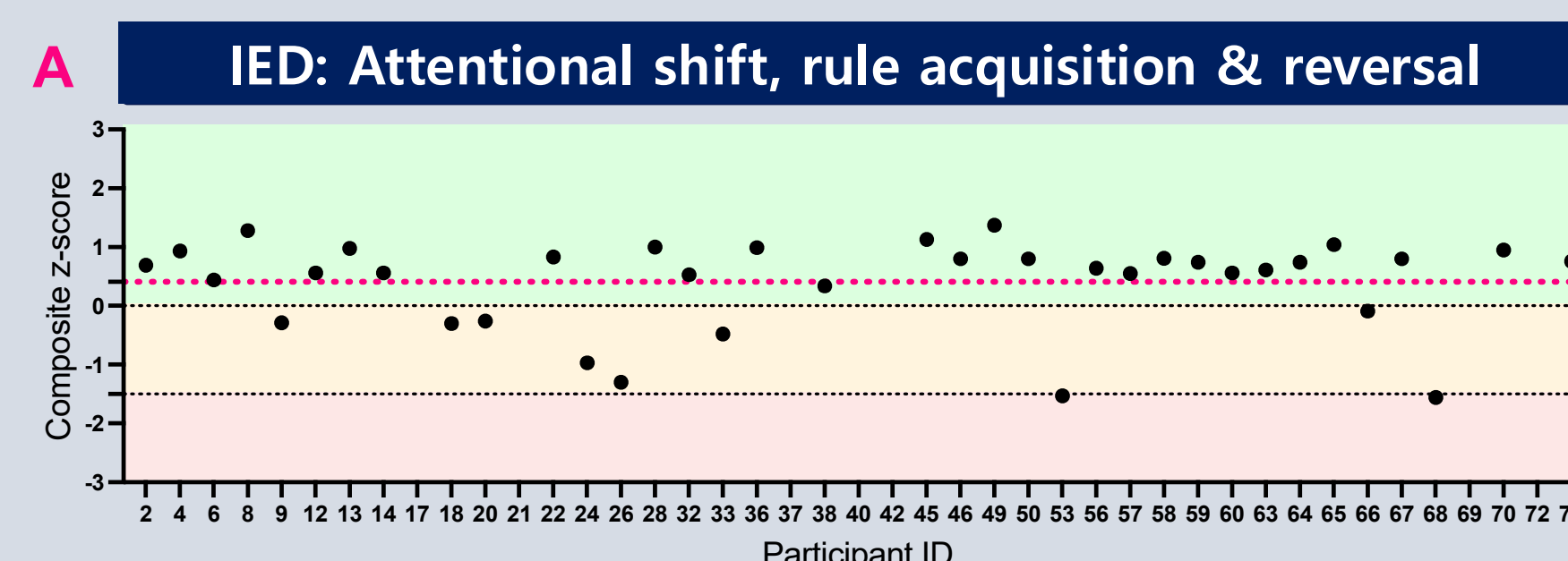


Figure 2: 27.3% (12/44) showed CCD in at least one of four tests. Mean composite z-scores were: IED=0.41 (SD=0.77) (A), PAL=-0.58 (SD=1) (B), PRM=-0.08 (SD=1.1) (C), and SWM=-0.14 (SD=0.96) (D).

CONCLUSION

Discrepancy between self-perception of one's own cognition and actual cognitive function.

Visual memory and new learning may be particularly vulnerable post SCI.

FUTURE DIRECTIONS:

- Continue SCI recruitment
- Age and sex-matched controls

Comprehensive database of SCI cognitive profiles.

Advocate for improvement to cognition care following SCI.



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