EVIDENCE FOR WORKING MEMORY AS A DOMAIN-GENERAL DEFICITS IN MATHEMATICAL LEARNING DISABILITIES

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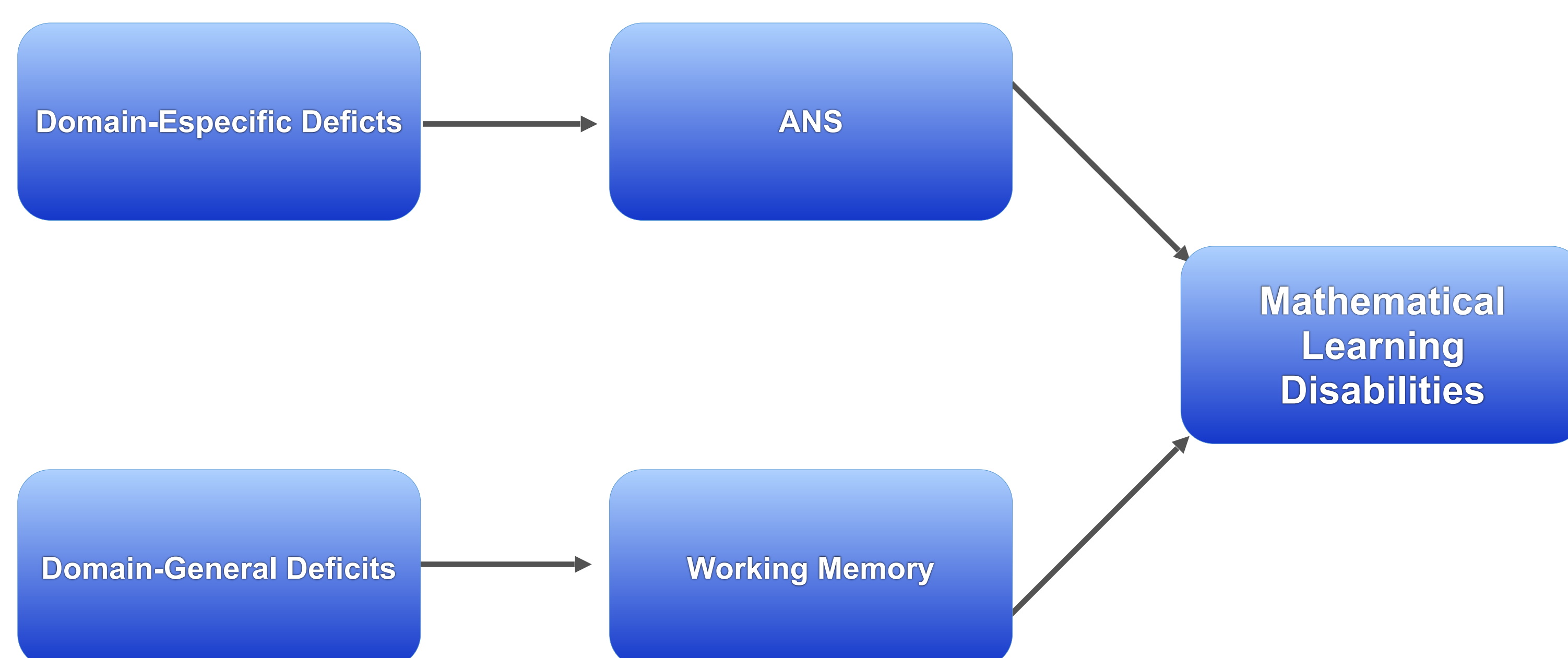
INTRODUCTION

Figure 1. Possibles deficits associated with the persistent difficulty in learning mathematics.

METHODS

Participants:

Group	N	Age		
		Mean	SD	Comparison
Math Learning Disabilities (MLD)	48	9.50	1.37	t(62.8) = 0.28
Typical Achievement	213	9.56	1.15	p = 0.78

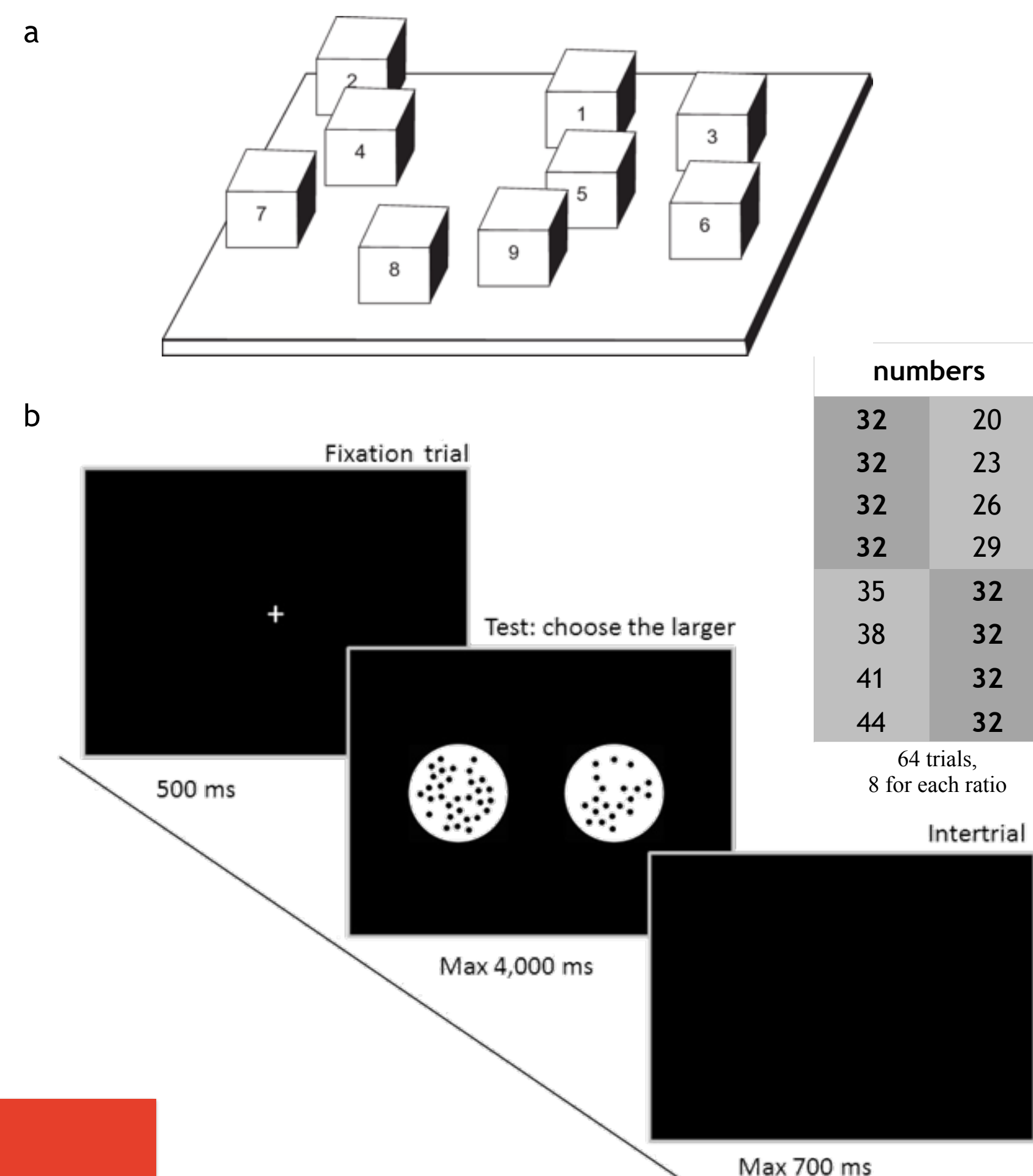Table 1. Participants' sociodemographic information

Tasks:

Figure 2. Experimental tasks. a) Corsi Blocks test. b) Nonsymbolic number comparison, participants should identify the larger array, with reference 32. c) Arithmetic task, participants should solve two blocks of basic addition, subtraction, and multiplication problems in the max of 1min for each block.
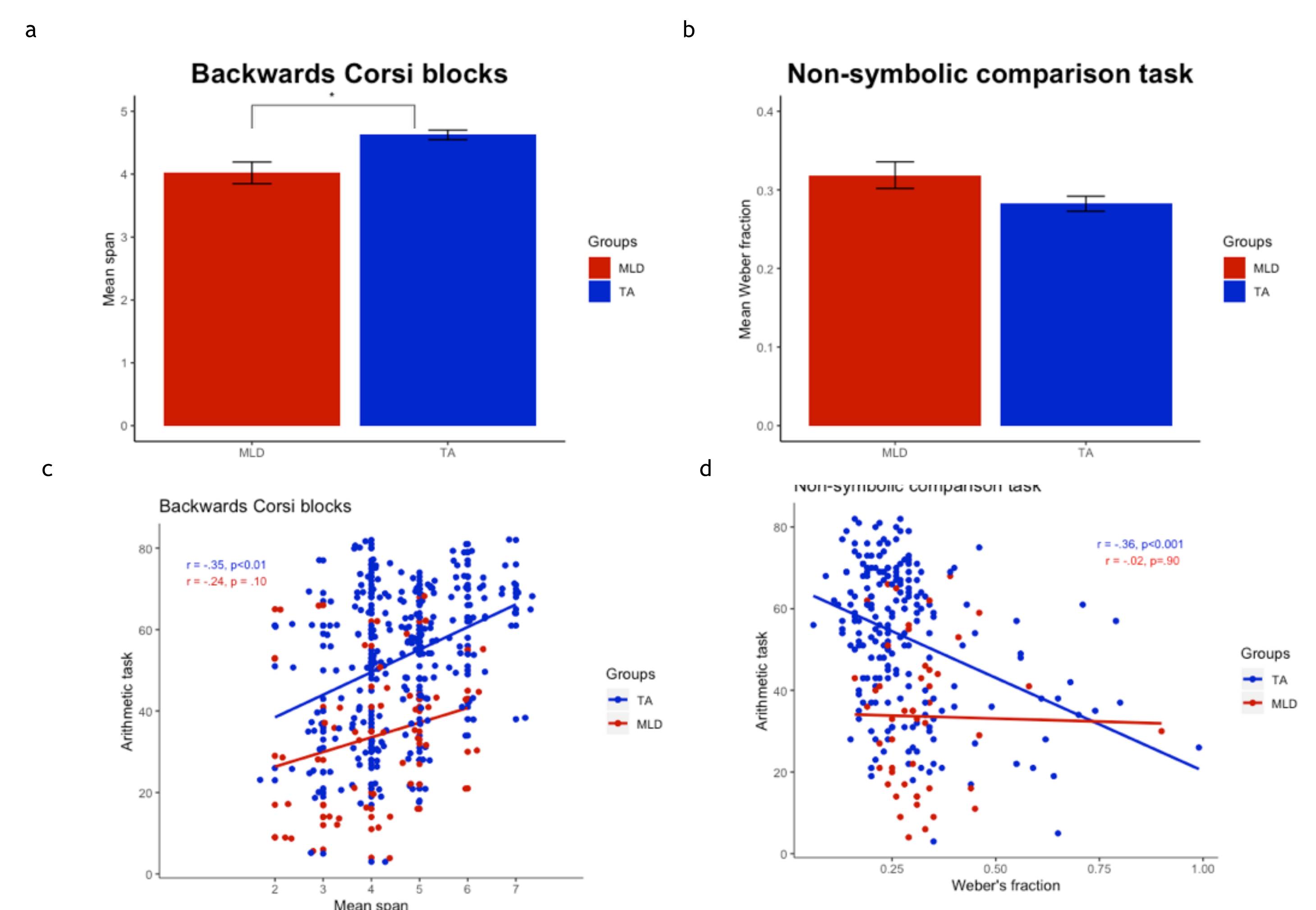
RESULTS

Figure 3. Results. a) Significant difference between groups in the Corsi blocks span: t(66.6) = 3.20, p < .005. b) No significant difference between groups in the Weber fraction: t(79.5) = -1.87, p = .07. c) and d) Both the span in Corsi blocks and the Weber fraction were correlated with the Arithmetic score for the TA group and weren't for the MLD group.

CONCLUSION

- We increased our data and the difference in the Weber fraction approximated a significant result, maybe the test wasn't sensitive enough to capture the effect size (d = 0.28).
- The results are in line with the domain-general deficits hypothesis for explaining the mathematical learning deficits.
- The Arithmetic performance of MLD children not correlating with WM or Weber fraction suggests that they are using other strategies to answer the test.
- These results contribute to a better characterization of the MLD profile, which has implications not only for research but also for clinical diagnosis and interventions.