NUMERICAL VALUES MODULATE SIZE PERCEPTION

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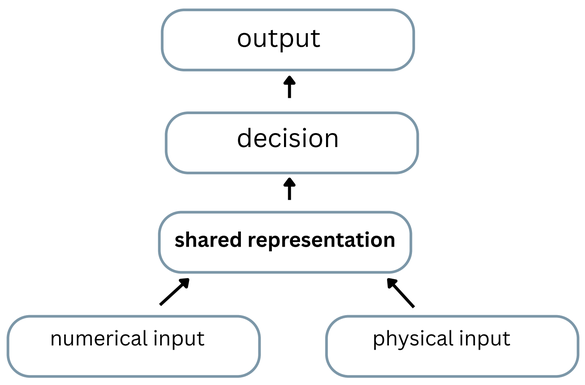
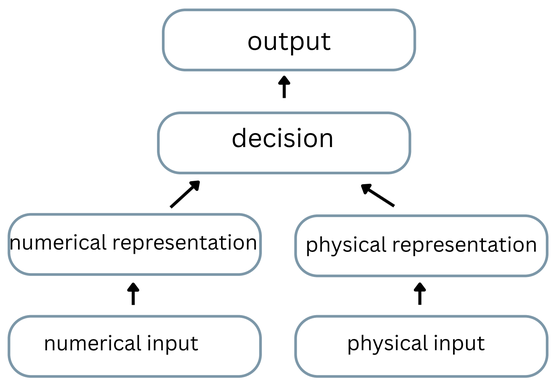
1 INTRODUCTION

The Shared-Representation Account (Schwarz & Heinze, 1998)



The Shared-Response Account (Otten et al., 1996)



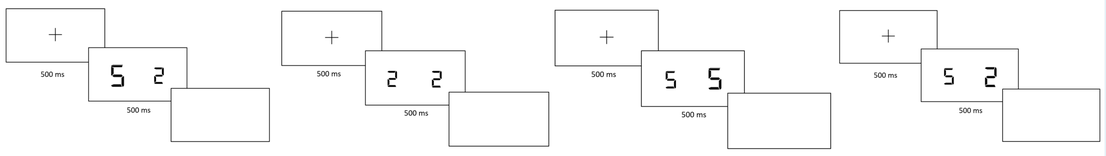
Size Congruity Effect (Henik & Tzelgov, 1982)

Physical size judgments are faster and more accurate when numerical magnitude aligns with physical size, even when numerical value is irrelevant to the task.

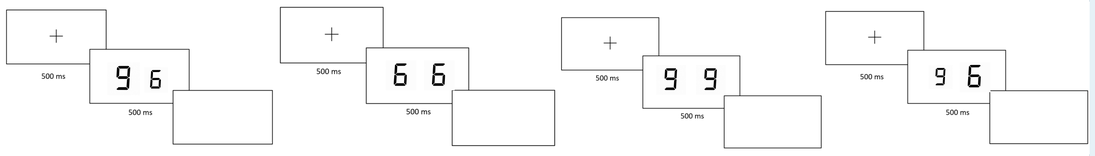
Size Effect (Moyer & Landauer, 1967)

When the numerical distance is identical, comparisons between smaller numbers are made faster than comparisons between larger numbers.

2 METHODOLOGY – FIRST EXPERIMENT

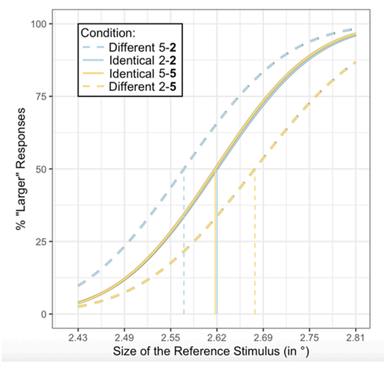


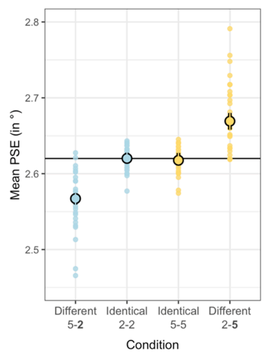
3 METHODOLOGY – SECOND EXPERIMENT



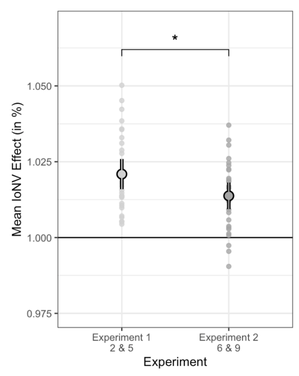
4 RESULTS

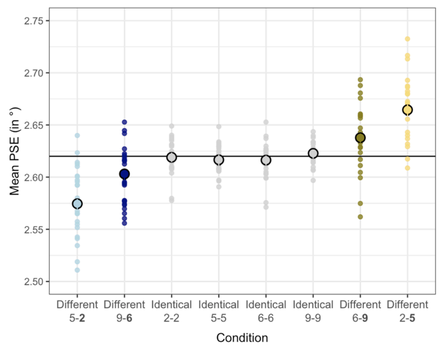
First experiment



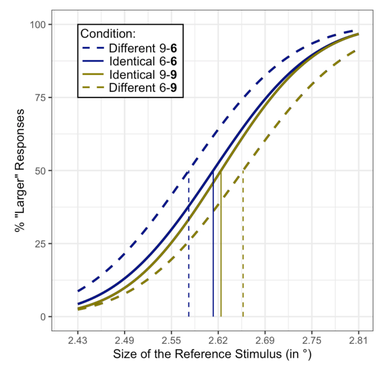


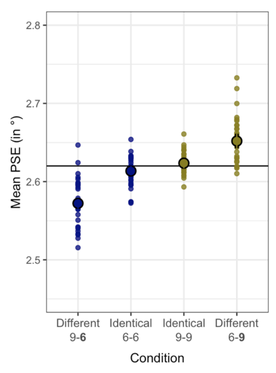
Comparison and mix





Second experiment





In Experiment 3, we used a mixed design and included all the pairs from Experiments 1 and 2 within the same block.

5 CONCLUSION

- Numerical magnitude influences how physical size is perceived.
- Our results suggest that numerical magnitude is processed similarly to physical size.
- Precise quantification of numerical magnitude influence enables a deeper investigation of the symbolic number system in both typical development and dyscalculia.

References

Henik, A., & Tzelgov, J. (1982). Is three greater than five: The relation between physical and semantic size in comparison tasks. *Memory & Cognition*, *10*(4), 389-395.
Moyer, R. S., & Landauer, T. K. (1967). Time required for judgements of numerical inequality. *Nature*, *215*(5109), 1519-1520.
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Schwarz, W., & Heinze, H. J. (1998). On the interaction of numerical and size information in digit comparison: A behavioral and event-related potential study. *Neuropsychologia*, *36(11)*, 1167-1179.

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