

METACOGNITIVE DOMAINS DO NOT GROUP BASED ON INTERNAL VS. EXTERNAL SOURCES OF INFORMATION

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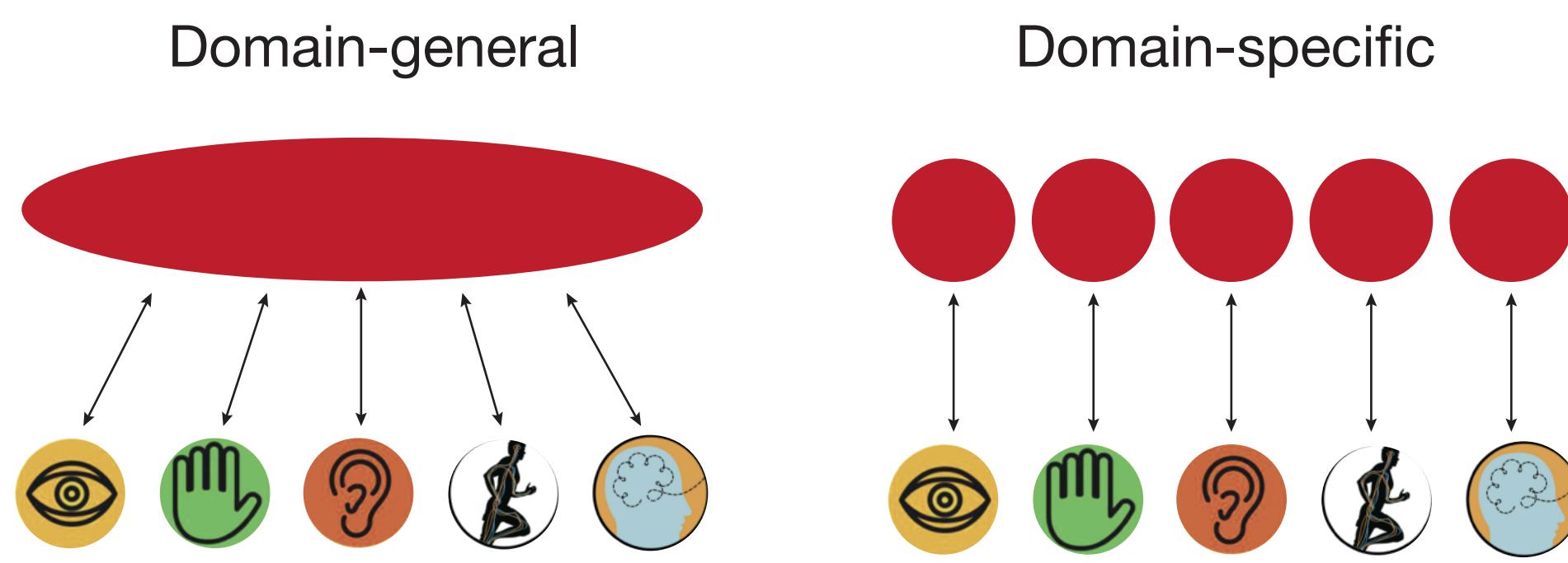


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Introduction

METACOGNITION



Adapted from Rouault et al (2018)

Is there a single general metacognitive mechanism or is it a collection of multiple monitoring modules, separate for each cognitive domain?

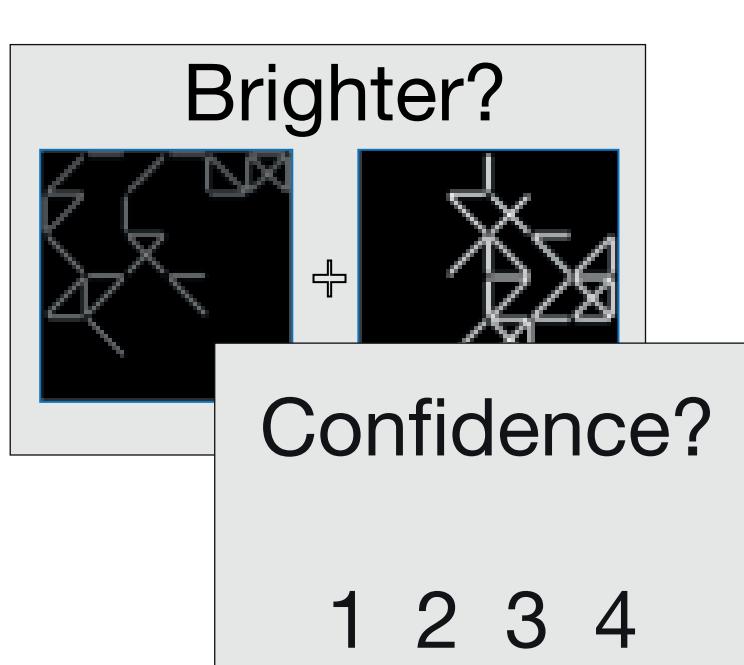
One potential divide could stem from two broad categories depending on the source of information: monitoring of externally-generated (like visual metacognition) information and monitoring of internally-generated information (like memory metacognition) (Fleming et al, 2014)



Here, we use tasks that stand on a continuum between these two categories to test this idea explicitly.

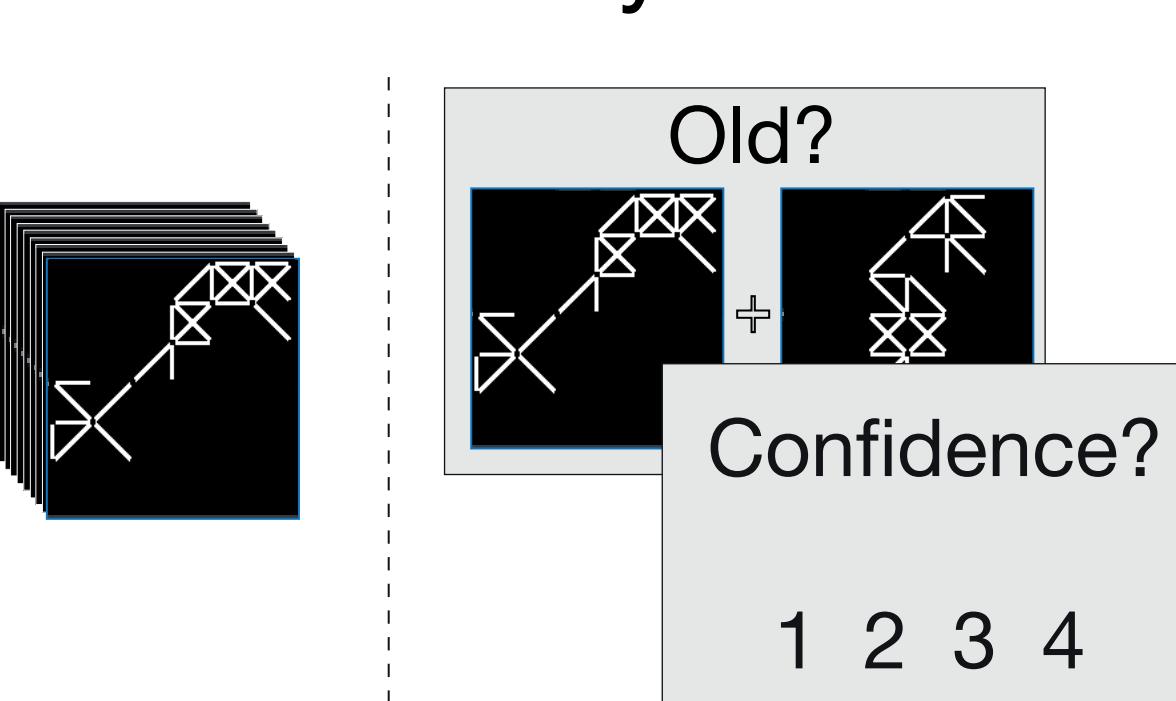
Methods

Visual task

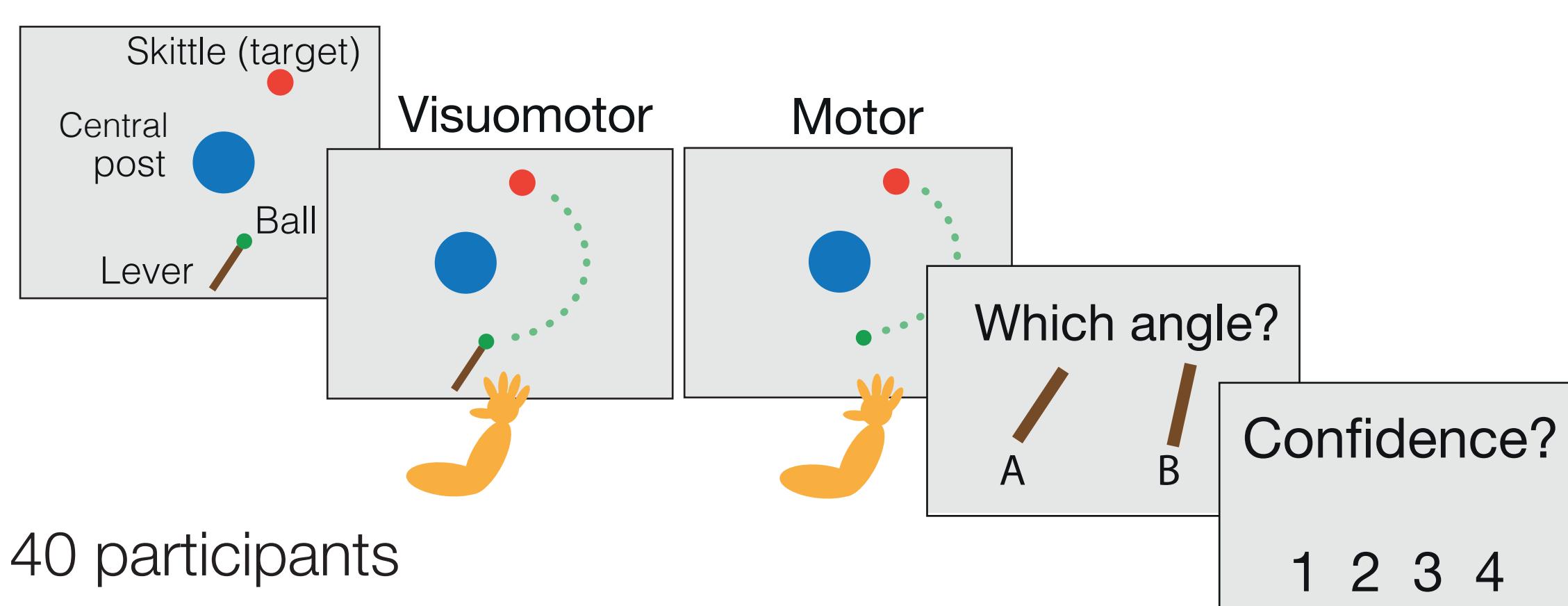


Adapted from Morales et al (2018)

Memory task



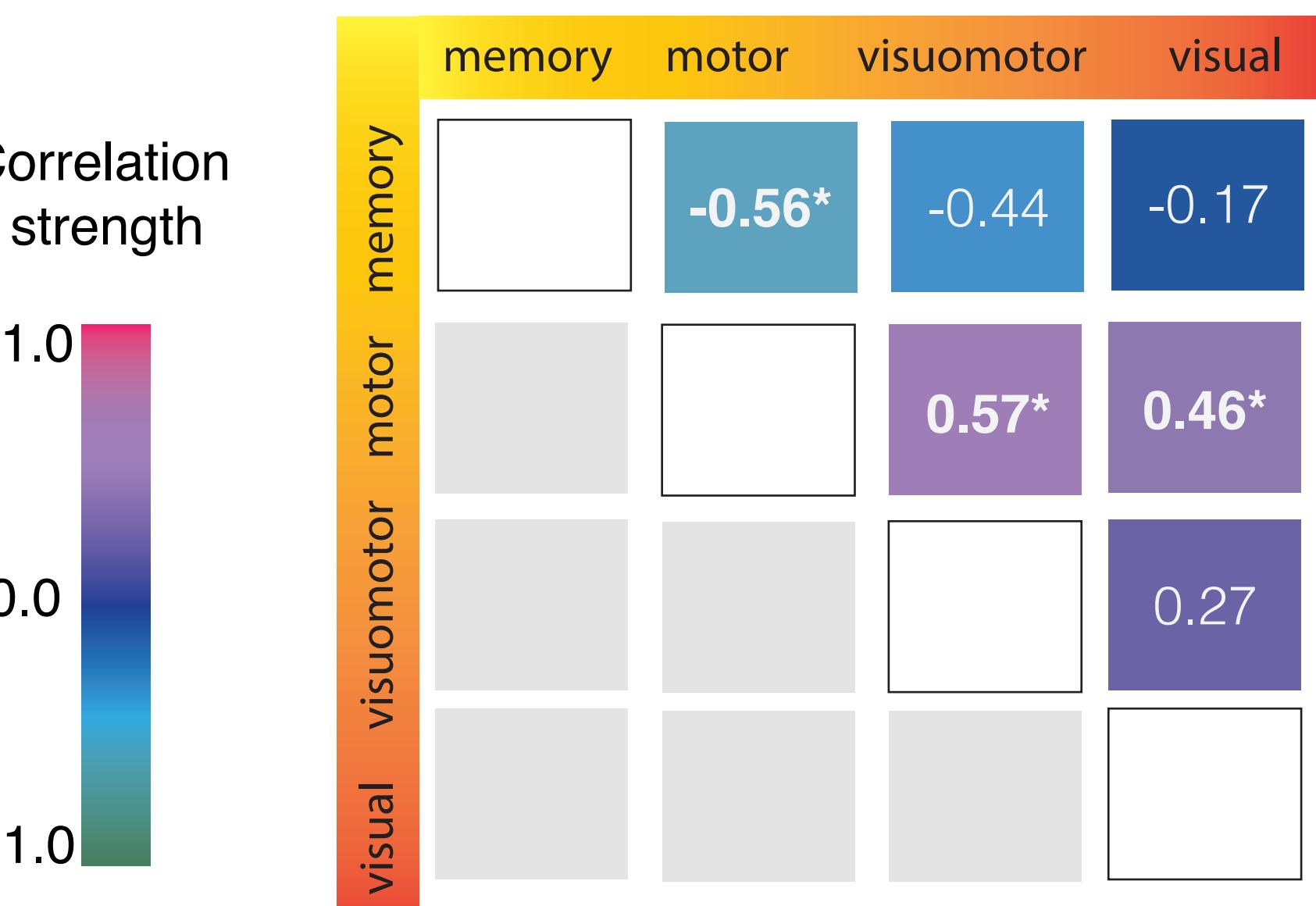
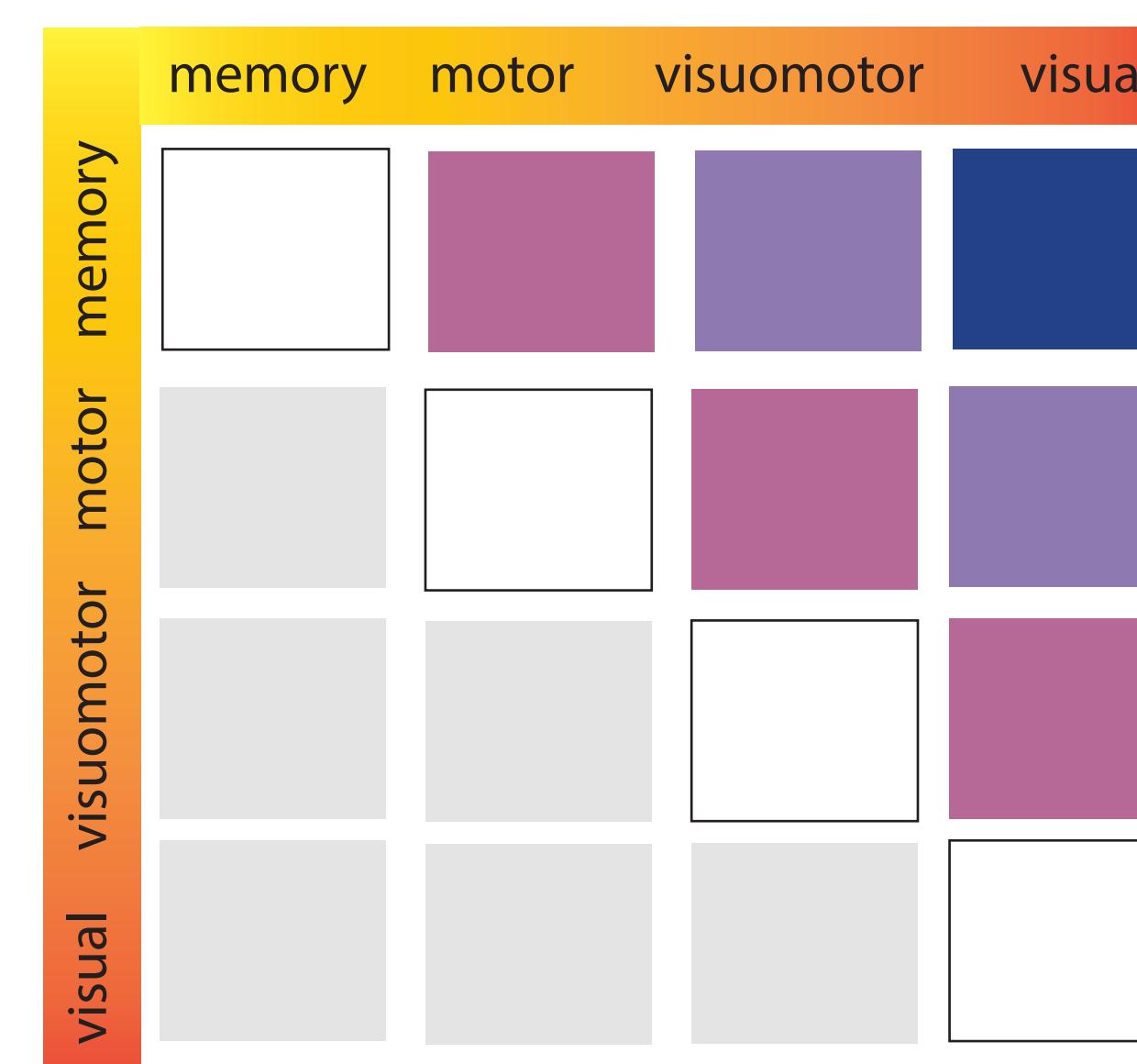
Visuomotor and motor tasks: Skittles



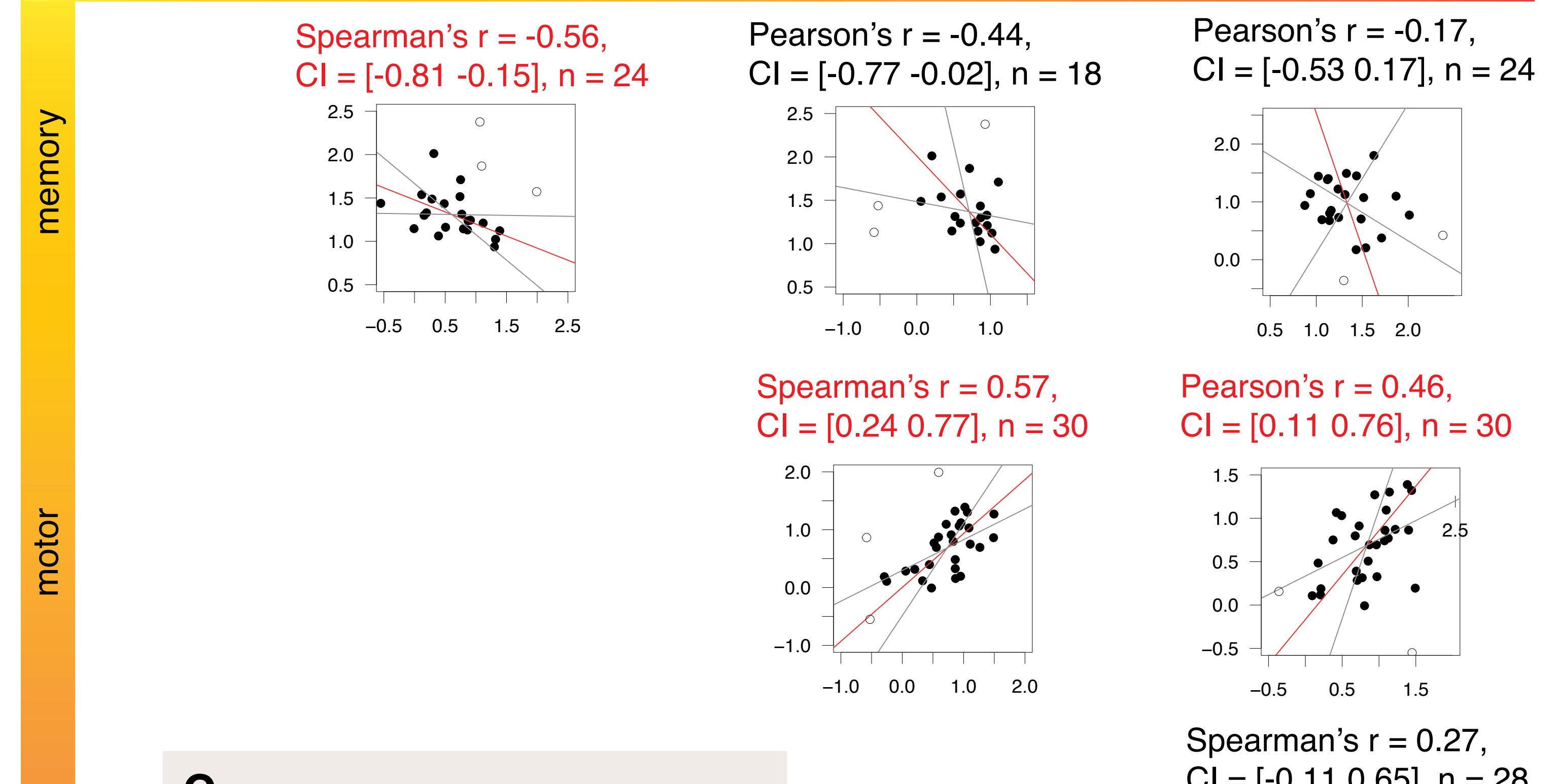
Meta-d'/d' (m-ratio) as a measure of metacognitive sensitivity normalized by first-order performance (Maniscalco & Lau, 2012)

Results

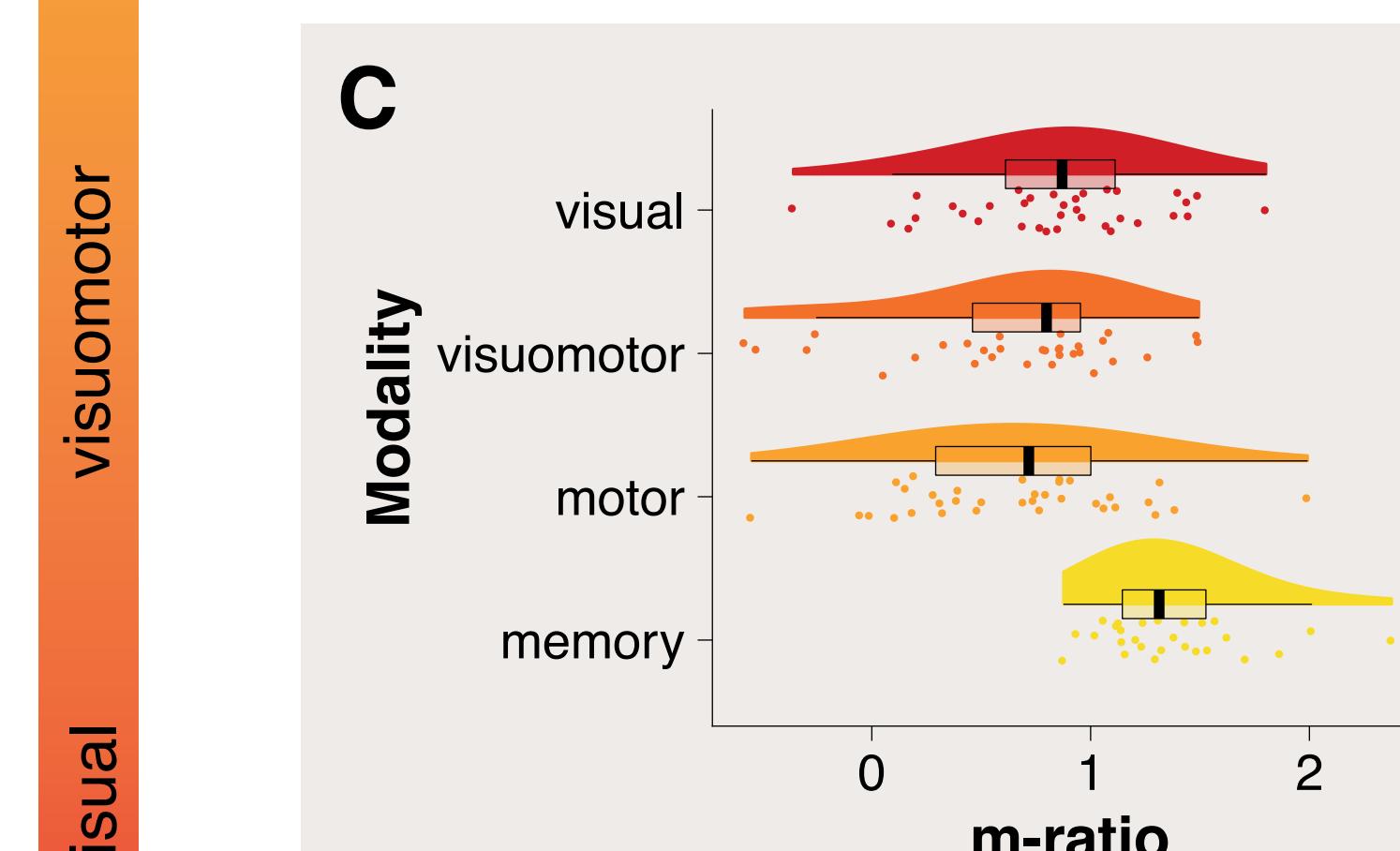
Expected pattern



Results

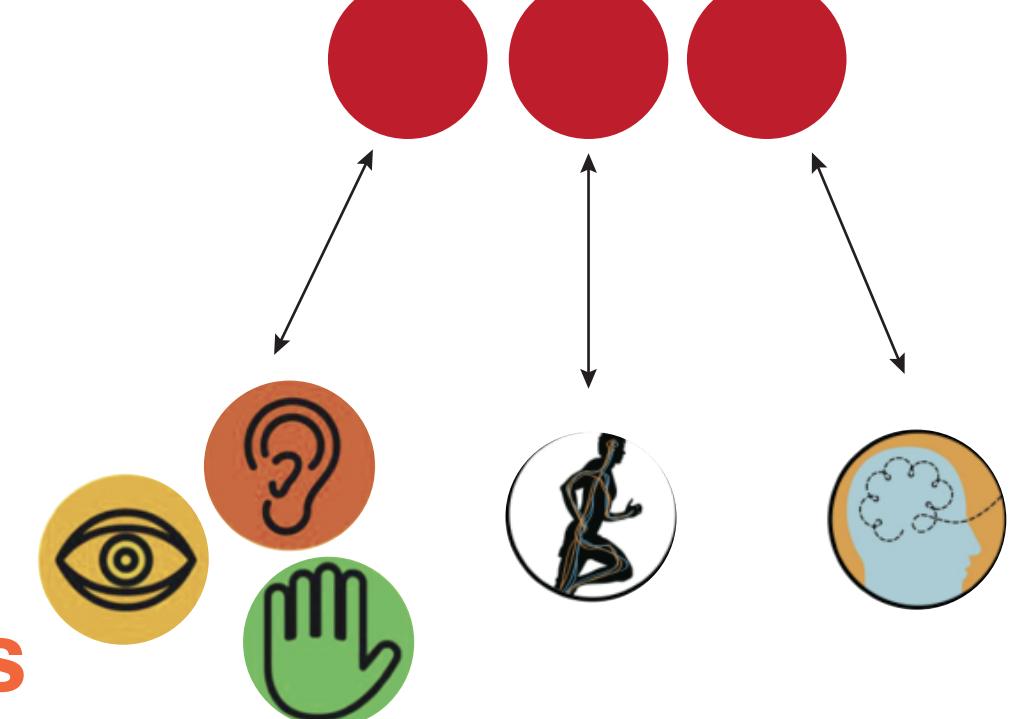


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Discussion

- No support for internal/external grouping - m-ratio correlations pattern not consistent with it
- Internal information in motor and in memory tasks might differ in metacognitive processes
- Other task features (temporal structure, attentional demands) could be more important



References:

- Fleming, S. M., Ryu, J., Golfinos, J. G., & Blackmon, K. E. (2014). Domain-specific impairment in metacognitive accuracy following anterior prefrontal lesions. *Brain*, 137(10), 2811-2822.
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Morales, J., Lau, H., & Fleming, S. M. (2018). Domain-general and domain-specific patterns of activity supporting metacognition in human prefrontal cortex. *Journal of Neuroscience*, 38(14), 3534-3546.
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