

Background

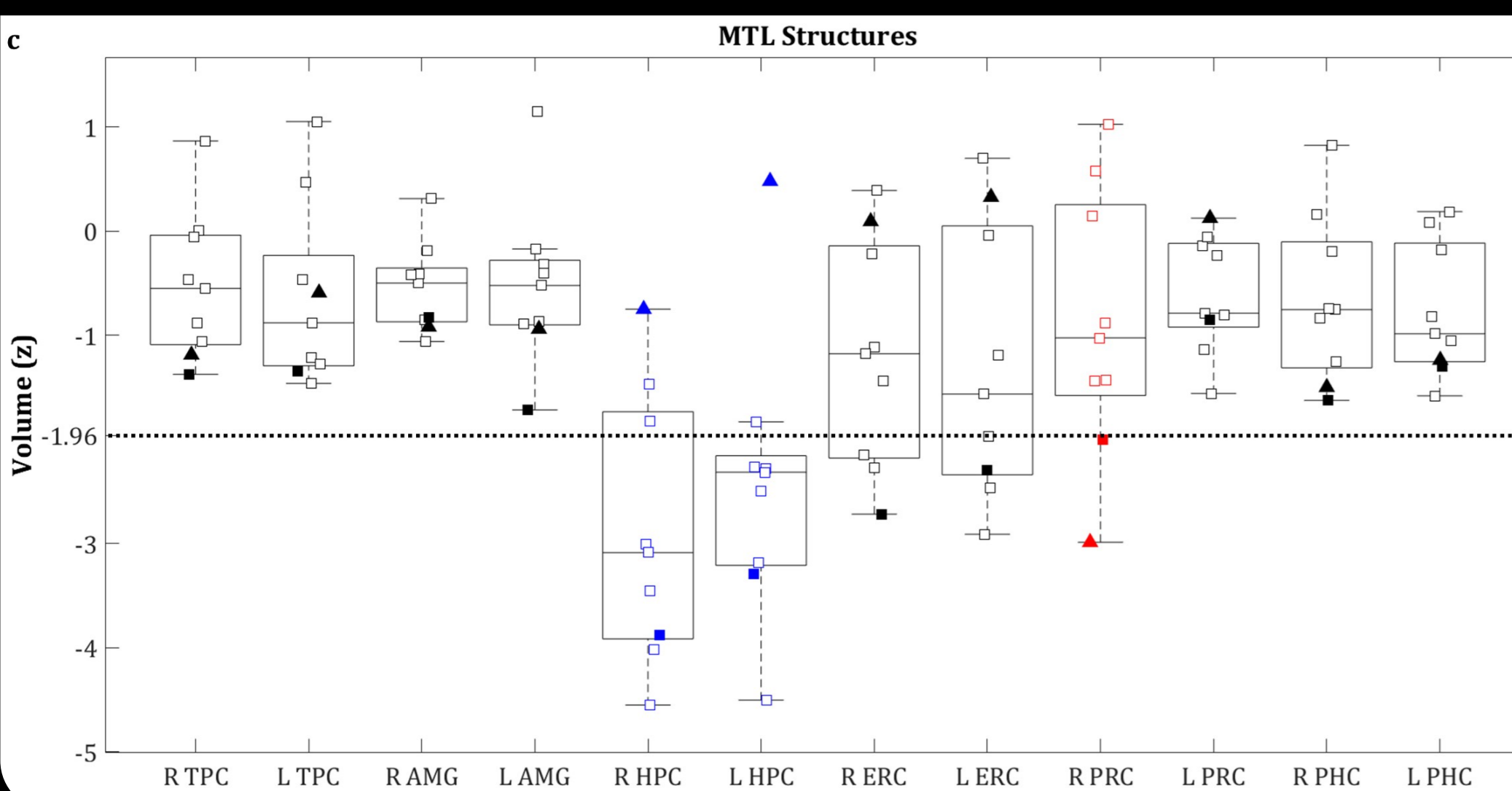
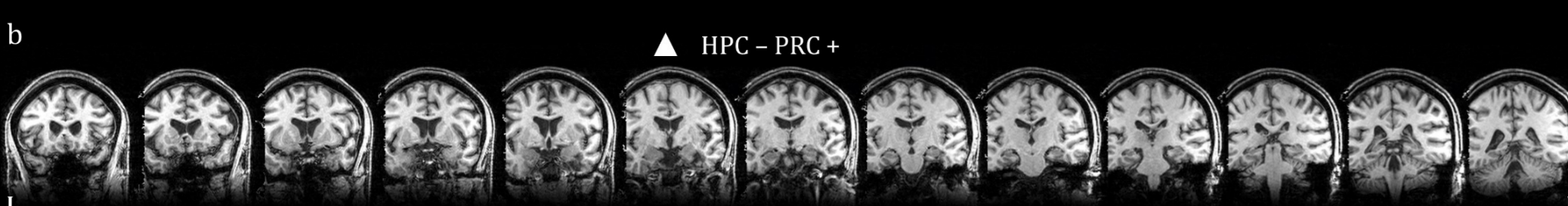
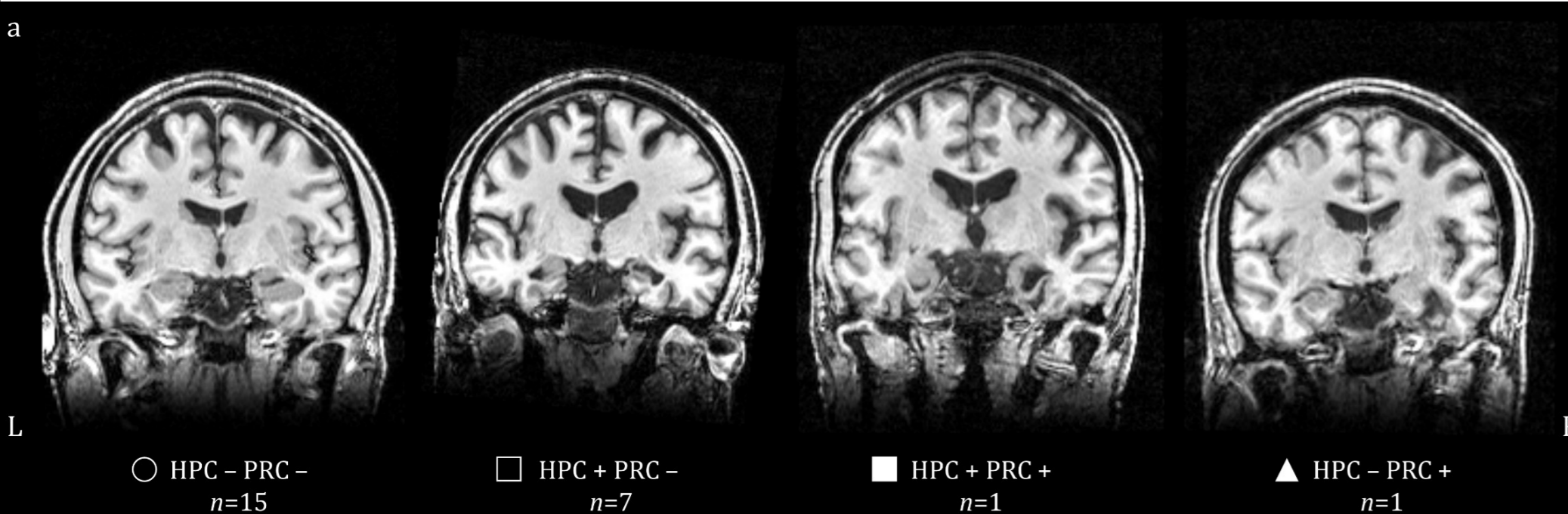
- Is familiarity dissociable from recollection at the neurofunctional level within the MTL?
- Limited evidence from patient studies so far.¹
- 'Dual-process' models²: familiarity ⇔ parahippocampal gyrus (esp. PRC) vs. recollection ⇔ HPC.
- 'Single-process theory'³: recollection and familiarity non-selectively affected post-MTL damage.

Goal

- Assess this dissociation in recognition memory of patients with MTL damage.

Patients

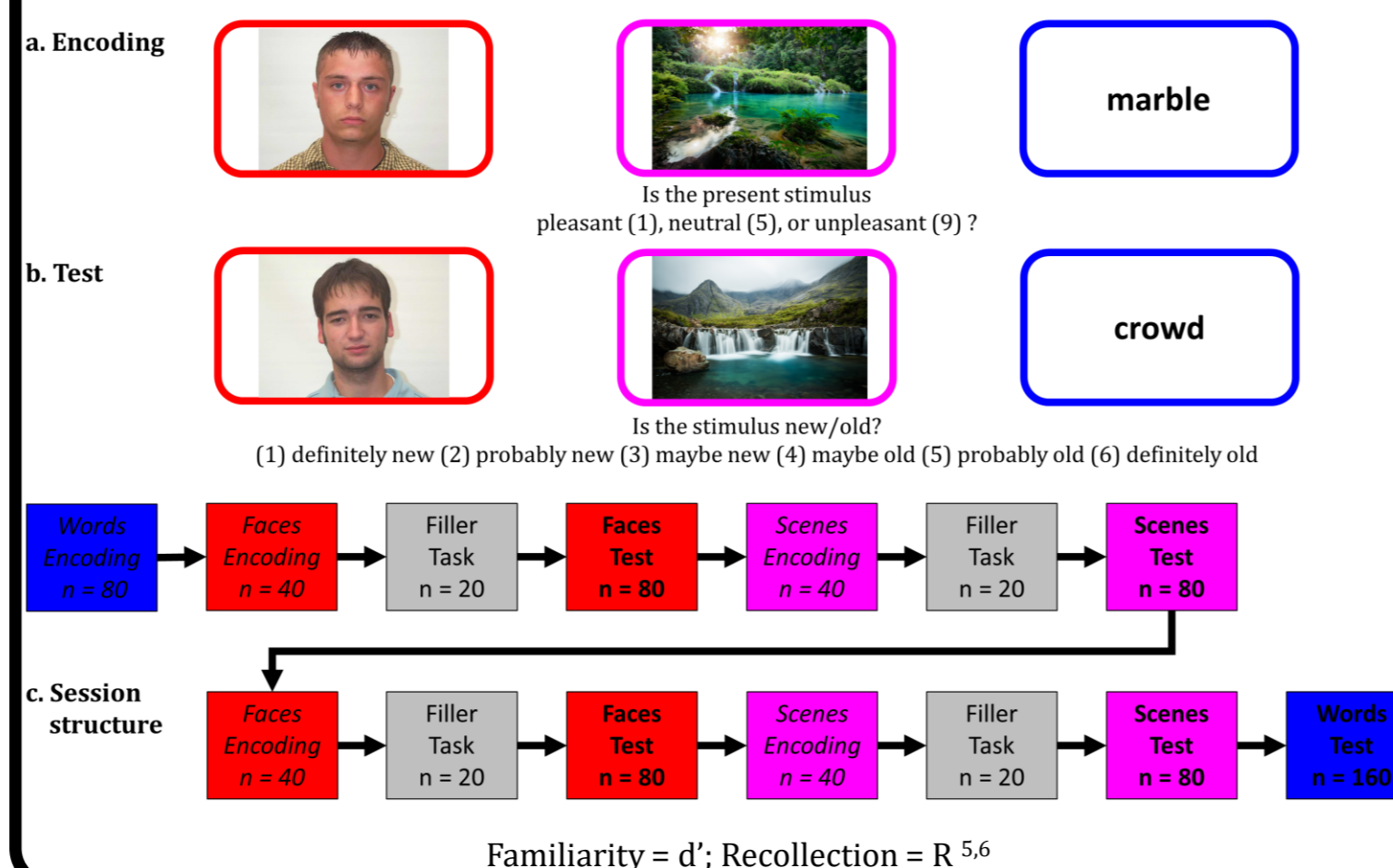
- **HPC-PRC+**: focal PRC damage (n=1)
- **HPC+PRC+**: HPC + PRC damage (n=1) vs. **CTRs (HPC-PRC-)** (n=15)
- **HPC+PRC-**: HPC w/o PRC damage (n=7)



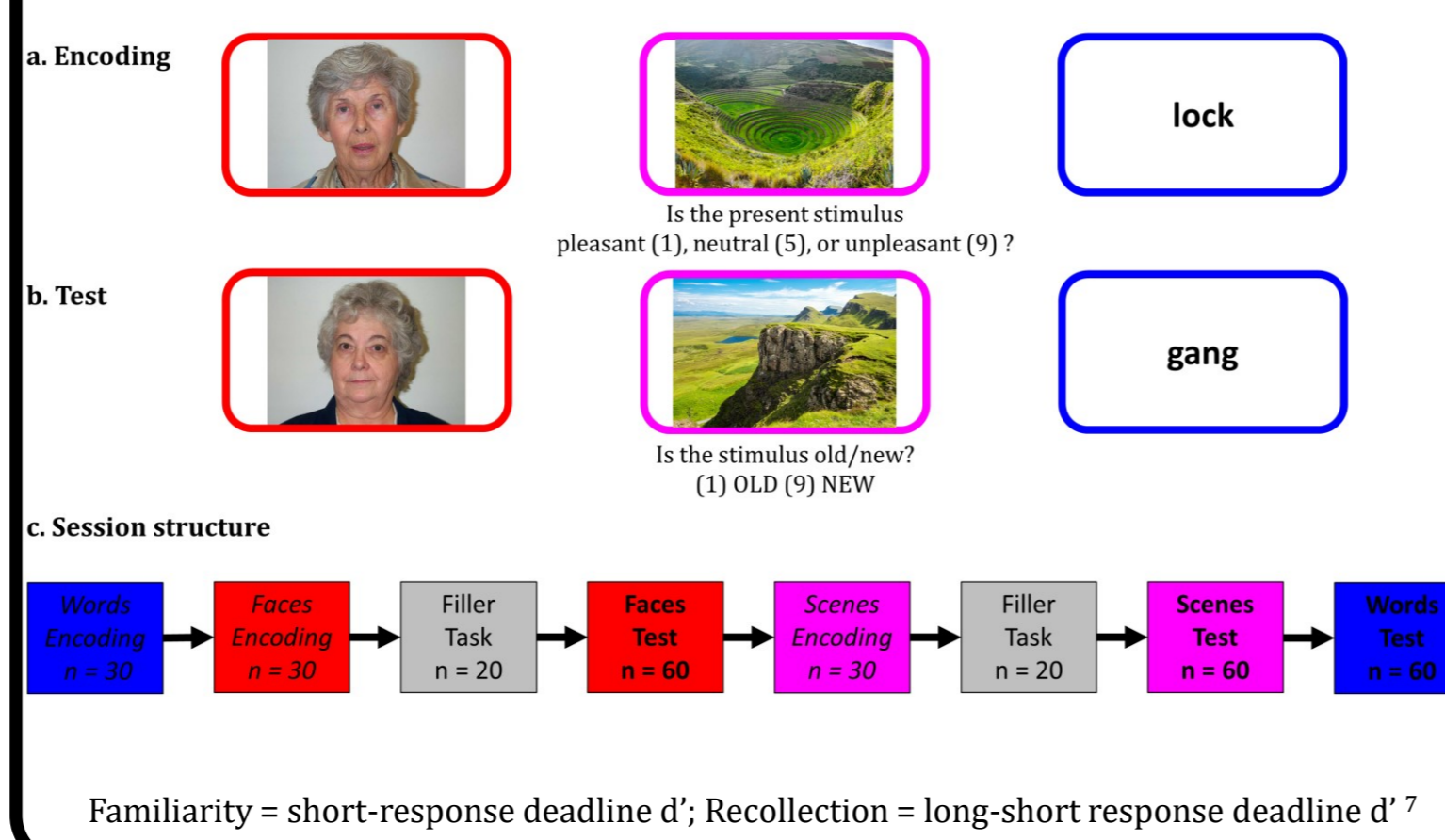
Behavioural Paradigms

- 3 visual recognition paradigms dissociating recollection vs. familiarity

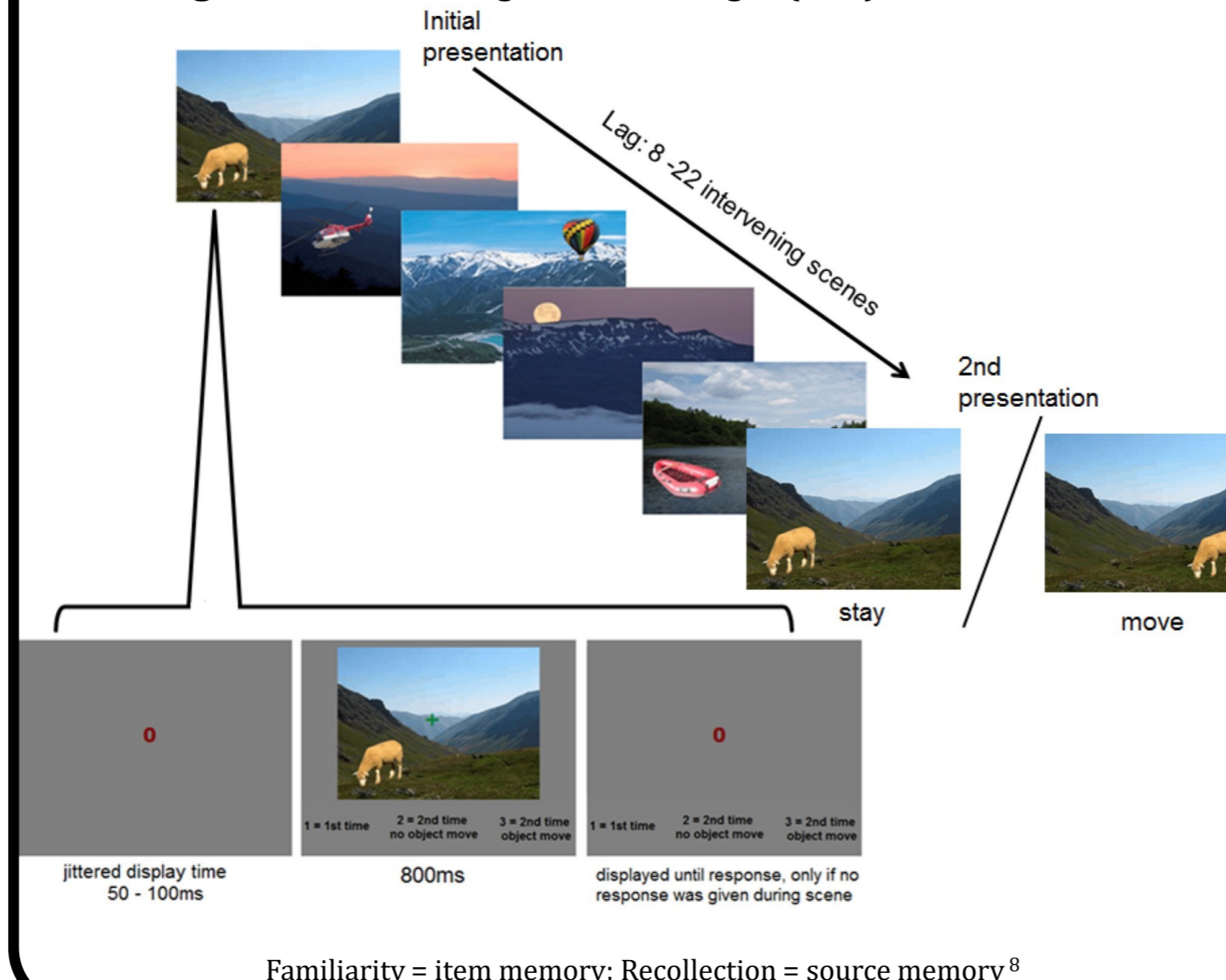
Paradigm 1: receiver-operating characteristics (ROC)⁴



Paradigm 2: Response Deadline Paradigm (RDP)⁷

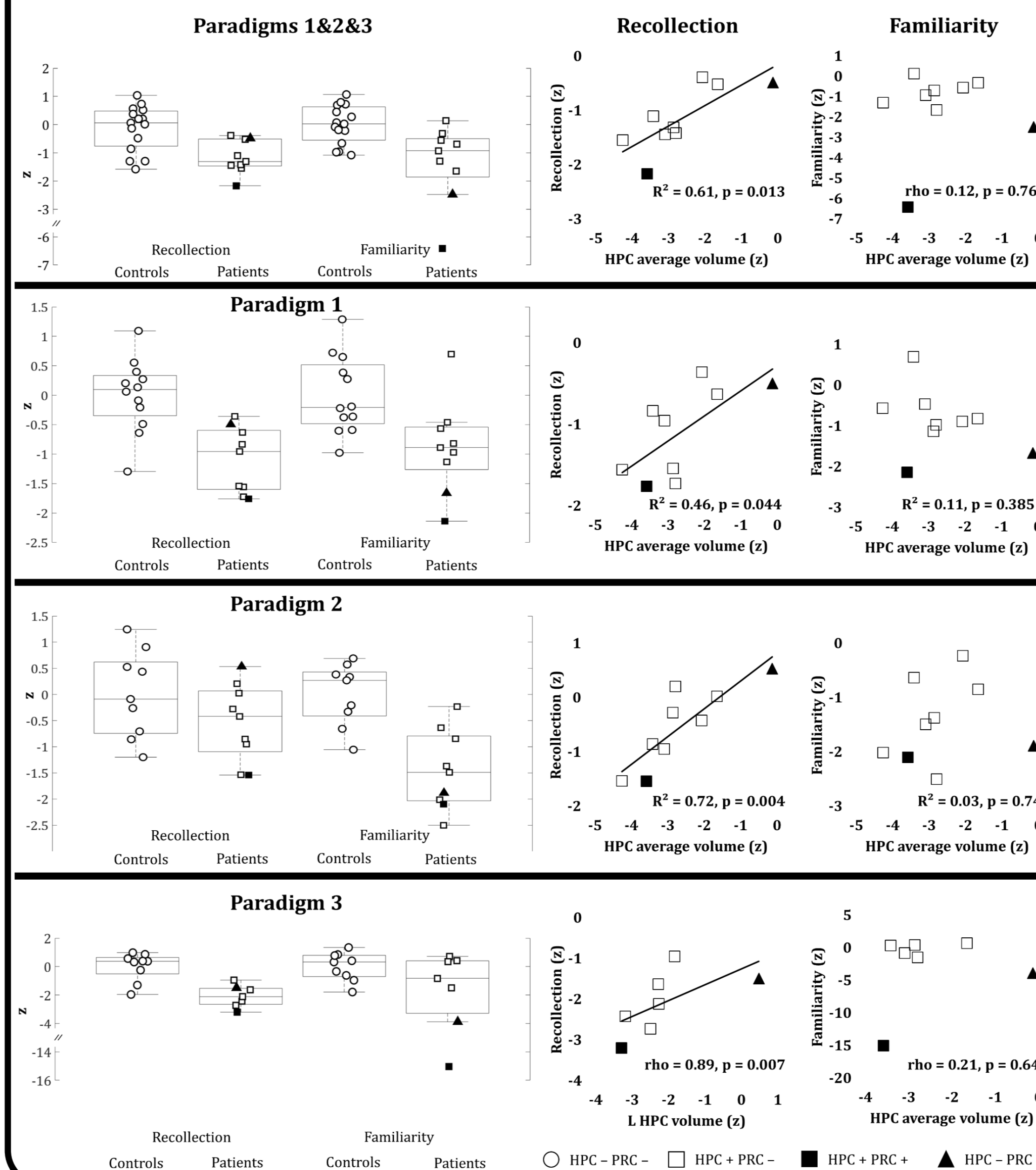


Paradigm 3: Source Recognition Paradigm (SRP)⁸



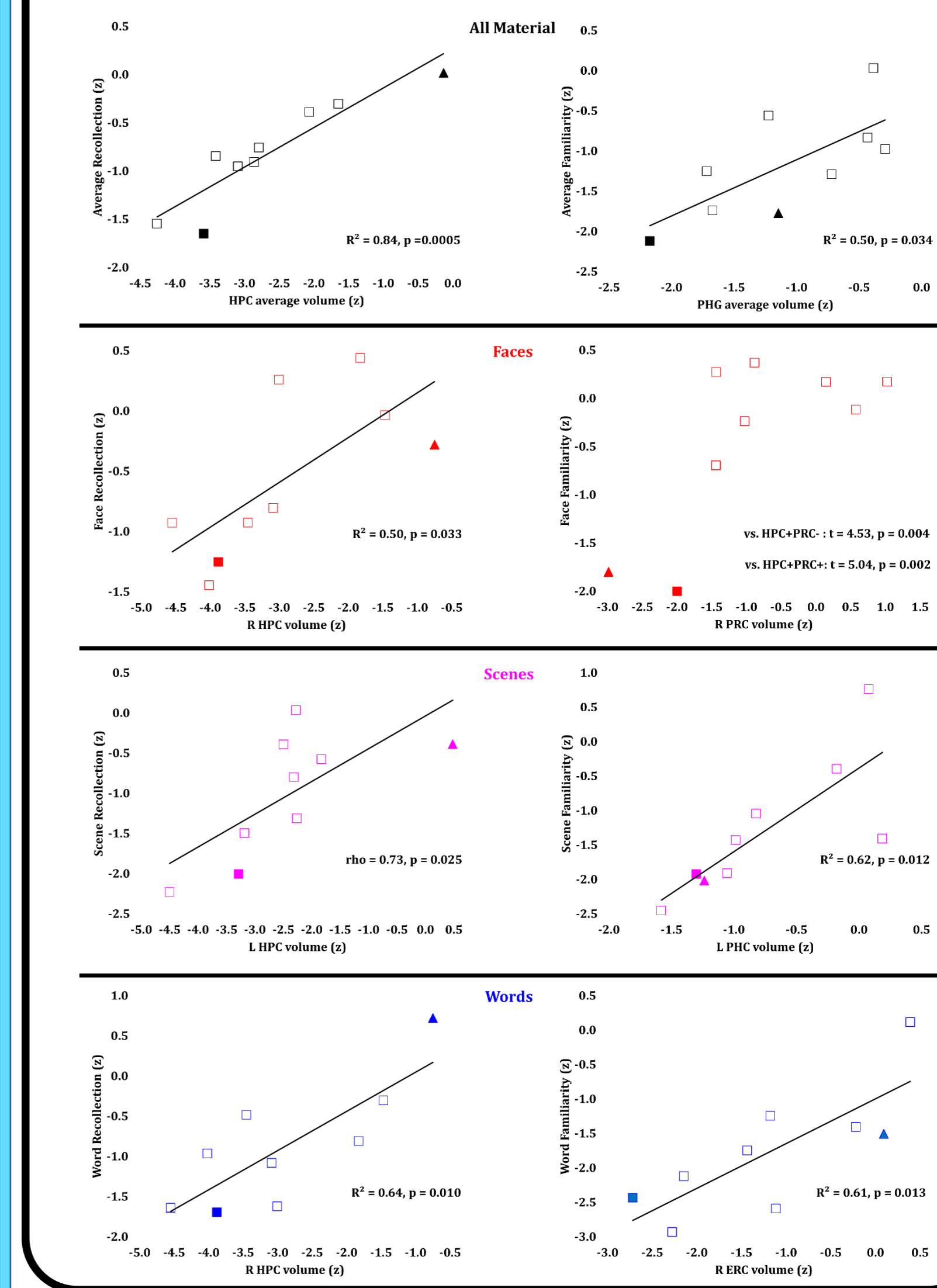
Results (Collapsing across material types)

- **HPC-PRC+ & HPC+PRC+**: impaired familiarity; but **HPC+PRC+**: also impaired recollection.
- Recollection, but not familiarity, was a function of HPC volume across patients



Results (Collapsing across Paradigms 1 & 2)

- **HPC-PRC+ & HPC+PRC+**: impaired face familiarity
- Scene familiarity: function of PHC volume
- Word familiarity: function of ERC volume
- Face/Scene/Word recollection: function of HPC volume



Conclusions

- Double dissociation provides strong evidence for dual process models of recognition memory⁹
- Findings go further by supporting material-specific models
 - recollection always depends on HPC: requires binding all material to context representations¹⁰
 - familiarity depends on distinct parahippocampal structures as a function of material type: consistent with differential PRC and PHC connectivity with ventral and dorsal visual processing streams.¹¹

References

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Acknowledgments

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