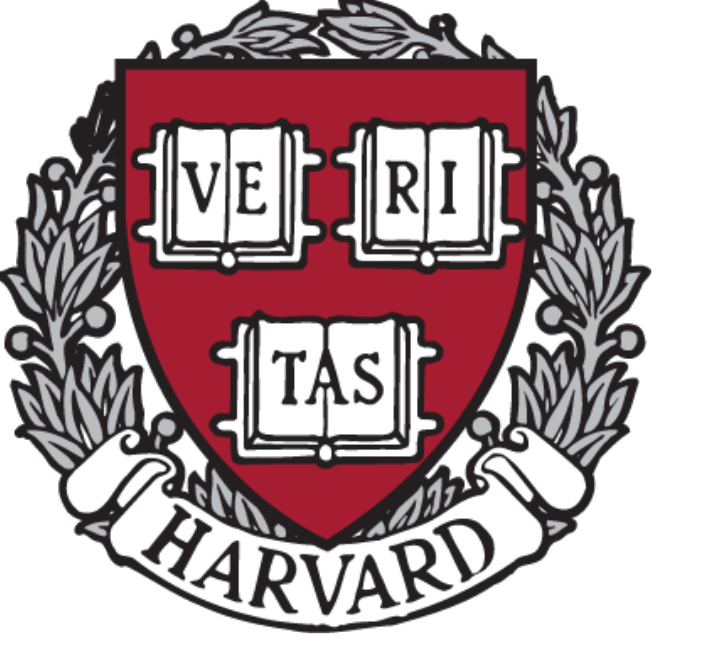


Neural mechanisms underlying the income-achievement gap: the role of the ventral visual stream



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BACKGROUND

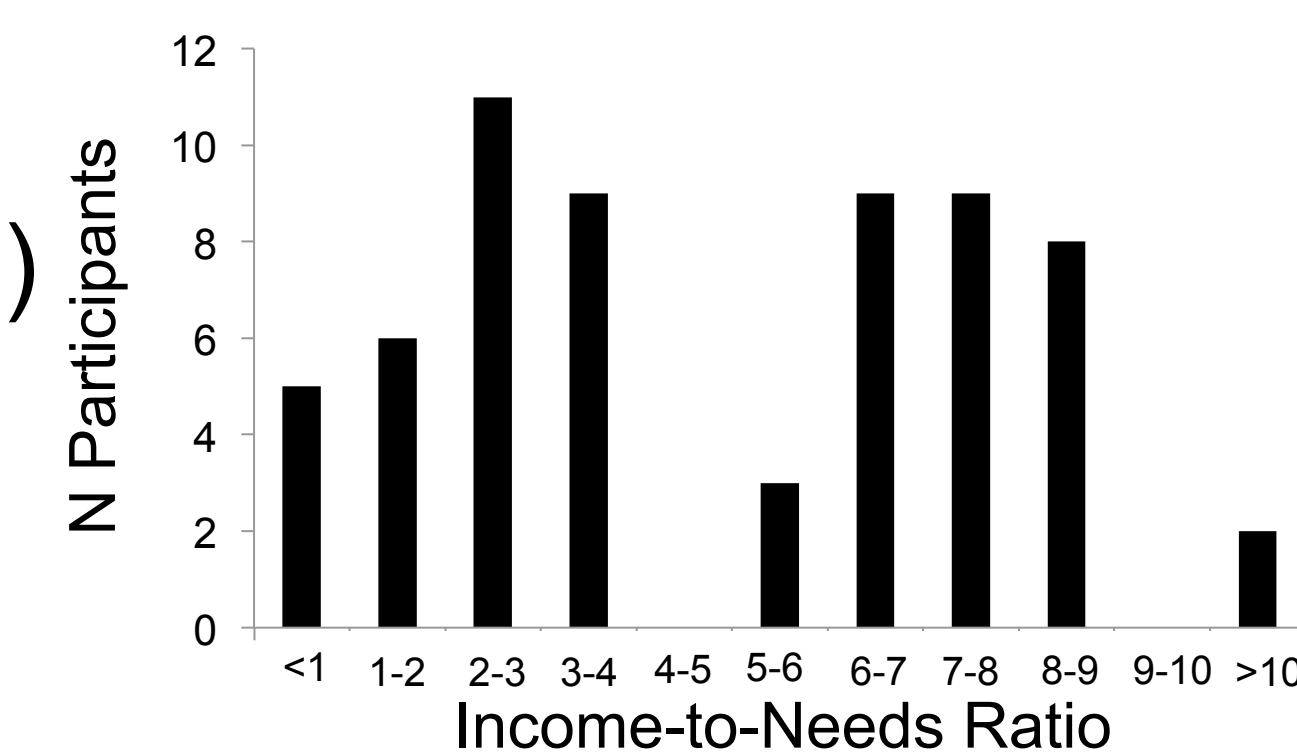
- Childhood socioeconomic status (SES) is associated with differences in both brain structure and function and that these differences may contribute to the income-achievement gap.¹⁻⁴
- Research on SES and neurodevelopment has focused largely on the neural networks that support these complex cognitive functions
- Many studies have also found SES-related differences in the structure and function of the ventral visual stream¹⁻⁵ (VVS)—a set of brain regions involved in processing visual stimuli
- We recently proposed that development of the VVS may be influenced by environmental experiences common among children from low-SES families⁶
- These functional differences in VVS may contribute to SES-related differences in cognitive and academic abilities⁶

PRESENT STUDY

- We hypothesized that SES-related differences in VVS recruitment during attention would contribute to the SES-achievement gap.
- We used a task that requires coordination between visual processing and top-down control: cued attention—the ability to use an external visual cue to direct attention to a specific location in the environment

SAMPLE

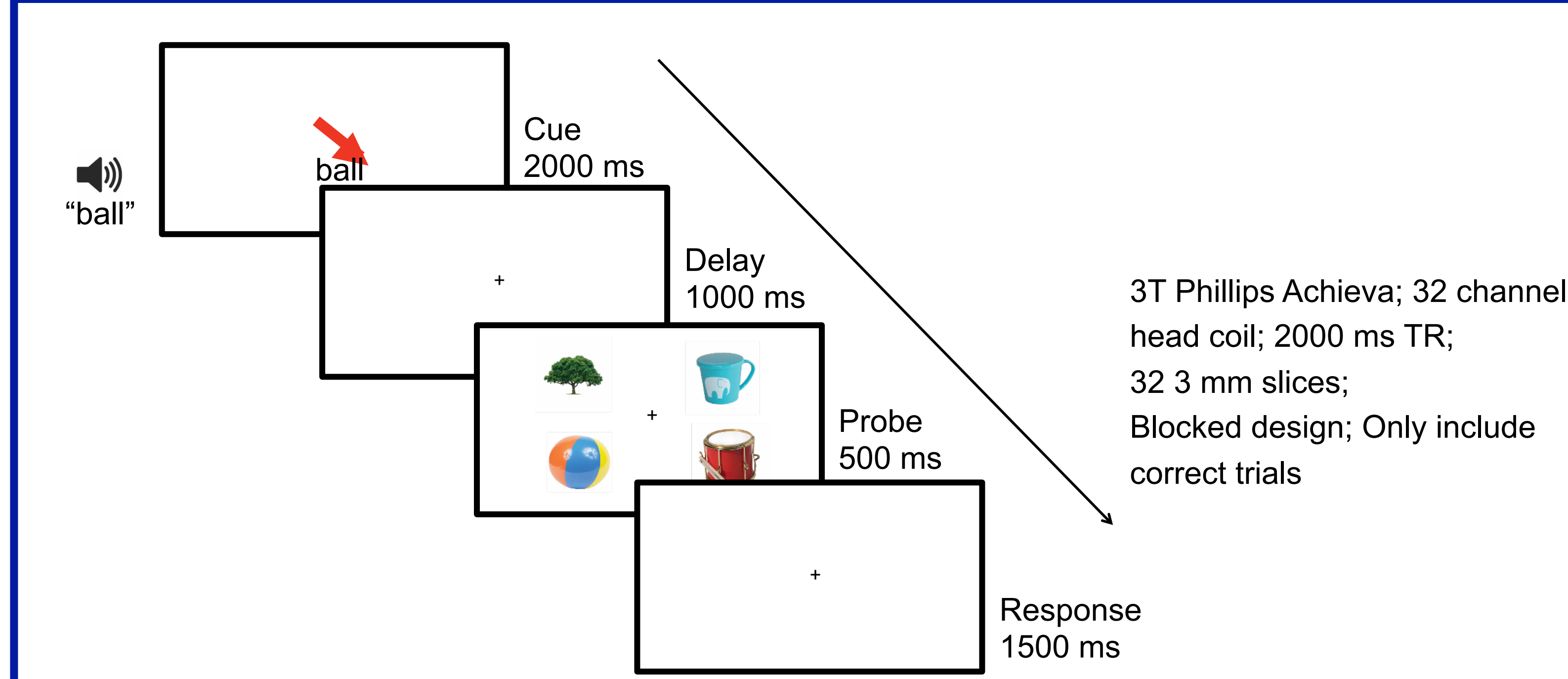
- 62 children aged 72 – 96 months (Mean = 84.5, SD = 4.5, 31 female)
- SES was assessed using log income-to-needs ratio
- Control for age, sex, and violence



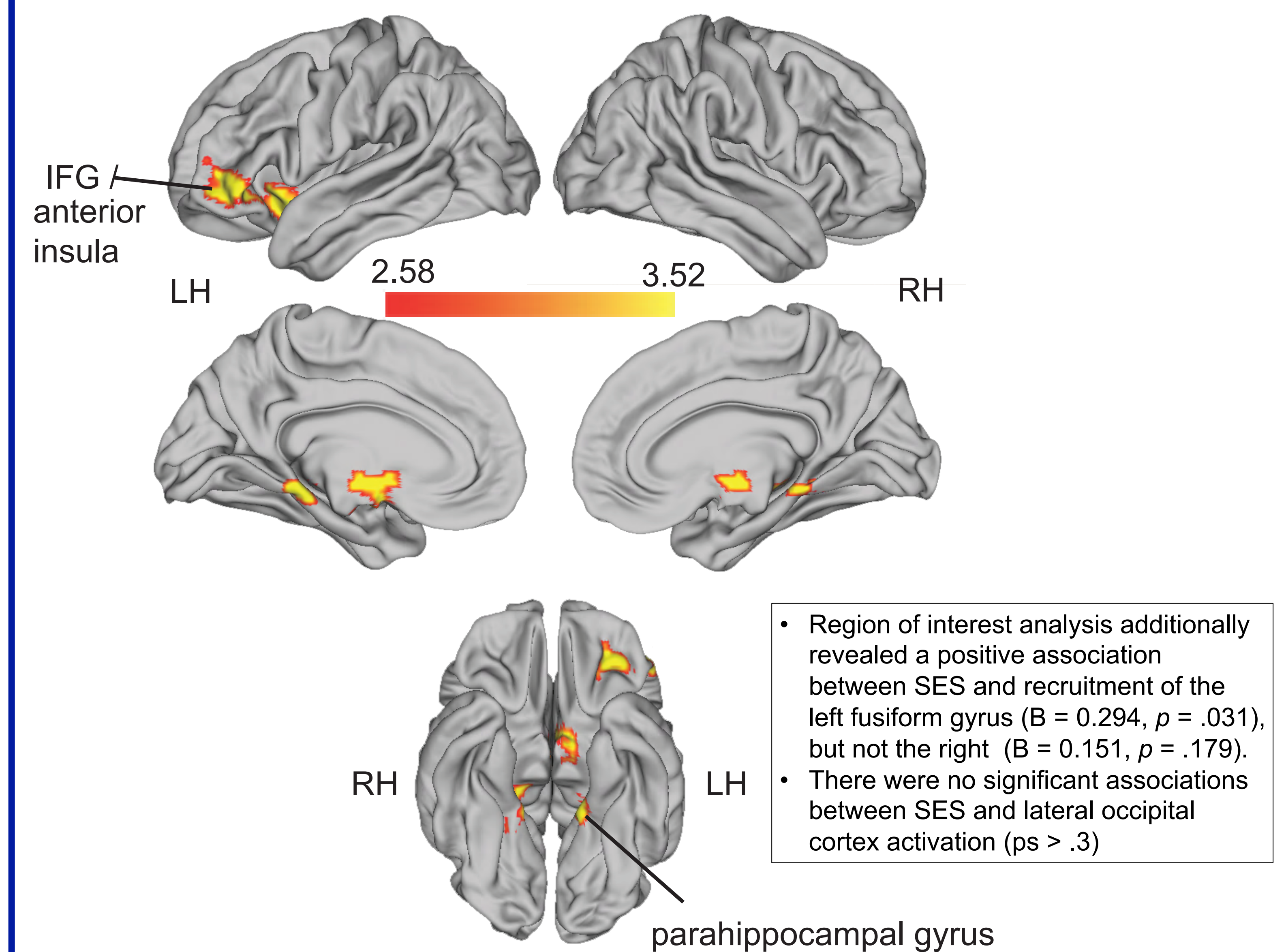
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CUED ATTENTION TASK AND PARAMETERS



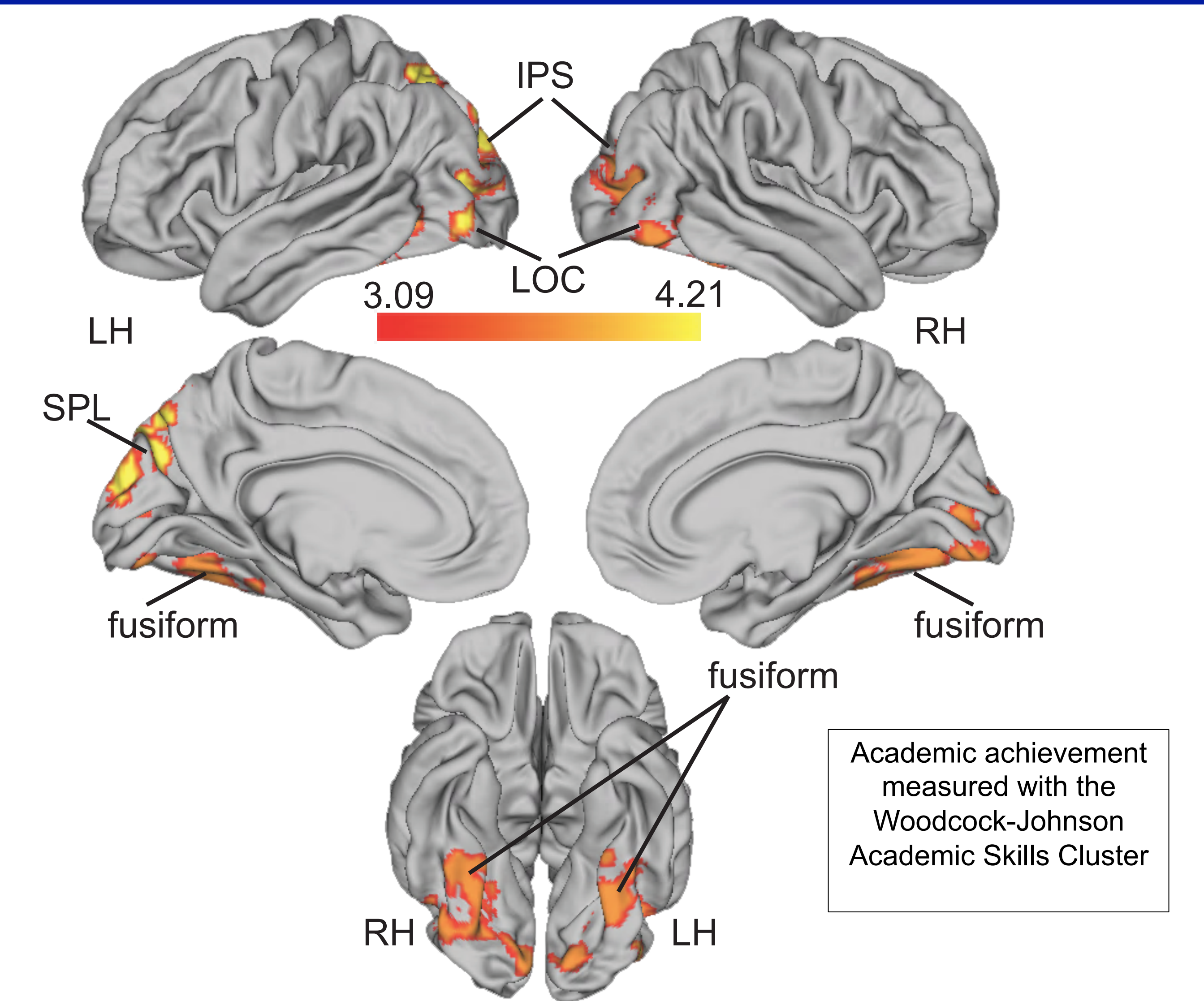
POSITIVE ASSOCIATIONS BETWEEN SES AND ACTIVATION DURING CUED ATTENTION



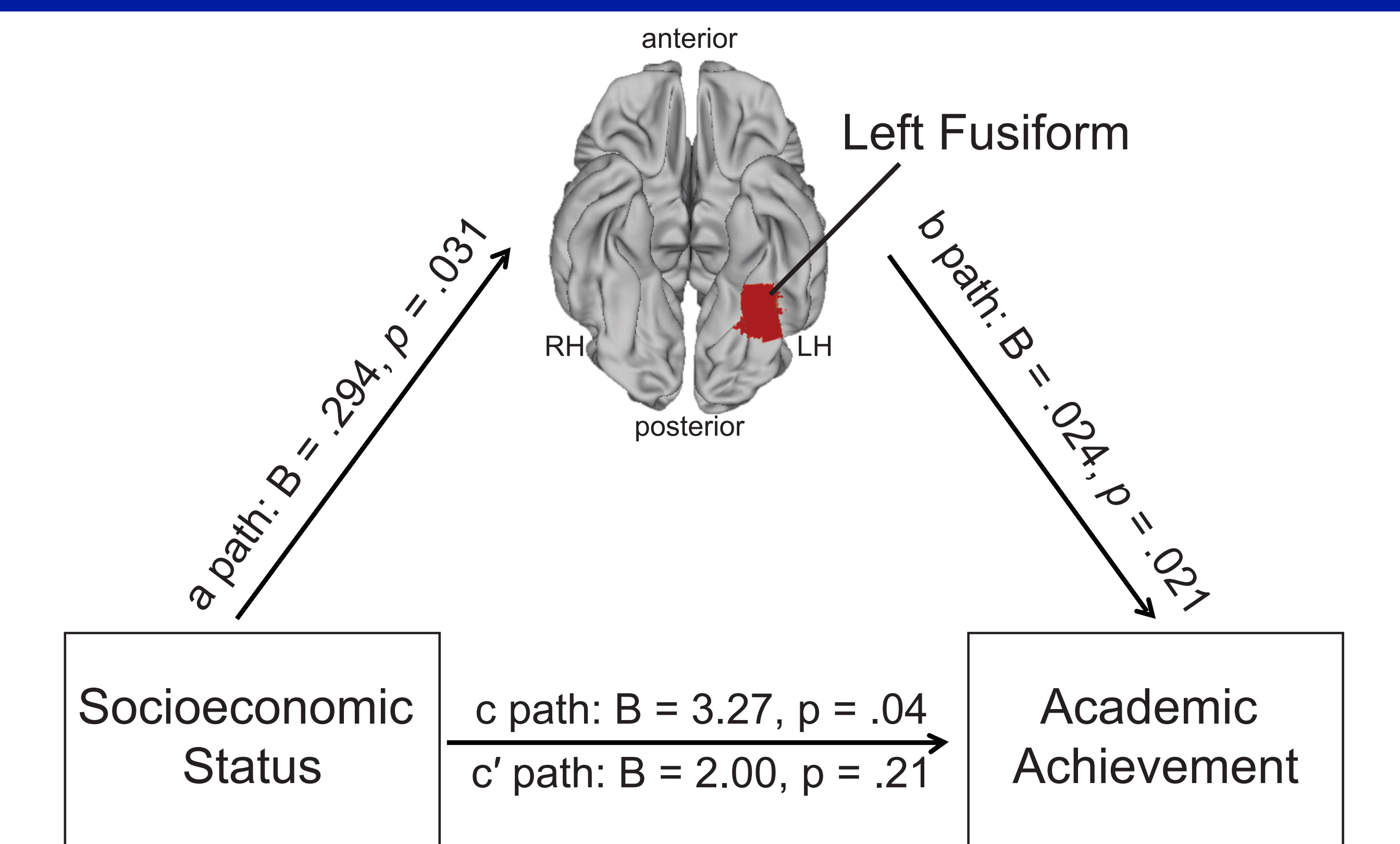
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VVS RECRUITMENT IS ASSOCIATED WITH HIGHER ACADEMIC ACHIEVEMENT



VVS RECRUITMENT MEDIATES SES-RELATED DIFFERENCES IN ACHIEVEMENT



CONCLUSIONS

These findings extend previous work by highlighting that (i) early-developing visual processing regions play an important role in supporting complex attentional processes, (ii) the development of these regions is influenced by SES (iii) individual differences in VVS function may be an additional neural mechanism in the income-achievement gap.