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Spatial awareness is a function of the temporal not the posterior parietal lobe

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Abstract



Our current understanding of spatial behaviour and parietal lobe function is largely based on the belief that spatial neglect in humans (a lack of awareness of space on the side of the body contralateral to a brain injury) is typically associated with lesions of the posterior parietal lobe. However, in monkeys, this disorder is observed after lesions of the superior temporal cortex¹, a puzzling discrepancy between the species. Here we show that, contrary to

the widely accepted view, the superior temporal cortex is the neural substrate of spatial neglect in humans, as it is in monkeys. Unlike the monkey brain, spatial awareness in humans is a function largely confined to the right superior temporal cortex, a location topographically reminiscent of that for language on the left². Hence, the decisive phylogenetic transition from monkey to human brain seems to be a restriction of a formerly bilateral function to the right side, rather than a shift from the temporal to the parietal lobe. One may speculate that this lateralization of spatial awareness parallels the emergence of an elaborate representation for language on the left side.

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