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Cortical contributions to cognitive control of language and beyond: evidence from functional connectivity profiles of the inferior parietal cortex and cognitive control-related resting state networks

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STELLINGEN

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Cortical contributions to cognitive control of language and beyond: evidence from functional connectivity profiles of the inferior parietal cortex and cognitive control-related resting state networks

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aan de Universiteit Leiden door

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1. Primary somatosensory cortex has a dual function in cognitive control of language, with the left and the right parts of this cortical area having different connectivity patterns.
2. The connectivity profiles of the clusters of the inferior parietal cortex (IPC) elucidate that it is only the rostral cluster of this brain area that is involved in cognitive control.
3. The rostral IPC adopts asymmetrical patterns of functional connectivity when cognitive demand is concerned.
4. The middle and the caudal IPC demonstrate negative functional associations with the precuneus cortex and cortical areas involved in general cognitive functions and executive functions, proportional to cognitive demand.
5. The traditional categorization of different brain areas into either task-related or related to the resting-state functionality of the brain cannot accommodate the functions of the middle and the caudal IPC.
6. The unique connectivity profiles of the middle and the caudal IPC have highlighted another brain functional category, beyond the classic definitions, as modulating cortical areas.
7. The more difficult the task is, the more negative functional associations of modulating cortical areas with other parts of the brain would be observed, while their connectivity patterns in some other respects do not correspond to the resting state-related parts of the cortex.
8. No matter to what extent some research ideas have been consolidated in the literature and no matter for how long they have existed; none of these would guarantee the correctness of the ideas that are thought to be true.
9. The contradictory research reports, especially when they have existed in the literature for years, are the best indications of an inherent flaw which has not received enough attention.
10. Willpower, determination, astuteness, analytical skills, ongoing development of knowledge, and having multidisciplinary research perspectives are among the best attributes a researcher can be equipped with.