Towards a unified, computationally-implemented neural network for understanding semantic cognition and its disorders.

https://www.neurodegenerationresearch.eu/survey/towards-a-unified-computationally-implemented-neural-network-for-understanding-semantic-cognition-and-its-disorders/

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Country

United Kingdom

Title of project or programme

Towards a unified, computationally-implemented neural network for understanding semantic cognition and its disorders.

Source of funding information

MRC

Total sum awarded (Euro)

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01/04/2012

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5.0

The project/programme is most relevant to:

Neurodegenerative disease in general

Keywords
Research Abstract

Semantic memory refers to the rich database of knowledge we have about the meanings of words, objects, people and all the stimuli present in our environment. This information is crucial for both verbal and nonverbal activities, and so when it disintegrates or becomes inaccessible, patients become significantly disabled. Semantic impairment is a feature in many different types of neurodegenerative and chronic brain disease including semantic dementia, Alzheimer's disease, stroke and herpes simplex encephalitis. For some of these, semantic impairment is central to diagnosis (e.g., semantic dementia) whilst for others it can be a common feature (e.g., we found that around 1/3 stroke aphasic patients have measurable semantic impairment when assessed with suitable materials). The core aims of our continuing research programme, therefore, are (a) to implement a neuroanatomically-constrained, computational model of semantic processing; (b) to catalogue and investigate all types of patient with semantic impairment; (c) to mimic and test key hypotheses about the nature and neural basis of semantic processing via transcranial magnetic stimulation studies; (d) to use functional MRI and MR tractography to map the core semantic regions and their connectivity (both structural and functional); and (e) to amalgamate this rich empirical database through the new 'neurocomputational' model in order to understand the causes of the patients' different impairments. These steps will be used to improve: detection of semantic deficits; differential diagnosis; clinical management; and evidence-based interventions.

Lay Summary
Further information available at:

Types:
Investments > €500k

Member States:
United Kingdom

Diseases:
Neurodegenerative disease in general

Years:
2016

Database Categories:
N/A

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