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Functional anatomy and impact of cognitive training on chunking within working memory in early Alzheimer's disease

Submission date
10/12/2010

Recruitment status
No longer recruiting

Registration date
07/02/2011

Overall study status
Completed

Last Edited
24/10/2016

Condition category
Nervous System Diseases

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[X] Results
[ ] Individual participant data

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
Version 1 (13.7.10); G0901982

Study information

Scientific Title
Functional anatomy and impact of cognitive training on chunking within working memory in early Alzheimer's disease: a randomised controlled trial

Study objectives
1. Training individuals with early Alzheimer's disease (AD) in the use of chunking strategies will improve their working memory (WM) capacity
2. Use of chunking strategies in early AD will correlate with significantly increased activity in the prefrontal cortex (PFC) and posterior parietal cortex (PPC)
3. Following training in chunking, improvement in WM capacity will generalise across different modalities of WM tasks and measures of general cognitive functioning
4. Improvements in WM following cognitive training will be associated with structural and functional re-organisation of brain activity

Ethics approval required
Old ethics approval format

Ethics approval(s)
Cambridgeshire 1 Research Ethics Committee, 21/10/2010, ref: 10/H0304/68

Study design
Randomised controlled trial

Primary study design
Interventional

Study type(s)
Quality of life

Health condition(s) or problem(s) studied
Early Alzheimer's disease

Interventions
Subjects will be randomly allocated to either a cognitive training group or control group. The cognitive training group will undergo 18 days of training over 6 weeks for approximately 45 minutes/day. Each training session will consist of 30 trials of structured span tasks. The length of span will be adjusted after each trial depending on whether it is correctly recalled. Each subject will therefore be continually tested at their span limit, which can adjust both within and across sessions. The control group will perform 30 trials of a 2 span unstructured task over the same time period. After 6 weeks of training, subjects will be reassessed using the baseline battery of tasks, and re-imaged with functional magnetic resonance imaging (fMRI) performing the same verbal chunking task protocol.

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
1. Scores on verbal working memory task
2. Cerebral blood flow in the prefrontal and parietal cortices as measured using fMRI
Measured at baseline and after 8 weeks (following the 6 week cognitive training intervention).

Key secondary outcome(s))

Scores on:
1. Spatial working memory task
2. Sustained attention, reasoning and episodic memory tasks
3. Artificial grammar task
4. Instrumental activities of daily living (ADL) task
Measured at baseline and after 8 weeks (following the 6 week cognitive training intervention).

Completion date
05/08/2014

Eligibility

Key inclusion criteria
1. Aged greater than 60 years, either sex
2. Diagnosis of probable Alzheimer's disease according to National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA) criteria
3. Mini-Mental State Examination (MMSE) score greater than 23/30
4. All subjects will be required to provide informed consent to participate in the study

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Senior

Sex
All

Key exclusion criteria
1. Co-existent neurological or psychiatric disease
2. Substance misuse
3. Significant auditory or visual impairment

Date of first enrolment
20/12/2010

Date of final enrolment
05/08/2014

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Institute of Psychiatry
London
United Kingdom
SE5 8AZ

Sponsor information

Organisation
Institute of Psychiatry (UK)

ROR
https://ror.org/0220mzb33

Funder(s)

Funder type
Research council

Funder Name
Medical Research Council (MRC) (UK) (ref: G0901982/ ID 93849)

Alternative Name(s)
Medical Research Council (United Kingdom), UK Medical Research Council, MRC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/01/2017		Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes