

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

<b>Submission date</b> 10/12/2010	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
<b>Registration date</b> 07/02/2011	<b>Overall study status</b> Completed	<input type="checkbox"/> Protocol
<b>Last Edited</b> 24/10/2016	<b>Condition category</b> Nervous System Diseases	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
		<input type="checkbox"/> Individual participant data

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Scientific

**Contact name**  
Dr Jonathan Huntley

**Contact details**  
Institute of Psychiatry  
De Crespigny Park  
London  
United Kingdom  
SE5 8AZ

## 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, Medical Research Committee and Advisory 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?
<a href="#">Results article</a>	results	01/01/2017		Yes	No