Perturbing associative memories in early visual cortex

Published: 04-11-2014 Last updated: 22-04-2024

We aim to investigate whether reinstatement of cortical representations are necessary for successful memory retrieval.

Ethical review	Approved WMO	
Status	Pending	
Health condition type	Other condition	
Study type	Interventional	

Summary

ID

NL-OMON41116

Source ToetsingOnline

Brief title Perturbing memories

Condition

• Other condition

Synonym not applicable

Health condition

not applicable

Research involving Human

Sponsors and support

Primary sponsor: Radboud Universiteit Nijmegen Source(s) of monetary or material Support: ERC-StG RECONTEXT 261177

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Intervention

Keyword: Associative memory, Transcranial magnetic stimulation (TMS), Visual cortex

Outcome measures

Primary outcome

Memory performance on the orientation matching task will be addressed as a function of stimulation condition: we expect that TMS to the hemisphere contralateral to the location of the retrieved stimulus impairs memory performance (as measured by adjustment error in degrees) compared to no contralateral TMS, while performance between no TMS and TMS ipsilateral to recall site does not differ.

Secondary outcome

Not applicable.

Study description

Background summary

The cortical reinstatement hypothesis posits that during retrieval of a stimulus, cortical regions that were involved in initial encoding of that stimulus reinstate their stimulus representation. In previous work, we have provided evidence for this hypothesis even at the lowest level of the visual hierarchy. However, this work was correlational in nature, and therefore cannot answer the question whether reinstatement is necessary for memory retrieval. Here we combine online TMS and a cued recall paradigm to test a possible causal role of mnemonic reinstatement for retrieval.

Study objective

We aim to investigate whether reinstatement of cortical representations are necessary for successful memory retrieval.

Study design

Experimental within-subject (cross-over) design with healthy volunteers.

Intervention

TMS will be applied to the early visual cortex while participants recall previously learnt associations. We expect TMS to impair associative recall, providing causal evidence for the necessity of cortical reinstatement for memory retrieval.

Study burden and risks

For the assessment of risks and burden associated with transcranial brain stimulation in this study please refer to paragraph 5.2 of the approved Standard Operating Procedure for Non-Invasive Brain Stimulation (v. 2.1., CMO No. 2013/245) at the Donders Institute for Brain, Cognition and Behaviour.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age

Adults (18-64 years) Elderly (65 years and older)

Inclusion criteria

Please refer to 'Donders Institute Standard Operating Procedure for Non-Invasive Brain Stimulation' - Document number SOP 2013/245 - Section 6.2, 'Screening' and Section 6.3, 'Exclusion Criteria'.

Exclusion criteria

Please refer to 'Donders Institute Standard Operating Procedure for Non-Invasive Brain Stimulation' - Document number SOP 2013/245 - Section 6.2, 'Screening' and Section 6.3, 'Exclusion Criteria'.

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL	
Recruitment status:	Pending
Start date (anticipated):	01-10-2014
Enrollment:	48
Туре:	Anticipated

Ethics review

Approved WMO Date:

04-11-2014

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Application type:
Review commission:

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

 Register
 ID

 CCMO
 NL50328.091.14

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