Spatial and temporal dynamics of emotional memory consolidation

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This study addresses the following three questions:1. How do fear memories change over time?2. How is the context of fear coded in the brain?3. How can the process of excessive strengthening of fear memory be disrupted

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Anxiety disorders and symptoms
Study type	Interventional

Summary

ID

NL-OMON40617

Source
ToetsingOnline

Brief title
Emotional memory

Condition

- Anxiety disorders and symptoms

Synonym
traumatic memory and pathological fear

Research involving
Human

Sponsors and support

Primary sponsor: Radboud Universiteit Nijmegen
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Consolidation, Emotion, Memory

Outcome measures

Primary outcome

Functional Magnetic Resonance Imaging (fMRI)

Behavioural measures (e.g. memory accuracy and response bias)

Secondary outcome

Salivary levels of cortisol and alpha-amylase

Psychophysiological recordings (pupil dilation, respiration, heart rate, skin

conductance, blood pressure)

Study description

Background summary

Evolution has equipped the human brain with a highly adaptive and plastic defense system. We rapidly acquire fears for cues that are associated with threat, and such memories are both flexible and enduring. While this system is undoubtedly critical for survival, fear memories sometimes culminate in pathological fear. This occurs particularly when fear memories are overly strengthened and come to be expressed in situations that do not pose a real threat anymore. While the acquisition of fear memories has been studied in considerable detail, the neural mechanisms that underlie consolidation and generalization of fear memories over time remain poorly understood.

Study objective

This study addresses the following three questions:
1. How do fear memories change over time?
2. How is the context of fear coded in the brain?
3. How can the process of excessive strengthening of fear memory be disrupted

Study design

Participants will be tested in mixed (study arm 1) and a within group (study

arm 2 and 3) designs.

Intervention

In study arm 1, half of the subjects will undergo a stress induction protocol involving highly aversive cinematographic material and (threat of) mild electrical stimulation to the fingers.

In the study arm 2 and 3 subjects will receive mild electrical stimulation to the fingers.

Study burden and risks

All procedures in this protocol are well established, and highly tolerable. Based on extensive previous experience with these procedures (see e.g. CMO 2007-028 (Stress and brain function), CMO 2008-357 (Neural circuits of fear and anxiety), CMO 2010-257 (Norepinephrine and Extinction), CMO 2010-015 (Gene-environment interactions in the brain), and CMO 2011-382 (Memory & the MR)), the risk associated with participation can be considered negligible and the burden can be considered minimal. No pharmacological or otherwise invasive interventions are applied.

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

•Healthy volunteers between 18 and 45 years of age (balanced for gender)
•Predominant right-handedness.

Exclusion criteria

• Abnormal hearing or (uncorrected) vision.
• Average use of more than 3 alcoholic beverages daily.
• Average use of psychotropic medication or recreational drugs weekly or more.
• Habitual smoking, i.e. more than a package of cigarettes per week and a self-reported inability or unease to cease smoking for 24 hours prior to testing.
• Use of psychotropic medication, or of recreational drugs over a period of 72 hours prior to each test session, and use of alcohol within the last 24 hours before each measurement.
• Regular use of corticosteroids.
• Metal objects in or around the body (braces, pacemaker, metal fragments, hearing devices).
• History of psychiatric treatment or current psychiatric treatment.
• History of neurological treatment or current neurological treatment.
• History of endocrine treatment or current endocrine treatment.
• History of autonomic failure (e.g., vasovagal reflex syncope).
• Current parodontitis (only in study arm 1).
• Claustrophobia.
• Intense daily physical exercise.
• Irregular sleep/wake rhythm (e.g., regular nightshifts or cross timeline travel).
• BDI score higher than 13.

Study design

Design

Study type:	Interventional
Intervention model:	Other

Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	23-06-2014
Enrollment:	96
Type:	Actual

Ethics review

Approved WMO Date:	09-04-2014
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)
Approved WMO Date:	05-06-2014
Application type:	Amendment
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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	NL47168.091.14