Reward and the brain of healthy young adults and healthy older adults.

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The present study aims to identify processes underlying feedback related updating of stimulus-reward associations.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Observational non invasive

Summary

ID

NL-OMON43745

Source
ToetsingOnline

Brief title
Reward and the brain

Condition

- Other condition

Synonym
n.a.

Health condition

geen

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: decision making, fMRI, gambling, learning

Outcome measures

Primary outcome

The main study parameters are: the choices participants make on each trial, the switching behaviour of the participants (sequential choices) and the brain activity corresponding to those. The outcome of the study (endpoints) will consist of: the neural mechanisms associated stimulus-reward association updating; a description of the age-related differences in those mechanisms.

Secondary outcome

n.a.

Study description

Background summary

To perform optimally in daily life we use knowledge about success and failure in the past. This knowledge is continuously updated based on the feedback we receive from our environment. Based on this feedback we learn which behaviour in response to stimuli or events was successful or rewarding and which behaviour was not, that is, we learn to associate certain stimuli or events with rewards. These stimulus-reward associations will subsequently influence future behaviour. For instance, previous studies examined neural responses to symbols that had a higher probability of reward (i.e. probability for losing or gaining money). However, these studies did not look at how the learning of stimulus-specific reward associations was implemented on a neural level and how these stimulus-reward associations would be updated. In the present study we aim to identify those neural underpinnings of learning and updating of stimulus-reward associations.

Study objective

The present study aims to identify processes underlying feedback related

updating of stimulus-reward associations.

Study design

The study will combine behavioural and event*related fMRI measures. While in the scanner, participants will place a bet on either a face or a house. In a block of 20 trials either the face or the house has a higher probability of gaining money. To maximize their earnings, the participants has to learn which one has a higher probability of losing or gaining money. After 20 trials the probability is shuffled and the learning process starts over until a total of 24 blocks is completed. Behaviourally, we can track the learning progress within each block, additionally we can map when participants decide to switch from betting on houses to faces or vice versa (e.g., choice sequence: house, house, house, face). The design is double blind; neither the participants nor researcher knows which stimulus is associated with a higher probability of gaining or losing money. Participants will be fully informed about the nature and parameters of the study and paradigm before the experimental session.

Study burden and risks

In the MRI-scanner participants will be exposed to a field-strenght of 3 Tesla and scanner noise. Thus far there is no evidence to suggest that exposing humand to a magentic field of this strength has a negative influence on health. With regard to the noise earplugs and headphones will be provided. Subjects will not benefit directly from participating in the study, however the data collected during this study will enhance understanding of the neural basis of learning by young and elderly individuals.

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, younger and older Caucasian adults, males and females;
Between18-30 and 60-75 year old;
Right-handed;
Normal (or corrected to normal) vision;
Normal BMI (18-25 kg/m2);
fMRI compatible.

Exclusion criteria

Not matching any of the inclusion criteria, as well matching any criterion in the fMRI exclusion list, including, but not limited to, claustrophobia, infarctions, epilepsy or family history of epilepsy, presence of metal inside the body, presence of electric/electronic devices inside the body (pacemakers, etc.), presence of intracardial lines, users of non-removable dentures.
Psychoactive medication, including antidepressants, anxiolytic, and anti-epileptic drugs, as well as cannabis, XTC or other recreational drugs, (suspected) Pregnancy, intra-utrine device with metal

Study design

Design

Study type: Observational non invasive

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	25-07-2016
Enrollment:	48
Type:	Actual

Ethics review

Approved WMO

Date:	08-06-2016
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

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	NL54116.042.16