

The effect of cognitive load on neural responses to sweet and sour tastes

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

Summary

ID

NL-OMON49118

Source

ToetsingOnline

Brief title

TASTE-II

Condition

- Other condition

Synonym

healthy participants are included to examine taste processing

Health condition

normaal functioneren van smaakverwerking in de hersenen

Research involving

Human

Sponsors and support

Primary sponsor: Universiteit Leiden

Source(s) of monetary or material Support: NWO;ORA subsidie

Intervention

Keyword: Cognitive load, fMRI, Taste processing

Outcome measures

Primary outcome

Neural activation as measured by fMRI and perceived taste intensity and hedonic value in response to tasting sweet and sour solutions under high and low cognitive load.

Secondary outcome

Performance on the Stroop task (to measure attentional control), BMI, responses on the mobile Approach-Avoidance task (AAT) to measure food approach motivation

Study description

Background summary

People pay less and less attention to their meals, often engaging in other activities simultaneously. Since mental capacity is limited, this leaves less room for processing of sensory information such as taste. In this ongoing research program, we test the hypothesis that mental load, induced by concurrent tasks or concerns, interferes with reward processing from consumption. Because people strive to obtain pleasure from the goods they consume, they may overconsume to up-regulate hedonic value. Overconsumption is the main driver of overweight and obesity.

Study objective

The present fMRI study aims to investigate the effect of cognitive load on the neural processing of sweet and sour tastes. In particular, the aim is to disentangle the effects of cognitive load on the perceived intensity and hedonic value of taste stimuli. Furthermore, we aim to examine individual

differences of this effect related to BMI and attentional control capacity and explore how these differences relate to real life food motivations.

Study design

Observational study consisting of one lab visit including an fMRI session and a five-day follow-up by means of short questions and tasks on a mobile app.

Study burden and risks

This type of paradigm poses no significant risk. Participants will have a 70-min MRI scan during which they will perform a taste task. Functional MRI is a commonly used technique which is considered to be safe when following standard neuroimaging regulations. Additionally, measurements will be done to assess relevant subject characteristics. In summary, the risk associated with participation is assessed as low and the burden as minimal.

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 (self-reported)
- Right-handed
- Between 18 and 45 years old.
- Having given their written informed consent
- BMI between 18.5-30 kg/m²

Exclusion criteria

- Having a history of or current alcohol consumption > 28 units per week
- Daily smoking
- Suffering from cold symptoms
- Having a history of medical or surgical events that may significantly affect the study outcome, such as metabolic or endocrine disease, or any gastro-intestinal disorder
- Mental or physical status that is incompatible with the proper conduct of the study
- Not having a general practitioner
- Participation in any other clinical trial during this study.
- Common MRI exclusion criteria, including
 - o Claustrophobia
 - o Presence of metal in body incompatible with MRI scanning
 - o Pacemaker
 - o Being pregnant.

Study design

Design

Study type: Observational non invasive

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Basic science

Recruitment

NL
Recruitment status: Recruitment stopped
Start date (anticipated): 07-03-2021
Enrollment: 70
Type: Actual

Ethics review

Approved WMO
Date: 15-05-2020
Application type: First submission
Review commission: METC Leiden-Den Haag-Delft (Leiden)
metc-ldd@lumc.nl

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	NL72215.058.19

Study results

Date completed: 17-09-2021

Actual enrolment: 64