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

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON25701

Source
Nationaal Trial Register

Brief title
TASTE-II

Health condition

Obesity, Diabetes Mellitus

Sponsors and support

Primary sponsor: Leiden University
Source(s) of monetary or material Support: NWO

Intervention

Outcome measures

Primary outcome

1. Neural activation in response to tasting sweet and sour solutions under high and low cognitive load measured with fMRI on time point 1 (study day)
2. Taste intensity and hedonic value ratings of the sweet and sour solutions under high and low cognitive load measured with 5-point Likert scale on time point 1

Secondary outcome

1. Performance on the Stroop task (to measure attentional control) measured at time point 1
2. BMI measured at time point 1
3. Responses on the mobile Approach-Avoidance task (AAT) measured on the five days following the study day on time point 1

Study description

Background summary

Rationale:
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.

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 population:
The study will include 60 (+10 pilot participants) healthy male and female volunteers in equal gender proportions, between the age of 18 and 45 years old.

Main study parameters/endpoints:
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.

Study objective

-Cognitive load will negatively impact taste intensity perception and related brain activation
-Cognitive load will not impact hedonic value and related brain activation

Study design

1

Contacts

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Eligibility criteria

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
Intervention model:	Other
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	07-03-2021
Enrollment:	60
Type:	Anticipated

IPD sharing statement

Plan to share IPD: Yes

Ethics review

Positive opinion

Date:	05-03-2021
Application type:	First submission

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
NTR-new	NL9327
Other	METC Leiden-Den Haag-Delft : P19.112

Study results