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Investigating the impact of a health game targeting impulse control towards food and eating behaviour of young adults

Submission date
18/05/2017

Recruitment status
No longer recruiting

Registration date
28/06/2017

Overall study status
Completed

Last Edited
26/06/2017

Condition category
Nutritional, Metabolic, Endocrine

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
The global prevalence of being overweight or obese has reached an all-time high. Generally, the diet leading to obesity consists of too many energy-dense products (such as junk food or food that is high in sugar and low in nutrients) and too few fruits and vegetables. Eating very little fruits and vegetables is associated with health risks such as cardiovascular (heart) disease. Increasing the amount of fruits and vegetables eaten in a diet might be helpful, especially when energy-dense products are replaced by fruit and vegetables. The goal of this study is to investigate whether a newly-developed videogame can be used to positively affect eating behavior. This study uses a health game employing the mechanism of a Go/No-Go (GNG) paradigm, targeting impulse inhibition towards food, which has been shown to induce more healthful behaviour to see if this can help improve diets. Suggested mechanisms for this effect are learning through modification of the stimulus-response association (in this case association with a stop signal) and an influence on implicit liking. The aim of this study is to evaluate the effectiveness of a health game based on a Go/No-Go (GNG) paradigm compared to a GNG control game and a double control game on (young) adults' impulse inhibition and eating behaviour.

Who can participate?
Adults aged 18 or older

What does the study involve?
Participants are randomly allocated to one of three conditions, but matched for gender. Their baseline impulse inhibition is assessed with a GNG task, after which they play a game for ten minutes. Those who are assigned to the first condition play a game that features food stimuli. Those who are assigned to the second condition play an identical game as the first group but the stimuli are soft and fluffy objects versus heavy and dense objects and does not include food. Those in the third condition play a card-sorting game that does not include a GNG principle nor food. After the game, impulse inhibition is assessed again. Participants then undergo a bogus taste test where they rate and compare two types of apples and two types of cookies.

What are the possible benefits and risks of participating?
The game is intended to train impulse inhibition to energy-dense food products to increase healthful eating behaviour. Even though the impulse inhibition effects of this game may be attenuated due to the second GNG measurement session, some (residual) inhibitory effects might still be present after conclusion of the study. Other than that, there are no notable benefits or risks with participating.

Where is the study run from?
Radboud University, Behavioural Science Institute (Netherlands)

When is the study starting and how long is it expected to run for?
November 2013 to December 2017

Who is funding the study?
Radboud University Behavioural Science Institute (Netherlands)

Who is the main contact?
Miss Eva Alblas

Contact information

Type(s)
Public

Contact name
Miss Eva Alblas

Contact details
Radboud University
Behavioural Science Institute
Postbus 9104
Nijmegen
Netherlands
6500 HE

Additional identifiers

Protocol serial number
Game On project, Study 3. Radboud University, Behavioural Science Institute

Study information

Scientific Title
Investigating the impact of a Go/No-Go health game targeting young adults' impulse inhibition towards food and eating behaviour

Study objectives

Study aim:
The aim of this study is to evaluate the effectiveness of a health game based on a Go/No-Go (GNG) paradigm compared to a GNG control game and a double control game on (young) adults' impulse inhibition and eating behaviour.

Hypotheses:
1. It is expected that participants in the intervention condition will show increased impulse inhibition towards energy-dense food after playing the health game compared to those in the control conditions
2. Impulse inhibition at baseline is expected to moderate the effect of condition on impulse inhibition
3. The participants in the intervention condition are expected to eat healthier compared to those in the control conditions
4. Impulse inhibition at baseline is expected to moderate the effect of condition on eating behaviour

Ethics approval required
Old ethics approval format

Ethics approval(s)
Radboud University Ethical Committee, 10/07/2015, ref: ECSW2015-2206-324

Study design
Randomised controlled trial

Primary study design
Interventional

Study type(s)
Not Specified

Health condition(s) or problem(s) studied
A change over time in impulse inhibition towards energy-dense food (a possible precursor of eating behaviour), and direct eating behaviour

Interventions
The participants are semi-randomly assigned to one of three conditions, matched on gender.

Condition 1 Go/No-Go (GNG) food game 'Castle Invaders Food':
This game is based on a GNG paradigm and features food stimuli.

Condition 2 GNG non-food game 'Castle Invaders Control':
This game is identical to 'Castle Invaders Food', but then instead of food stimuli, images of soft and fluffy versus heavy and dense objects are used.

Condition 3 Non-GNG non-food game 'Patience Solitaire':
This is a card-sorting game with no GNG principle nor food stimuli.

Each participant first starts with a few questions to assess hunger and thirst, masked with questions about fatigue and alertness. Then baseline impulse inhibition is assessed using a GNG task. After this, one of the three games starts with a 10-minute fixed playtime. Immediately

after the game, the post-test impulse inhibition is assessed. Then a bogus taste test will commence, where participants get eight minutes to rate and compare two types of apples and two types of chocolate chip cookies. The study concludes with questions about the game, gaming experience and demographic information. The duration of the study is approximately 35 minutes.

Intervention Type
Behavioural

Primary outcome(s)
Impulse inhibition is measured using a modified Go/No-Go paradigm at baseline and post-test, which is immediately after game-play.

Key secondary outcome(s))
1. Snack consumption is assessed at post-test, after the second assessment of impulse inhibition, using a bogus taste test with apples and chocolate chip cookies. Before and after the taste test, the food products are inconspicuously weighted and calorie intake is calculated for both products and compared between the groups.
1.1. Nutrient dense snack consumption is measured by subtracting weight after taste test from start weight of the two bowls of apples
1.2. Energy-dense snack consumption is measured by subtracting weight after taste test from start weight of the two bowls of chocolate chip cookies

Completion date
12/12/2017

Eligibility

Key inclusion criteria
Adults aged 18 and older

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria
No informed consent

Date of first enrolment

17/05/2016

Date of final enrolment
06/08/2016

Locations

Countries of recruitment
Netherlands

Study participating centre
Radboud University, Behavioural Science Institute
Nijmegen
Netherlands
6525 GD

Sponsor information

Organisation
Radboud University

ROR
https://ror.org/05wg1m734

Funder(s)

Funder type
University/education

Funder Name
Radboud University Behavioural Science Institute

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Eva Alblas, MSc at E.alblas@bsi.ru.nl

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes