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Size and shape of plates and size of wine glasses and bottles: impact on selection of food and alcohol

Submission date
22/01/2020

Recruitment status
No longer recruiting

Registration date
27/01/2020

Overall study status
Completed

Last Edited
07/06/2023

Condition category
Nutritional, Metabolic, Endocrine

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[X] Individual participant data

Plain English summary of protocol

Background and aims
Alongside tobacco, excess consumption of alcohol and energy-dense foods are two of the most significant preventable causes of a range of non-communicable diseases globally, including heart disease and many cancers. Changing cues in the immediate physical environments that influence consumption could contribute to reducing excess food and alcohol consumption. One intervention that has received considerable attention towards achieving this is altering the size of tableware, including plates and glasses, and packaging, including bottles. The current study focuses on selection - self-serving and self-pouring – of food and wine, an immediate, reliable predictor of consumption. The study aims are to estimate the impact of plate size and shape on the amount of food that is self-served, and the size of wine glasses and wine bottles on the amount of wine that is self-poured.

Who can participate?
Adults over the age of 18, who drink wine and eat rice at least monthly.

What does the study involve?
Participants will provide written informed consent to participate in both interventions that form part of this study. They will be given a cover story that the study is examining how different plates and glasses can affect the visual appeal and attractiveness of food and drink. Participants will first complete demographic measures (age, sex, education). They will then be randomised to the order in which they complete Intervention 1 and 2. The order of randomisation will be concealed from the researcher until consent has been given - at this point they will access the randomisation schedule.
For Intervention 1, participants will be randomised to one of 720 possible sequences in which plate size and shape conditions can be presented. Participants will first be presented with a short context-setting vignette and for each plate condition they will be asked to self-serve their typical amount of food (i.e. “Imagine the most typical setting in which you serve yourself a meal. Please serve your typical amount”) from a serving dish containing more than can be served on to the largest plate (between 1-1.5kg). Each portion of self-served food will be weighed (by weighing the remaining food in the serving bowl) and the serving dish will be re-filled between

serving sessions, to ensure the amount of food remains constant across conditions. Each plate will be presented separately with all other plates kept hidden during each self-serving session. The study food will be a microwaveable rice meal prepared each day that the study runs.
For Intervention 2, participants will be randomised to one of 12 possible sequences in which wine glasses and bottles of different sizes are presented. Participants will first be presented with a short context-setting vignette (i.e. “Imagine the most typical occasion in which you pour yourself wine. Please pour your typical amount”) and for each glass/bottle condition they will be asked to self-serve a typical amount from the provided bottle. Each portion of self-served wine will be measured (by weighing the remaining wine in the bottle) and the bottles re-filled between serving sessions, to ensure the amount of wine remains constant across conditions. Each glass will be presented separately with all other glasses kept hidden during each self-serving session. Similarly, each bottle will be presented separately.
After completing both interventions, participants will complete further demographic measures (height, weight) and the debrief measures, before being told the true purpose of the study. Participants will then be reimbursed ~30GBP for their time.

What are the possible benefits and risks of participating?
Participants will be paid standard market research panel rates for participating in this study. There are no known risks of participating in the study.

Where is the study run from?
Behaviour and Health Research Unit, University of Cambridge (UK)

When is the study starting and how long is it expected to run for?
October 2019 to March 2020

Who is funding the study?
Wellcome Trust (UK)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
v2.1

Study information

Scientific Title
Size and shape of plates and size of wine glasses and bottles: impact on selection of food and alcohol

Acronym
Tableware study

Study objectives
Intervention 1: plate size and shape
1. As plates increase in size, an increasing amount of food is self-served on to them
There is insufficient evidence for a directional hypothesis for plate shape

Intervention 2: wine glass size and wine bottle size
1. As wine glasses increase in size, an increasing amount of wine is self-poured
2. More wine is self-poured from larger bottles compared with smaller bottles
3. The effect of increasing bottle size is more marked for larger glasses than it is for smaller glasses

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 14/01/2020, Cambridge Psychology Research Ethics Committee (School of the Biological Sciences, University of Cambridge, 17 Mill Lane, Cambridge CB2 1RX; +44 (0)1223 766894; Cheryl.Torbett@admin.cam.ac.uk), ref: PRE.2019.058

Primary study design
Interventional

Study design
Intervention 1:
Within-subjects factorial design with six conditions: 3 plate sizes (small, medium, large) x 2 plate shapes (circular; square). Participants will be randomised to the order of plates onto which they will self-serve food, determined by simple randomisation.

Intervention 2:
Within-subjects factorial design with six conditions: 3 glass sizes (29cl; 35cl; 45cl) x 2 bottle sizes (75cl; 50cl). Participants will be randomised to the order in which they free-pour from each of the bottles into each of the glasses, using simple randomisation.

Study type(s)
Other

Health condition(s) or problem(s) studied
Food and alcohol consumption

Interventions
Intervention 1 – Plate size and shape
Plate sizes
Three different size plates will be used in the study differing in surface areas:
1. Small: 254.5 cm2
2. Medium: 415.5 cm2
3. Large: 683.5 cm2
The surface areas will be kept constant between plates of same sizes but different shapes. Surface areas correspond to circular and square plates as follows: 254.5 cm2: 18 cm diameter circular; 16 cm square; 415.5 cm2: 23 cm diameter circular; 20.4 cm square; 683.5 cm2: 29.5 cm diameter circular; 26.1 cm square. The set of sizes is informed by the sizes of circular plates previously used in a lab study (Kosite et al, 2019) (23 cm and 29 cm).

Plate shapes
Two different shapes of plates will be used in the study:
1. Round
2. Square
Square plates will be matched in surface area to round plates (see above).
All plates used will be of a similar design, made from white bone china, unlined and unpatterned – with custom-made plates made as necessary (Round plates: China by Denby Dinner Plate [large], China by Denby Dessert/Salad Plate [medium], China by Denby Tea Plate [small]; Square plates: Bennett Square Dinner Plate [large], Bennett Square Plate Salad Plate [medium], Custom Made by Reiko Kaneko [small]).

Intervention 2 - Wine glass size and wine bottle size
Glass sizes
Three sizes of wine glasses will be used in the study with capacities of:
1. 290 ml (small)
2. 350 ml (medium)
3. 450 ml (large)
This set of sizes is informed by recent field studies (Clarke et al., 2019). All glasses will be of the same design (Royal Leerdam Bouquet).

Bottle sizes
Two wine bottle sizes will be used in the study:
1. 50 cl
2. 75 cl
The set of bottle sizes is informed by a recent randomised controlled trial assessing the impact of bottle size on in-home wine consumption (Codling, Mantzari et al., under review). Both bottles will be labelled as containing the same wine, using a branded bottle to increase ecological validity (Isla Negra Sauvignon Blanc). The grape variety is chosen on the basis of it being the most popular in the UK. The brand is chosen based on it being available in both 50 cl and 75 cl sizes and in bottles of identical design, i.e. shape and colour.

Participants will provide written informed consent to participate in both interventions that form part of this study. They will be given a cover story that the study is examining how different plates and glasses can affect the visual appeal and attractiveness of food and drink. Participants will first complete demographic measures (age, sex, education). They will then be randomised to the order in which they complete Intervention 1 and 2. The order of randomisation will be concealed from the researcher until consent has been given - at this point they will access the randomisation schedule.

For Intervention 1, participants will be randomised to one of 720 possible sequences in which plate size and shape conditions can be presented. Participants will first be presented with a short context-setting vignette and for each plate condition they will be asked to self-serve their typical amount of food (i.e. “Imagine the most typical setting in which you serve yourself a meal. Please serve your typical amount”) from a serving dish containing more than can be served on to the largest plate (between 1-1.5 kg). Each portion of self-served food will be weighed (by weighing the remaining food in the serving bowl) and the serving dish will be re-filled between serving sessions, to ensure the amount of food remains constant across conditions. Each plate will be presented separately with all other plates kept hidden during each self-serving session. The study food will be a microwaveable rice meal prepared each day that the study runs.

For Intervention 2, participants will be randomised to one of 12 possible sequences in which wine glasses and bottles of different sizes are presented. Participants will first be presented with a short context-setting vignette (i.e. “Imagine the most typical occasion in which you pour yourself wine. Please pour your typical amount”) and for each glass/bottle condition they will be asked to self-serve a typical amount from the provided bottle. Each portion of self-served wine will be measured (by weighing the remaining wine in the bottle) and the bottles re-filled between serving sessions, to ensure the amount of wine remains constant across conditions. Each glass will be presented separately with all other glasses kept hidden during each self-serving session. Similarly, each bottle will be presented separately.

After completing both interventions, participants will complete further demographic measures (height, weight) and the debrief measures, before being told the true purpose of the study. Participants will then be reimbursed ~30GBP for their time.

Intervention Type
Behavioural

Primary outcome(s)
Intervention 1: the amount of food (in grams) self-served, measured by weighing the remaining food in the serving bowl
Intervention 2: the amount of wine (in millilitres) self-poured, measured weighing the remaining wine in the bottle

Measured at a single timepoint

Key secondary outcome(s)
There are no secondary outcome measures

Completion date
17/03/2020

Eligibility

Key inclusion criteria
1. 18 + years
2. Able to read and write in English
3. Eat rice and drink white wine occasionally (at least once a month for both)

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Total final enrolment
140

Key exclusion criteria
1. Drinks wine or eats rice less than monthly
2. Under 18

Date of first enrolment
03/02/2020

Date of final enrolment
17/03/2020

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Roots Research
50 Grand Parade
Brighton
United Kingdom
BN2 9QA

Sponsor information

Organisation
University of Cambridge

ROR
https://ror.org/013meh722

Funder(s)

Funder type
Charity

Funder Name
Wellcome Trust

Alternative Name(s)

Funding Body Type
Private sector organisation

Funding Body Subtype
International organizations

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The anonymised raw data will be made available on the OSF and the university repository, along with the analysis plan which will be registered before the researchers analyse the data on the OSF. Consent from participants was obtained.

IPD sharing plan summary
Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		20/10/2021	21/10/2021	Yes	No
Results article		01/09/2021	28/02/2023	Yes	No
Dataset			28/02/2023	No	No
Preprint results	non-peer-reviewed results	02/11/2020	12/03/2021	No	No