

Title: Fast food online delivery purchase behaviour in the presence and absence of price-based incentives.

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Description: A study examining differences in food purchasing behaviour when price-based incentives are present (control) vs removed.

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Category: Project

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Background

Consumption of out-of-home (OOH) food is associated with significantly greater energy and less-healthy nutrient (i.e. fats, salt and sugar) intake(1). Specifically, OOH eating occasions contain 197 additional kcal compared to non-OOH eating occasions. This increase appears to persist into daily energy intake with only minor compensation(1). Consumption of OOH food therefore contributes to obesity and associated ill-health.

The price of food is a key consideration of food choice, particularly for individuals of lower socioeconomic position (SEP)(2). It is estimated that 23% of money spent on food is consumed OOH for UK adults(3), where financial incentives appear to be more widely available for less-healthy foods than healthier foods (4, 5), and have been shown to increase the likelihood of purchase of promoted items(5). Research by Public Health England estimated that approximately one-third of foods purchased in supermarkets were on price promotion in 2018(6). Equally, recent evidence suggests that 66% of outlets on food delivery platforms in the UK offer at least one type of price promotion(7), with more promotions offered in outlets in more deprived areas. Due to the existing evidence of negative impacts of price-based incentives on dietary quality, the government in England have implemented restrictions on volume-based promotions (i.e. buy one get one free) in supermarket settings(8). No such restrictions have yet been considered for the OOH food sector.

There are a range of different types of price-based incentive in OOH settings. Three common incentives include value pricing, price reductions and bulk-buy reductions(9). Value pricing can be applied to items available in multiple sizes, whereby the increase in price is disproportionate to the increase in size (i.e. size up for £1 and receive an extra 50%)(10, 11). Price reductions often refer to a percentage discount, and are frequently applied to full menus on food delivery platforms(7). Bulk-buy reductions relate to meal deal or bundle options whereby a group of items are provided together at a discounted price(12).

Little research to date has examined the causal effect of removing price-based incentives on purchasing behaviour in OOH food settings. One online randomised controlled trial explored the effect of removing three types of price-based incentives individually and in combination, on food choice through a virtual food delivery platform(9). This study found that energy selection was 7-8% lower when price incentives were removed. While not statistically significant, Bayes factors indicted that data comparing control vs “all promotions removed” conditions were inconclusive ($BF_{10} = 0.55$) and therefore could not provide support for the alternative or null hypotheses. A limitation of this study is that the outcome was hypothetical food choice. As participants would not pay for or receive their selected meals, the prices of foods may have been less salient, thus reducing the potential for impact. Studying real-world consumer behaviour (as opposed to hypothetical choice) will better determine the potential impact of removing price-based incentives in the OOH food sector.

Hypotheses

Removal of price-based incentives will be associated with reduced energy purchased by households and consumed by household members.

Evidence suggests that price-based incentives are used more frequently by lower SEP individuals(13), therefore we hypothesise that any effects of removing price-based incentives will be greater for individuals from lower SEP groups.

Design Plan

Study type Experiment – participants will be randomly assigned to one of two conditions.

Blinding Participants will not know the treatment group to which they have been assigned. Researchers will also be blinded. Participants will be told they are taking part in a study of food choice and diet-related health beliefs to disguise the true aims of the study.

Is there any additional blinding in this study? N/A

Study design Participants will be recruited online through social media to complete a study of food choice and health beliefs, where they will be required to place a real order with a specified outlet for themselves, and other adults in their household.

The study will be conducted online. Participants will complete a short screening questionnaire to ensure they meet the eligibility criteria and provided access to the study platform. Participants will be randomised to one of two conditions (control vs price incentives removed) and then order a meal for themselves, and on behalf of their household, through an online platform resembling a food delivery app for a pizza outlet.

Participants will then be transferred to an outlet's payment and delivery scheduling system to schedule their order for the same day or the following day and then return to the study platform. Participants will be asked to upload proof of purchase (i.e. a receipt from the food outlet) and any reasons for deviation from the original order selected, as well as the scheduled date and time of delivery.

If ordering for a multi-person household, participants will provide the email addresses for other adults in the household who will have the option to become participants in the study. A follow-up questionnaire will be completed by all adults in the household who consent to taking part. The study will be created on the online research platform Qualtrics(14).

Menus

Local franchise outlets of a large UK chain outlet Tops Pizza was approached as this chain offers common financial incentives used by other chains and identified in previous research(9):

- 1) Product price reductions (e.g. 20% off orders – available through a voucher code)
- 2) Bulk buy reductions (e.g. meal deal for one person/family bundles)
- 3) Value pricing (e.g. size up for a small price increase)

Multiple of the chain's franchises (outlets) based in England will be used in the present study, as it provides a range of postcodes eligible for food delivery. Food menus will be presented to participants in the form of a virtual food delivery platform resembling the Tops Pizza website.

For both conditions, all available items on the Tops Pizza menu for the selected franchises will be presented. This menu consists of n=29 pizzas (available in small, medium, large size), n=24 side dishes, n=7 dips (available in small and large size), n=16 desserts, n=12 drinks and n=7 meal deal/bundle options.

Baseline size, price and calorie information are taken from the Tops Pizza website. The menu items and prices will be frequently monitored to ensure the virtual platform resembles the real website at all times. On all menu pages, a statement at the bottom of the screen will read "a 50p service charge will be added to all orders".

Price-based incentives

The control condition will have all price-based incentives present (resembling the current chain's pricing structure and promotions), and the intervention condition will have all price-based incentives removed.

Product price reductions

In the control menu, at the top of each page a message will describe the price reduction available (e.g. "20% off order with code XXX"). All original prices will be shown crossed

out, with discounted prices next to them. In the price incentives removed condition, all items will be shown with their non-discounted prices, and no discount code will be made available.

Bulk buy price reductions

N=7 bulk buy (meal deal/bundle) options will be offered for personalisation (listed in Table 1). For the food choice task, the menu category will be called 'set meals'. In the control condition, these will be offered at discounted prices. In the price incentive removed condition, the same options will be provided, but with no discounted price.

Table 1: Meal deal & bundle offers available

| Name | Description | Personalisation |
|---------------------|--|--|
| The Hungry Man | Any melt & Garlic Bread or Fries | Choice of n=5 melts, n=2 side dishes, n=3 drinks at an extra price |
| Party Pack Deal | Sharing pizza + 2 sides + any 1.5L drink | Choice of n=4 sides at a regular price, n=9 sides at an additional price, n=4 drinks |
| The Family Besties | 2 sharing pizzas + 2 sides + 1.5L drink | Choice of n=4 sides at a regular price, n=9 sides at an additional price, n=4 drinks |
| The Flying Wiiiings | 2 sharing pizzas + 2 sides + 2 desserts + 1.5L drink | Choice of n=4 sides at a regular price, n=9 sides at an additional price, n=4 drinks, n=5 desserts |
| The Great Double | 3 sharing pizzas + 2 1.5L drinks | Choice of n=4 drinks |
| The Home Alone | Vegan individual pizza + vegan side + 500ml drink | Choice of n=3 pizzas, n=2 sides, n=3 drinks |

Volume value pricing

Pizzas will be available at three portion size options. Existing value pricing (i.e. the price increase is disproportionately small compared to the size increase) will be used in the control condition. In the price incentives removed condition, proportional pricing will be calculated based on the medium size option. This is demonstrated in calculations below. This will be applied to all pizzas on menus (35% of menu items).

Proportional pricing calculation - Margherita:

Small = £6.99; Medium = £12.99; Large= £13.99

Medium to Small size change = - 43.5%

Medium to Large size change = + 49.68%

Randomization: Computer-based random assignment of participants to one of the two conditions will be applied upon signing up to the study. The order in which the

food/beverage items are presented will be the same order shown on food delivery platforms at the time of virtual app creation.

Sampling Plan

Existing Data: Registration prior to creation of data

Explanation of existing data: N/A

Data collection procedures: Data collection will take place through Qualtrics.

Participants will be recruited online, including through the use of social media advertising, targeted by postcode. Other adults in the same household will have the opportunity to join the study as a participant and complete the follow-up questionnaire. All participants will be reimbursed for their participation (£15 per person).

Inclusion criteria:

- Able to order and pay for a takeaway pizza for delivery today or tomorrow
- Currently reside in select postcode areas
 - Manchester (M13 store): M1, M2, M3, M4, M5, M11, M12, M13, M14, M15, M16, M18, M19
 - Liverpool (L3 store): L1, L2, L3, L4, L5, L6, L8, L13, L15
 - Birmingham (B27 store): B9, B10, B11, B12, B13, B25, B26, B27, B28, B33, B90, B91, B92
- Over the age of 18 years
- Report having used food delivery services in the last year

Exclusion criteria:

- Partaking in a fast or other restrictive eating (e.g. for religious or health reasons) at time of participation
- A previous eating disorder diagnosis
- Currently on appetite-suppressing medication
- Dietary restrictions/intolerances including:
 - Gluten-free
 - Dairy-free
 - Sugar-free

Stratification

To ensure that we have a sample that is diverse in SEP and balanced for other key demographics, where possible, we will attempt to recruit a sample that has equal numbers of males vs. females, at representative levels of household income and age group.

Quintiles of average disposable household income in the UK in 2023/2024 were obtained from the Office for National Statistics(15). Midpoints of quintiles were determined and rounded to the nearest £10,000 to define thresholds for 5 groups of household income (Table 2).

Table 2: Calculation of thresholds for income groups representative of UK population

| | Quintiles of household income (from ONS)* | Ranges based on quintile midpoints | Final income groups for data collection |
|-----------------|---|------------------------------------|---|
| 1 st | £19,799 | < £26,891 | < £30,000 |
| 2 nd | £33,983 | £26,891 - £40,482 | £30,000 – £39,999 |
| 3 rd | £46,981 | £40,482 - £54,853 | £40,000 – £49,999 |
| 4 th | £62,724 | £54,853 – £74,170 | £50,000 – £69,000 |
| 5 th | £85,615 | > £74,170 | > £70,000 |

*Total household disposable income (i.e. income post-tax/national insurance)

Using data from ONS(16), we calculated the age split of UK adults, whereby approximately 50% of UK adults are between the ages of 18 and 48, and 50% of adults are 49+. Therefore, we will try and recruit an equal proportion of participants across the two age groups.

Procedure

Participants recruited online, including the use of social media (Appendix A) and taken to a short description of the study (Appendix B), asked to read the participant information sheet (Appendix C) and provide consent to take part in the study (Appendix E). Participants will complete a short screening questionnaire (Appendix G) to ensure they are eligible to take part and can order and pay for a takeaway meal the same day for themselves, or on behalf of their household.

Participants will be randomly allocated to one of the following groups:

- *Control menu*
- *Price-based incentives removed*

Participants will be asked to select a takeaway meal for themselves, or on behalf of the adults in their household that they will then order from the real food outlet website. They will be asked to clarify the number of adults that the food order is for (Appendix H).

In both conditions, participants will be able to view the different menu categories without placing an order. When participants have decided what they would like to order for themselves, or on behalf of their household they can select an item which will take them to a page to make any amendments related to the item. For example, if they select a pizza, they will be asked to select a size. Once participants have made any specifications, they can add the item to their shopping basket and either continue shopping or ‘checkout’. If they select to checkout, they will be taken to a basket page, and asked to confirm their order, or start again.

Control menu: At the bottom of each menu page, it will describe the price reduction available (e.g. “20% off all orders with code XXX”). Meal deal and bundle options will be available at discounted prices. All pizzas will be available at value pricing.

Price incentives removed menu: Participants will not be shown the available discount code. Meal deal and bundle options will be presented but not at discounted prices. All pizzas will be shown with proportional pricing.

When orders are confirmed, participants will be asked to follow a link on the page to the Tops pizza website to place the same order and schedule delivery for the same day or the following day. They will be asked to return to the study page once the order has been placed.

Participants will return to the study, and upload proof of their order (i.e. a screenshot of the order confirmation or the receipt). If there are any inconsistencies between the order placed on the study platform and the real order, participants will be asked to provide reasons for this. Participants will be told they will receive a link via email to complete the follow-up questionnaire and to organise study reimbursement in the next 24 hours.

Researchers will email all participants (including the additional adults in the household) with a link to the follow-up questionnaire after participants receive their food order (as noted by the evidence provided by participants). The follow-up questionnaire (Appendix I) will collect data including a measure of health beliefs (in line with cover story), participant characteristics, consumption of the food ordered, and opinions on price incentives. To estimate energy consumption, participants will be asked if they ate anything from the following categories: Pizzas, Starters/Side dishes, Desserts, Drinks, Dips.

If a participant has consumed pizza, they will be asked to select the pizza they ate (from a dropdown list) and how many slices they ate. They will have the option to select multiple pizzas if they sampled more than one. A similar approach will be used for the other categories, but participants will be asked to estimate a percentage of the dish they consumed rather than a number of slices.

On completion of the follow-up questionnaire, participants will be asked to confirm their email address, and given a choice of reimbursement options:

- £15 bank transfer from the University of Liverpool
 - Participants will be made aware that payments can take up to 5 weeks to appear in bank accounts, due to university procedures.
- £15 Amazon voucher
 - Typically received within 2 working days
- £15 JustEat voucher

- Typically received within 2 working days

Attention checks

Two attention checks will be included:

- One question in the follow-up questionnaire, will state: “This is an attention check. How many times have you visited the planet Mars? Several times / Just once / Never”.
 - Correct answer: Never
- In the food choice motives questionnaire (post-food order), an additional item states: “This is an attention check. Please select the answer 2 ‘A little important’”.
 - Correct answer: 2 ‘A little important’.

Variables

Manipulated variables: Control vs. intervention condition (see above).

Measured variables:

Participant characteristics

To compare outcomes by individual participant variables, and to aid stratification, participants will be asked to report their gender and age and. Self-reported height and weight data will also be collected to calculate body mass index (BMI). Ethnicity data will also be collected.

Measures of socioeconomic position

Three measures of socioeconomic position will be collected:

- Highest level of education achieved
- Equivalised household income
- A subjective measure of socioeconomic position - MacArthur Scale of Subjective Social Status (SSS)(17)

Education level will be recorded, as there is evidence that individuals with a higher level of education are more motivated by health when making food decisions(18). Subjective social status will be recorded as this measure has been found to have strong associations with overweight and obesity(19). Equivalised household income will be calculated by gathering participant’s after-tax household income and household composition (number of adults and children in the household). This calculation will involve dividing the after-tax household income by the sum of the equivalence value of all the household members: first adult = 1, additional adult or child aged 14 and over =

0.5, child aged 0-13 = 0.3. This method is used by the Office for National Statistics(20) and categorises households into ten deciles of SEP.

Food choice motives

The Food Choice Questionnaire(21) will be used to assess the factors that may influence participants' food choices. This questionnaire is comprised of nine factors (health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity & ethical concern).

We will collect scores for the four food choice motives most relevant to our outcomes of interest, specifically price, health, convenience and sensory appeal.

Aim guessing

Participants will be asked what they believe the aims of the study to be. Anyone that guesses the study aims to be investigating the influence of pricing on food purchases will be coded as being aware of study aims. One researcher will code awareness of aims and a second researcher will independently verify.

Outcome variables

Orders placed through online platform

- Total energy ordered
 - Used to calculate energy ordered per household member
- Total monetary spend
 - Used to calculate monetary spend per household member
- Total energy consumed per household member
 - Estimated using self-reported data

Additional variables

In the follow-up questionnaire, participants will be asked to describe how much of the takeaway meal they consumed, and if anyone not included in the study ate any of the food (e.g. if any children in the house ate some of the meal). They will also be asked about their frequency of use of food delivery platforms and whether they thought their food choices were typical for them. Participants will complete 3 subscales of the UPPS-P Impulsivity scale (negative urgency, positive urgency and lack of premeditation). These measures will not be used in any formal analyses. Finally, participants will be asked how they feel about the removal of price-based incentives, and whether they believe this would be a successful approach to improve eating habits in the OOH food sector. Within the follow-up questionnaire, there will be a health beliefs measure to corroborate the cover story.

Study Flow

| | | |
|---|---|--|
| RECRUITMENT | <ul style="list-style-type: none"> ▪ Advertisements will be placed online (Appendix A), targeted to individuals in set postcodes, which are within range of delivery from the Pizza outlets. ▪ Participants will be taken to a landing page which describes the study procedure (Appendix B). | |
| INFORMED CONSENT <i>(Inquisit)</i> | <ul style="list-style-type: none"> ▪ Participants will read the information sheet (Appendix C) ▪ Participants who wish to proceed will consent to taking part (Appendix E). ▪ Participants who believe they meet the inclusion/exclusion criteria will follow a link to complete a screening questionnaire (Appendix G) which will confirm eligibility and ensure participants understand and can comply to the study procedure, and that they will order and pay for a meal for that day or the following day. If participants do not meet the eligibility criteria, or do not wish to continue they will be redirected. | |
| RANDOMISATION <i>(Inquisit)</i> | <ul style="list-style-type: none"> ▪ Participants will be randomized to one of the two experimental conditions (computer-based randomisation). | |
| FOOD CHOICE TASK <i>(Inquisit)</i> | <ul style="list-style-type: none"> ▪ Control menu | <ul style="list-style-type: none"> ▪ All price-based incentives removed |
| | <ul style="list-style-type: none"> ▪ Instructions will be displayed (Appendix H) ▪ Participants will report if they are ordering a meal on behalf of other adults and if so, the number of adults. ▪ Participants will be asked to select the food they will order for a meal from Tops Pizza for their household. ▪ Once the food choice is confirmed, participants will be asked to follow a link to the Tops Pizza website to place the same order. | |
| FOOD ORDERING <i>(Tops Pizza website)</i> | <ul style="list-style-type: none"> ▪ Participants will be asked to schedule their food order for the same day, or the following day from the Tops Pizza website. ▪ Participants will return to the study and upload evidence of their order (a screenshot of the order confirmation or receipt) ▪ If orders deviate from the online food selection, participants will be asked to explain the cause. | |
| ADDITIONAL RECRUITMENT | <p>Participants will be asked to provide email addresses of other adults in the household who would like to take part in the study and confirm that the other adults have consented to sharing of email address.</p> | |
| QUESTIONNAIRES <i>(Inquisit)</i> | <ul style="list-style-type: none"> ▪ Follow up questionnaires will be sent to all participants the morning following their food order with unique identifier codes to link their answers to the food choice task. ▪ Additional participants will be provided with a participant information sheet (Appendix E) and consent form (Appendix G). ▪ This questionnaire will collect data on participant characteristics, food choice motives, consumption, and thoughts on policy related to price incentives (Appendix I). ▪ Aim guessing in an open-ended response format. | |
| DEBRIEFING <i>(Inquisit)</i> | <ul style="list-style-type: none"> ▪ Participants will be debriefed on study aims (Appendix J) | |
| PAYMENT | <ul style="list-style-type: none"> ▪ Participants will select their preferred method of study payment and confirm their email address. All participants will be reimbursed £15 via bank transfer or gift voucher. | |

Analysis Plan

Analyses will be conducted in R Studio. Results for primary analysis will be considered significant at $p < 0.05$. To account for multiple testing, results for secondary analysis will be considered significant at $p < 0.0167$. Results for exploratory analysis will be considered at $p < 0.05$ due to their exploratory nature.

Participant characteristics:

All participants who have completed the follow-up questionnaire in full, and who have provided a valid identifier number connecting them to the food ordering task will be included in the analysis.

Participant characteristics overall and by experimental condition will be reported. Data will include age, gender, ethnicity, highest educational qualification, equivalised household income, subjective social status and BMI. Continuous variables will be summarised by means and standard deviations if approximately symmetrical or median (IQR) otherwise, categorical variables will be summarised by counts and percentages.

Primary analysis

Firstly, we will examine if there is any evidence of clustering of outcomes by household. Evidence of clustering will be an ICC value $> .05$ and a design effect > 2 .

If there is no evidence of clustering:

We will conduct a one-way ANCOVA to explore differences in self-reported energy consumed between the two conditions (control vs price incentives removed). Covariates included in the model will be age, gender, SEP (equivalised household income and education) and any household composition or ordering variables (e.g., size of household order is made by) associated with the primary outcome. If there is covariance between the two measures of SEP, only equivalised household income will be included in the model. We will explore whether BMI and food choice motives at the individual/household level contribute to variance in the outcome variable. If they do, we will include these variables as covariates.

We will also report results with clustering by household as confirmatory analyses (i.e., whether size of intervention vs. control effect is similar in size and direction as in non-clustered analysis, as opposed to null significance testing).

If there is evidence of clustering by household:

A linear mixed model will be used to assess the impact of pricing condition (control vs price incentives removed) on energy consumed per household member. We will cluster analyses by household, by including this as a random effect and the covariates described above as fixed effects.

Sensitivity analysis

If there is evidence of clustering, and there are not many participants from single person households (e.g. < 10%) then we will omit these participants and re-run the primary models as sensitivity analysis.

We will also re-run the primary models with participants who guess the aim of the study removed.

Secondary analysis

We will examine whether SEP (equivalised household income, education), moderates the effect of study condition on the primary outcome (energy consumed) by including interaction terms in the above primary model.

Energy ordered by households: Because energy ordered data will only be available for 1 member of each household (i.e. the majority of participants will not have energy ordered data, as energy ordered is by household) and sample size calculation is based on total number of participants and not total number of households, we will treat energy ordered as a secondary outcome and descriptively report the effect of intervention condition (% change in energy ordered and effect size). For the subsample of main participants who took part in the food choice task and therefore have individual level data for energy ordered (i.e. the household member responsible for ordering), we will conduct a linear regression model to explore the size of association between study condition and total energy ordered per household. We will adjust this model for gender, SEP (equivalised household income, education), BMI, food choice motives and any household composition or ordering variables.

Exploratory analysis

Further to the earlier moderation analysis, we will explore whether additional individual/household-level characteristics such as age, gender, BMI and food choice motives moderate the relationship between study condition and our primary outcome (energy consumption).

We will also conduct analyses to explore potential mechanisms for any observed effects. For example, we will conduct a linear regression model to assess whether condition is associated with the number of items selected. We will conduct logistic regression models to assess whether condition is associated with the likelihood of ordering a food bundle, ordering a large sized pizza, and ordering a small sized pizza. The same covariates in the primary analysis will be included.

Descriptive analyses

For descriptive purposes, we will use the energy ordered by households modelling approach (see above) to examine difference in money spent (replacement of dependent variable from model above) under the two arms of the study.

One tailed vs. two tailed statistical testing

We will adopt and power for a one tailed approach for primary analysis, given that there is a strong directional hypothesis regarding the effect of removing price incentives (i.e. reduces energy consumption) and this approach increases statistical power given the available resources.

Sample size analysis

We conducted a power analysis for a one-way ANCOVA using the ‘superpower’ package in R. Using an ANCOVA with 6 possible covariates (listed above) that explain ~30% of variance in the outcome, and an effect size of $d = .20$, and power of 80% would require 440 participants (one-tailed).

Power Calculation for 1-way ANCOVA

```
dfs = 1, 436
N = 440
n = 220, 220
n_cov = 2
mu = 1000, 1100
sd = 500
r2 = 0.3
alpha_level = 0.1
beta_level = 0.1986632
power = 80.13368
type = exact
```

Assuming a hierarchical structure to the data (individuals nested within households) with the average household size = 2 and similar effect size a multilevel model with clustering (VPC ~ .10) would have 82% power [95% CI: 73% to 89%] (using the ‘simr’ package).

82.00% (73.05, 88.97)

Test: t-test with Satterthwaite degrees of freedom (package lmerTest)
Effect size for treatment is 1.0e+02

Based on 100 simulations, (0 warnings, 0 errors)
alpha = 0.05, nrow = 440

Time elapsed: 0 h 0 m 4 s

Our aim will be to oversample (max N = 600) in response to uncertainty in both effect size estimates and clustering of data (removal of singletons if necessary). This oversampling will improve the precision of our estimates. However, we will also employ a stopping rule (described below).

Stopping rule

Prior to starting data collection, we do not know with certainty what the rate of participant recruitment will be, and effect size estimates have uncertainty. To balance the trade-off between costs (e.g., in research time, participant burden) and likelihood of

the study providing convincing evidence, we will conduct interim analyses of our primary outcome to assess whether the results are convincing enough to conclude that effects on energy consumption are present at interim and if not, if it is justifiable to extend data collection to a final endpoint (e.g., N=600 or similar).

The interim analyses will examine the effect size of the primary outcome and observed statistical significance. Based on simulations by Kowialiewski (2024)(22), we would expect some effect size stabilisation of Cohen's d with > 150 participants. We will also calculate Bayes Factors to assess the strength of evidence for the experimental vs null hypotheses.

We will aim to conduct the interim analysis when we have obtained approximately 50% of the estimated pre-study sample size ($N \sim 300$) and aim to choose a stopping point based on scheduling of participants and outlet sessions (i.e. end of April 2026). If at this point, the data suggests that it is extremely unlikely that the predicted effect would be observed up to maximum sample size capacity based on recruitment to date, or if Bayes Factors suggest there is strong evidence for the null hypothesis ($BF^{10} < 0.3$) then we will schedule a study data collection completion date shortly after the interim analysis.

If the observed effect size suggests that a condition effect will likely be statistically detectable at the maximum sample size possible to achieve (based on recruitment to date), or Bayes Factors do not provide support for either the null or alternative hypothesis ($BF^{10} > 0.3$ and < 3) for our primary outcome, we will continue data collection to recruit the largest possible sample size with available resources. At interim we will determine the maximum sample size possible to achieve given participant recruitment rates and specify the end data collection at this point. For final analyses we will adjust p values (dividing by 2 for outcomes examined at interim to account for multiple analyses) to account for error rate inflation due to the interim analysis conducted.

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Appendix

Appendix A: Recruitment text for online recruitment

Researchers at the University of Liverpool are conducting a study exploring health beliefs, food choice and purchases through online delivery platforms.

You will choose a meal for yourself, or on behalf of the adults in your household and order and pay for the meal from a real takeaway pizza outlet to eat the same day or the following day.

The day after your food order, you and other adults in your household will be asked to complete a short follow-up questionnaire. Any adults who take part in the study by completing the follow-up questionnaire will be reimbursed financially for their time.

Appendix B – Landing page

Thank you for your interest in our study of health beliefs and food delivery!

If you take part in this study, you will select a takeaway meal for yourself, or on behalf of the adults in your household through an online food choice task. You will then order the same food items from the Tops pizza website scheduled for today or tomorrow and provide evidence of this order.

Any other adults in your household who eat the food ordered will have the opportunity to join the study as participants. All adults who take part in the study and complete the follow-up questionnaire will be reimbursed £15 each, via a bank transfer (estimated to be 3-5 weeks) or gift voucher (received within 2 working days – Amazon or JustEat).

If you would like to take part, please make sure you meet the criteria below. A detailed information sheet and consent form follow on the next pages.

- Able to order and pay for a takeaway pizza for delivery today or tomorrow
- Currently reside in select postcode areas
 - Manchester (M13 store): M1, M2, M3, M4, M5, M11, M12, M13, M14, M15, M16, M18, M19
 - Liverpool (L3 store): L1, L2, L3, L4, L5, L6, L8, L13, L15
 - Birmingham (L27 store): B9, B10, B11, B12, B13, B25, B26, B27, B28, B33, B90, B91, B92
- Over the age of 18 years
- Have used food delivery services in the last year

Exclusion criteria:

- Partaking in a fast or other restrictive eating (e.g. for religious or health reasons) at time of participation
- A previous eating disorder diagnosis
- Currently on appetite-suppressing medication
- Dietary restrictions/intolerances including:
 - Gluten-free
 - Dairy-free
 - Sugar-free

Appendix C: Participant information sheet for original participant



Health beliefs and food delivery study

You are invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. We would like to stress that you should only agree to take part if you want to.

What is the purpose of the study?

The purpose of the study is to understand health beliefs and consumer habits when ordering pizza for delivery.

Why have I been chosen to take part?

We are recruiting volunteers who fulfil the following criteria:

1. Can schedule and pay for pizza delivery for the day of the study or the following day.
2. Reside in select postcode areas in Liverpool, Manchester or Birmingham
 - a. Manchester: M1, M2, M3, M4, M5, M11, M12, M13, M14, M15, M16, M18, M19
 - b. Liverpool: L1, L2, L3, L4, L5, L6, L8, L13, L15
 - c. Birmingham: B9, B10, B11, B12, B13, B25, B26, B27, B28, B33, B90, B91, B92
3. Over the age of 18
4. Have used food delivery services in the last year
5. Are not partaking in a fast or other restrictive eating (e.g. for religious or health reasons) at time of participation
6. You have no previous or current diagnosis of an eating disorder
7. Are not on appetite-suppressing medication
8. Have none of the following dietary restrictions/intolerances:
 - a. Gluten-free
 - b. Dairy-free
 - c. Sugar-free

Do I have to take part?

No. Participation in this research is completely voluntary. You are free to withdraw at any time without explanation and without incurring a disadvantage.

What will happen if I take part?

You will complete a screening questionnaire to confirm you are eligible to take part and are happy with the study process. You will complete a short food choice task where you will select a meal to order for yourself, or on behalf of the adults in your household. You will be asked to report the number of adults in your household and their email addresses so they can also take part in the study as participants. You will then place your selected food order through the Tops Pizza website and schedule this order for delivery the same day or the following day. You will be asked to upload evidence of this food order (a screenshot of the order confirmation or receipt).

The following day, you and the other adults in your household will be asked to complete a short follow-up questionnaire and select a method of financial reimbursement for your participation. All adults who take part in the study and complete the follow-up questionnaire will be reimbursed £15 each, via a bank transfer (estimated to be 3-5 weeks) or gift voucher (received within 2 working days – Amazon or JustEat).

So that your awareness of the study hypotheses does not affect your behaviour in the study we provide more detailed information about the study aims at the end of the study. If you feel uncomfortable about this then you are free not to participate in this study. Overall, the online aspects of the study will take 10-15 minutes.

How will my data be used?

The University processes personal data as part of its research and teaching activities in accordance with the lawful basis of ‘public task’, and in accordance with the University’s purpose of advancing education, learning and research for the public benefit. University of Liverpool employee Victoria Heath (V.Heath@liverpool.ac.uk) acts as the Data Protection Officer for this study and any queries relating to the handling of your personal data can be sent to her. Further information on how your data will be used can be found in the table below.

| | |
|--|---|
| How will my data be collected? | Through an online questionnaire and online tasks. |
| How will my data be stored? | On a password protected computer server. |
| How long will my data be stored for? | Your personal data will be stored for up to 28 days and then deleted. All other information will be stored indefinitely. |
| What measures are in place to protect the security and confidentiality of my data? | We will store all data on password protected computer servers and we never share any of your personal data outside of the research team for this project. |
| Will my data be anonymised? | After the study your personal information will be stored separately from your other questionnaire responses to create an anonymised data set. After 28 days all personal information will be deleted, but up to this point you can contact us and ask to see your information or have it deleted. |
| How will my data be used? | Your anonymised data will be combined with other participants’ data in order to be analysed. |
| Who will have access to my data? | The research team for this project will have access to your data. |

| | |
|--|--|
| Will my data be archived for use in other research projects in the future? | After the research team have anonymised your data and completed this research project, they will place the anonymised data sets on an archive (e.g. Open Science Framework) in case any other researchers want to use it for future research purposes. |
| How will my data be destroyed? | Your personal data will be destroyed electronically (deleting the files and removing them from the computer server). |

Are there any risks in taking part?

There are no anticipated risks to you if you take part in the study.

Are there any benefits in taking part?

There are no direct benefits, other than the monetary reimbursement you will receive.

What will happen to the results of the study?

We intend to publish the results from this study in a scientific journal. However, as explained above any personal information you provide is deleted before this and you would therefore not be identifiable in report. If you are interested in the results of the study, please let us know and we will share the results of the study with you when we publish it.

What will happen if I want to stop taking part?

You are under no obligation to take part in this study; it is completely your choice. If you do decide to take part, you are free to withdraw at any time and without giving any reason or explanation. Data collected up until the period you withdraw may be used, but only if you are happy for this to be done. Otherwise you may request that your data be destroyed and no further use is made of them.

What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, please feel free to let us know by contacting Amy Finlay or Eric Robinson (contact details below) and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer on 0151 794 8290 (ethics@liv.ac.uk). Please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Who can I contact if I have further questions?

Please contact the lead researcher:

Amy Finlay
2.79, Eleanor Rathbone Building
Bedford Street South
University of Liverpool,

Liverpool,
L69 7ZA,
UK
email: a.finlay@liverpool.ac.uk

or the principal investigator
Prof. Eric Robinson
email: robinsoe@liverpool.ac.uk

I confirm I have read the information sheet

- ☐ Yes

Appendix D: Participant information sheet for additional participants



Health beliefs and food delivery study

You are invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. We would like to stress that you should only agree to take part if you want to.

What is the purpose of the study?

The purpose of the study is to understand consumer habits when ordering pizza for delivery.

Why have I been chosen to take part?

We are recruiting volunteers who fulfil the following criteria:

1. Have a household member who participated in the first part of the study
2. Consumed food ordered in the first part of the study (A meal ordered from Tops pizza)
3. Over the age of 18
4. Are not partaking in a fast or other restrictive eating (e.g. for religious or health reasons) at time of participation
5. You have no previous or current diagnosis of an eating disorder
6. Are not on appetite-suppressing medication
7. Have none of the following dietary restrictions/intolerances:
 - a. Gluten-free
 - b. Dairy-free
 - c. Sugar-free

Do I have to take part?

No. Participation in this research is completely voluntary. You are free to withdraw at any time without explanation and without incurring a disadvantage.

What will happen if I take part?

You will be required to complete a short questionnaire where you will answer questions relating to demographic characteristics and our study outcomes. You will be asked to report what you consumed of the food order placed in part one of the study. Finally, you will be asked to select your preferred method of study reimbursement (£15 via bank transfer (slightly delayed payment) or gift voucher (received within 2 working days)). So that your awareness of the study hypotheses

does not affect your behaviour in the study we provide more detailed information about the study aims at the end of the study. If you feel uncomfortable about this then you are free not to participate in this study. The study should take 5-10 minutes to complete.

How will my data be used?

The University processes personal data as part of its research and teaching activities in accordance with the lawful basis of ‘public task’, and in accordance with the University’s purpose of advancing education, learning and research for the public benefit. University of Liverpool employee Victoria Heath (V.Heath@liverpool.ac.uk) acts as the Data Protection Officer for this study and any queries relating to the handling of your personal data can be sent to her. Further information on how your data will be used can be found in the table below.

| | |
|--|---|
| How will my data be collected? | Through an online questionnaire and online tasks. |
| How will my data be stored? | On a password protected computer server. |
| How long will my data be stored for? | Your personal data will be stored for up to 28 days and then deleted. All other information will be stored indefinitely. |
| What measures are in place to protect the security and confidentiality of my data? | We will store all data on password protected computer servers and we never share any of your personal data outside of the research team for this project. |
| Will my data be anonymised? | After the study your personal information will be stored separately from your other questionnaire responses to create an anonymised data set. After 28 days all personal information will be deleted, but up to this point you can contact us and ask to see your information or have it deleted. |
| How will my data be used? | Your anonymised data will be combined with other participants’ data in order to be analysed. |
| Who will have access to my data? | The research team for this project will have access to your data. |
| Will my data be archived for use in other research projects in the future? | After the research team have anonymised your data and completed this research project, they will place the anonymised data sets on an archive (e.g. Open Science Framework) in case any other researchers want to use it for future research purposes. |
| How will my data be destroyed? | Your personal data will be destroyed electronically (deleting the files and removing them from the computer server). |

Are there any risks in taking part?

There are no anticipated risks to you if you take part in the study.

Are there any benefits in taking part?

There are no direct benefits, other than the small monetary payment.

What will happen to the results of the study?

We intend to publish the results from this study in a scientific journal. However, as explained above any personal information you provide is deleted before this and you would therefore not be identifiable in report. If you are interested in the results of the study, please let us know and we will share the results of the study with you when we publish it.

What will happen if I want to stop taking part?

You are under no obligation to take part in this study; it is completely your choice. If you do decide to take part, you are free to withdraw at any time and without giving any reason or explanation. Data collected up until the period you withdraw may be used, but only if you are happy for this to be done. Otherwise you may request that your data be destroyed and no further use is made of them.

What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, please feel free to let us know by contacting Amy Finlay or Eric Robinson (contact details below) and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer on 0151 794 8290 (ethics@liv.ac.uk). Please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Who can I contact if I have further questions?

Please contact the lead researcher:

Amy Finlay
2.79, Eleanor Rathbone Building
Bedford Street South
University of Liverpool,
Liverpool,
L69 7ZA,
UK
email: a.finlay@liverpool.ac.uk

or the principal investigator:

Prof. Eric Robinson
email: robinsoe@liverpool.ac.uk

I confirm I have read the information sheet

- ☐ Yes

Appendix E: Consent form for original participant



Pizza delivery study

I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

I understand that taking part in the study involves completing online tasks and questionnaires. As part of this study, I will schedule and pay for a meal from a pizza delivery outlet.

I understand that my participation is voluntary and that I am free to stop taking part and can withdraw from the study at any time without giving a reason and without my rights being affected. I also understand that I have the right to lodge a complaint.

I understand that the information I provide is for research purposes and it will be held securely in line with the data protection requirements at the University of Liverpool. In addition, I understand personal information collected about me that can identify me will never be shared beyond the study team.

I understand that shortly after completing the study, researchers will keep my personal data and store it separately from my other questionnaire responses for up to 28 days on a computer, so that my anonymised questionnaire responses can later be deposited in an online data archive for sharing and used by other authorised researchers to support research in the future.

I provide my consent as a legal basis for the processing of my data as detailed previously, including the purposes of data processing, recipients of data and the right to withdraw my data.

I agree to the above, and consent to take part in the study

- ☐ **Yes**

By taking part in this study, you confirm you are happy to order and pay for a meal from a pizza outlet for delivery. Depending on your preferred payment method, you may not be reimbursed for your study participation for up to 5 weeks (i.e. if bank transfer selected).

I acknowledge the study processes and confirm to take part in the study

- ☐ **Yes**
☐ **No**

Appendix F: Consent form for additional participants



Pizza delivery study

I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

I understand that taking part in the study involves completing online tasks and questionnaires.

I understand that my participation is voluntary and that I am free to stop taking part and can withdraw from the study at any time without giving a reason and without my rights being affected. I also understand that I have the right to lodge a complaint.

I understand that the information I provide is for research purposes and it will be held securely in line with the data protection requirements at the University of Liverpool. In addition, I understand personal information collected about me that can identify me will never be shared beyond the study team.

I understand that shortly after completing the study, researchers will keep my personal data and store it separately from my other questionnaire responses for up to 28 days on a computer, so that my anonymised questionnaire responses can later be deposited in an online data archive for sharing and used by other authorised researchers to support research in the future.

I provide my consent as a legal basis for the processing of my data as detailed previously, including the purposes of data processing, recipients of data and the right to withdraw my data.

I agree to the above, and consent to take part in the study

☐ **Yes**

Appendix G: Screening questionnaire

1. Please select the postcode district where you live, and where your pizza order will be delivered to.

[dropdown list of the following postcode areas: L1, L2, L3, L4, L5, L6, L8, L13, L15, M1, M2, M3, M4, M5, M11, M12, M14, M15, M16, M18, M19, B9, B10, B11, B12, B13, B25, B26, B27, B28, B33, B90, B91, B92, my postcode is not in this list]

2. Are you able to order and pay for food from a takeaway pizza outlet (Tops Pizza) to be scheduled for delivery today or tomorrow?

- ☐ Yes
- ☐ No

3. Please select your age

[dropdown list 18-99]

4. How frequently do you use food delivery services? (for example, JustEat, Deliveroo, or online ordering from a specific food business)

- ☐ Not in the last year
- ☐ Less than once per month
- ☐ 1-3 times per month
- ☐ 1-2 times per week
- ☐ 3 times per week or more

5. Are you currently fasting or taking part in other restrictive eating (e.g. for religious or health reasons)?

- ☐ Yes
- ☐ No

6. Have you ever been diagnosed with an eating disorder?

- ☐ Yes
- ☐ No

7. Are you currently on medication that suppresses your appetite?

- ☐ Yes
- ☐ No

8. Do you have any of the following dietary restrictions/intolerances?

- ☐ Gluten-free
- ☐ Dairy-free
- ☐ Sugar-free
- ☐ None of the above

9. Do you, or any other adults you are ordering on behalf of have a food allergy?

- ☐ Yes

- No

****If Yes****

Please be aware of the risks of ordering food prepared out of the home for people with food allergies. The risks involved in this study are no higher than eating out of the home generally. However, please consider this risk before continuing with the study.

Please inform the outlet of any food allergies when you place your order.

Appendix H: Food ordering task instructions.

Before the task begins:

“We would like you to select a meal from a UK chain pizza outlet (Tops Pizza) using a recorded ordering platform. You can select this meal for yourself, or on behalf of all adults in your household.

After your selection, you will place the recorded order through the Tops Pizza website. This order can be scheduled for today or tomorrow and must be paid for today.

On the next page you will be transferred to the recorded ordering platform where you can look through different options. Once you select an item, you will be asked to select any preferences and confirm your choices.”

Once Food order has been selected:

Please report the number of adults in your household who will be eating some of the food ordered:

[dropdown list 1-10]

new page

Are you ordering this food for later today or tomorrow?

- ☐ Later today
- ☐ Tomorrow

Please report the age, gender and email addresses of all the adults in your household (with their consent) including yourself so you can all take part in the study as participants. Any adult participants who have eaten some of the ordered meal and complete the follow up questionnaire will be financially reimbursed for their participation.

However, if you do not provide correct email addresses, other household members will not have the opportunity to complete the follow up questionnaire, and we will not be able to provide reimbursement for these household members.

[textboxes provided, the number of textboxes will be the same number of adults reported above]

new page

Please now place the following order through the Tops Pizza website by opening this link in a new tab <https://topspizza.co.uk/>

Please note that individual menu item and overall prices may be slightly different to those listed in the completed task. You will need to upload evidence of your order (a screenshot of the order confirmation or the receipt) so researchers can validate your participation.

Your order on the Tops website must match your order made earlier to receive reimbursement, unless there is a reasonable explanation (i.e. if an item is not available). If this is the case, please provide evidence such as a screenshot. This can be sent to foodresearch@liverpool.ac.uk.

When you have placed your order, please screenshot your order confirmation and save as a picture on your device. Return to this page.

[List items selected]

[In control condition, note discount code available]

Please upload evidence of your food order through the Tops Pizza website. This confirmation should look like the example image below.

[example image of order confirmation]

[button to upload an image]

Is the order you placed from Tops Pizza different to the order you selected in the online task?

- ☐ Yes
- ☐ No

if No

Please describe why your order from Tops Pizza differs to the order you initially selected in the online task.

Thank you for placing your food order. The day after your food order has been delivered, you and the other adults in your household will receive a link via email to complete the follow up questionnaire with instructions to receive study payment.

Please contact the research team if you or other adults in the household do not receive an email the day after your food order: foodresearch@liverpool.ac.uk

Enjoy your meal!

Appendix I: Follow-up questionnaire

****email sent to original participants****

Thank you for your continued participation in our health beliefs and food delivery study! We hope you enjoyed your meal yesterday. Please follow the link to complete a short follow-up questionnaire. At the end of this questionnaire, you will be able to select your study reimbursement preference.

When prompted, please input the following unique participant code into the questionnaire: *[insert unique code]*

[insert link to questionnaire]

****email sent to participants joining the study****

Thank you for agreeing to take part in our health beliefs and food delivery study! Please follow the link to complete a short questionnaire. Before starting the questionnaire, you will be asked to read a study information sheet and consent form before consenting to take part in the study. At the end of this questionnaire, you will be able to select your study reimbursement preference.

When prompted, please input the following unique participant code into the questionnaire: *[insert unique code]*

[insert link to questionnaire]

1. Please confirm your participant code (this is the code sent to you via email)

2. Please select if you would like us to hold onto your email address so you can be invited to take part in future research led by individuals at the University of Liverpool. If you select yes, your email will remain on our system for three years, after which it will be permanently deleted.

- ☐ Yes
- ☐ No

3. Please think about the meal you ate yesterday. Did you eat anything from the following categories:

| | | |
|----------------------|------------------------------|-----------------------------|
| Pizzas | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Starters/Side dishes | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

| | | |
|----------|------------------------------|-----------------------------|
| Desserts | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Drinks | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Dips | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

*****If yes for Pizzas*****

Please select a pizza that you ate last night [dropdown list of all pizzas]

How many slices of this pizza did you eat? [dropdown list of number of possible slices, and 'full pizza'].

Did you eat another pizza? [dropdown Yes/No]

*****if Yes, repeat above*****

*****if Yes for other categories, for example Starters/Side dishes*****

Please select a Starter/Side dish that you ate last night [dropdown list of all starters/side dishes]

Approximately how much of this Starter/Side dish did you eat? [dropdown list: 25%, 50%, 75%, 100%]

Did you eat another Starter/Side dish? [dropdown Yes/No]

*****if Yes, repeat above*****

4. *[insert health beliefs scale] – scale is currently under development.*

5. Gender

- Man
- Woman
- Other

6. Age:

dropdown list: 18 – 99

7. Ethnicity (Choose one option that best describes your ethnic group or background)

**dropdown list:*

White English/Welsh/Scottish/Northern Irish/British

White Irish

Any other White background
White and Black Caribbean
White and Black African
Any other mixed/multiple ethnic background please describe
Indian
Pakistani
Bangladeshi
Chinese
Other Asian
African
Caribbean
Arab
Any other ethnic group

8. What is your height?

__ ft __ in

OR

__cm

9. What is your weight?

__ st __ lb

OR

__kg

10. What is your highest educational qualification? If you are a student please select the diploma being studied for.

- ☐ Less than high-school or equivalent (i.e. 1-4 GCSEs or O levels, foundation diploma)
- ☐ High-school completion or equivalent (i.e. 5+ GCSEs/O levels, Scottish Higher, Scottish advanced higher, intermediate/higher diploma)
- ☐ College or foundation degree or equivalent (i.e. apprenticeships, A-levels, progression/advanced diploma)
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Doctoral or professional degree

11. What is your annual household income (after tax), including all earners in your household, in GBP (to the nearest £1000)?

12. How many people live at your house, including you?

___ adult(s) or child(ren) aged 14 and over

___ child(ren) aged under 14

13. Think of a ladder (see image) as representing where people stand in society. At the top of the ladder are the people who are best off—those who have the most money, most education and the best jobs. At the bottom are the people who are worst off—who have the least money, least education and the worst jobs or no job. The higher up you are on this ladder, the closer you are to people at the very top and the lower you are, the closer you are to the bottom. Where would you place yourself on the ladder?



Choose the number whose position best represents where you would be on this ladder:

dropdown list: 1 – 10

14. This is an attention check. How many times have you visited the planet Mars?

- ☐ Several times
- ☐ Just once
- ☐ Never

15. How often, on average over the past year have you eaten takeaway pizza?

- ☐ Not in the last year
- ☐ Less than once per month
- ☐ 1-3 times per month
- ☐ 1-2 times per week
- ☐ 3 times per week or more

16. [food choice motives questionnaire]

Several different factors influence our choice of food. Read each item carefully and decide how important the item is to you. There are no right or wrong answers, we are interested in what is important to you.

It is important to me that the food I eat on a typical day...

| FCM no. | | Not at all important 1 | A little important 2 | Moderately important 3 | Very important 4 |
|---------|--|---------------------------|-------------------------|---------------------------|-----------------------|
| 1 | Is easy to prepare | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4 | Tastes good | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6 | Is not expensive | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9 | Is high in fibre and roughage | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10 | Is nutritious | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11 | Is easily available in shops and supermarkets | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 12 | Is good value for money | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14 | Smells nice | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| | This is an attention check. Please select the answer (2) 'A little important' | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15 | Can be cooked very simply | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18 | Has a pleasant texture | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 22 | Contains a lot of vitamins and minerals | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 25 | Looks nice | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 27 | Is high in protein | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 28 | Takes no time to prepare | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 29 | Keeps me healthy | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30 | Is good for my skin/teeth/hair/nails etc. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 35 | Can be bought in shops close to where I live or work | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 36 | Is cheap | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17. UPPS-P subscales

Please select how much you agree with each statement using the response scale below:

- When I feel bad, I will often do things I later regret in order to make myself feel better now.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

- Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.

1 = Strongly agree
2 = Agree

3 = Disagree
4 = Strongly disagree

3. When I am upset, I often act without thinking.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

4. When I feel rejected, I will often say things that I later regret.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

5. My thinking is usually careful and purposeful.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

6. I like to stop and think things over before I do them.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

7. I tend to value and follow a rational, sensible approach to things.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

8. I usually think carefully before doing anything.

1 = Strongly agree

- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

9. When I am in a great mood, I tend to get into situations that could cause me problems.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

10. I tend to lose control when I am in a great mood.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

11. Others are shocked or worried about the things I do when I am feeling very excited.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

12. I tend to act without thinking when I am really excited.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

18. What do you think the aim of the study was?

[Subset 1: RAND order questions 13, 14 & 15]

19. To what extent do you think product price incentives (e.g. 25% off all menu items/size up for £1/meal deal and bundle options) on unhealthy food saves you money in the out-of-home food sector?

- ☐ Strongly disagree
 ☐ Disagree
 ☐ Slightly disagree
 ☐ Neither agree or disagree
 ☐ Slightly agree
 ☐ Agree
 ☐ Strongly agree

20. To what extent do you think product price promotions (e.g. 25% off all menu items/size up for £1/meal deal and bundle options) lead you to purchase more unhealthy food in the out-of-home food sector?

- ☐ Strongly disagree
 ☐ Disagree
 ☐ Slightly disagree
 ☐ Neither agree or disagree
 ☐ Slightly agree
 ☐ Agree
 ☐ Strongly agree

21. To what extent do you agree with the government banning price incentives (e.g. 25% off all menu items/size up for £1/meal deal and bundle options) on unhealthy food (but not healthy food) in the out-of-home food sector to promote healthier eating?

- ☐ Strongly disagree
 ☐ Disagree
 ☐ Slightly disagree
 ☐ Neither agree or disagree
 ☐ Slightly agree
 ☐ Agree
 ☐ Strongly agree

22. Please report the number of children (<18 years) in your household ate some of the purchased food:

- ☐ No children
- ☐ 1 child
- ☐ 2 children
- ☐ 3+ children

23. Please estimate the amount that each child ate in as much detail as you did for yourself:

e.g.

Child 1: 1 slice of Large BBQ chicken pizza, 1 slice of garlic bread with cheese, 25% of garlic and herb dip

Child 2: 1 slice of Medium Margherita pizza, 30% of potato wedges portion, 1 can of Fanta

24. Please state any thoughts you have that have not been covered in the questionnaire:

Please select your preferred method of study payment. A researcher will be in touch to ask for bank details if bank transfer is your preferred payment method.

- ☐ £15 bank transfer (can take up to 5 weeks to appear in account)
- ☐ £15 JustEat Voucher (typically received within 2 working days)
- ☐ £15 Amazon voucher (typically received within 2 working days)

Appendix J: Debriefing text

In this study we were interested in the effect of price-based incentives on food choices in the out-of-home food sector.

All participants who initially signed up to the study and placed food orders were presented with the same food choices with one of two pricing conditions.

- In the first condition, participants were provided with the Tops pizza menu as it exists currently, with three different types of price-based incentives:
 - o Product price promotions (discount code for £ [insert code details])
 - o Bulk buy reductions (meal deals/bundles)
 - o Volume value pricing (size increase for a very small price difference)
- In the second condition, participants were provided with a menu with no price-based incentives.

We wanted individuals to place real food orders so that the intervention would have real-life consequences.

We will compare if people order, pay for and consume more food when price incentives for less healthy food options are available, as well as whether participant characteristics shape these relationships. The results will help to assess the potential impact of limiting the type of price-based incentives on unhealthy food that businesses can use in the out-of-home food sector.

If this study has raised any issues regarding your weight or eating behaviours, we recommend contacting your doctor. The following NHS page provides information and guidance on eating a healthy, balanced diet: <https://www.nhs.uk/live-well/eat-well/>

Thank you very much for your participation in our study.