ENCOURAGING SUSTAINABLE FOOD CONSUMPTION BY USING MORE-APPETIZING LANGUAGE

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HIGHLIGHTS

- Encouraging consumers to shift to primarily vegetarian diets is one way to lower the environmental impact of food.

- This two-phase online study explored the impact of the language used to describe vegetarian food on consumer choice. Phase one involved a consumer preference test to identify appealing alternative names for vegetarian dishes. In phase two, a randomized controlled trial determined the impact of these alternative names on dish choice in a mocked-up menu context.

- Experiential and indulgent language to describe vegetarian dishes led to significant increases in the preference of plant-based items. Conversely, the term “meat-free” consistently discouraged consumers from choosing vegetarian dishes.

- These findings provide initial evidence that it is possible to shift non-vegetarians to eat more plant-based dishes by changing how these are described, with indulgent language out-performing other language categories.

- We tentatively recommend that menu descriptions of vegetarian dishes encourage consumers to view these options as delicious and enjoyable, rather “healthy” or “meat-free” substitutes. Further research is, however, required to confirm these findings in a field-based experiment.

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Technical notes document the research or analytical methodology underpinning a publication, interactive application, or tool.

Food production has a significant impact on the environment, but different types of food have different effects. In general, meat, especially from ruminant animals, uses more land and water and emits more greenhouse gases than growing plants. Shifting consumers’ diets to include more plant-based foods and less meat can, therefore, increase the environmental sustainability of food.

This report describes an online study, conducted in partnership with the World Resource Institute’s (WRI) Better Buying Lab (BBL) and the Behavioural Insights Team (BIT), that explores whether the way that food is described on menus can influence consumer choices. On menus, many vegetarian dishes have names that are not very appealing to people who normally eat meat. We sought to test the impact of alternative names for eight vegetarian dishes on the propensity of meat-eaters to order vegetarian food.

The exploratory study was composed of two online phases. The first showed 727 online participants different variations of vegetarian dish names and asked them to self-report the likelihood that they would order each dish. The second phase took the three to four most successful dish names from phase one and presented them to 2,000 participants in mocked-up menus alongside four non-vegetarian dishes. The proportion of participants who chose a vegetarian dish was then measured and compared to the control dish for each alternative name.

For all eight dishes tested, new names outperformed existing names, although these improvements were not always statistically significant. We note that experiential and indulgent language performed best in both phases of the study, while the term “meat-free” consistently performed poorly.

Overall, this study provides initial evidence that it is possible to significantly increase the propensity of meat-eaters to choose vegetarian food by changing how plant-based dishes are described on menus. Given that this work was conducted online, and thus non-consequential, we recommend that our methodology be replicated to confirm our findings using a larger, randomized, controlled field trial.

Food production has a significant impact on the environment. Half of the world’s desert- and ice-free land is used to grow food, agriculture accounts for 70 percent of global freshwater withdrawals, and agriculture and land-use change account for one quarter of global greenhouse gas emissions (FAO 2011; FAO 2016; Searchinger et al. 2013). Furthermore, animal-based foods (e.g., meat and dairy) are typically more resource-intensive and environmentally impactful to produce than plant-based foods. Production of animal-based foods accounts for more than three-quarters of global agricultural land use and around two-thirds of agriculture’s production-related greenhouse gas emissions, while only contributing 37 percent of the protein in the global food supply (Ranganathan et al., 2016). Roughly half of all agricultural production emissions are from ruminant livestock (cattle, sheep, and goats), while pastureland expansion is a leading driver of deforestation (Kissinger et al. 2012; Henders et al. 2015). Therefore, as the world population climbs toward 10 billion by 2050, shifting diets in middle- and high-income countries to include more plant-based foods and less meat—especially beef and lamb—can greatly ease agriculture’s pressure on forests, freshwater supplies, and the climate (Ranganathan et al. 2016).

There are a number of challenges that need to be considered when attempting to influence consumers who usually eat meat to choose more plant-based dishes. Even if someone is motivated to help the environment, they may not make a strong connection between the environment and the food that they eat, and those that do are more likely to consider the impact of packaging and transportation than the effect of the different types of food that they eat (Macdiarmid et al. 2016). Consumers articulate a number of barriers to eating less meat, including enjoyment of meat, perceived importance of meat for nutrition, preference for familiar foods, and lack of knowledge and skills involving vegetarian food (Lea et al. 2001; Lea et al. 2006; Pohjolainen et al. 2015). Social influence also plays a role in food decisions (Connors et al. 2001; Cruwys et al. 2015) and eating meat is considered a sign of affluence and masculinity (Smil et al. 2002; Rozin et al. 2012), which may lead some consumers to think that plant-based dishes are not for them. Plant-based options are also sometimes framed as the healthy choice, resulting in a perception that they are less tasty (Raghunathan et al. 2006) or less filling (Suher et al. 2016).
Encouraging Sustainable Food Consumption by Using More Appetizing Language

One easy and inexpensive way to influence consumers’ choice is to change the language that is used to describe different foods. Research demonstrates that language can influence food choice in both restaurants and grocery stores (Wansink et al. 2001; Swahn et al. 2012). For example, using indulgent descriptions for vegetables significantly increases the number of people selecting these options in a university cafeteria (Turnwald et al. 2017), and including vegetarian dishes in the main part of a restaurant menu, instead of in a separate vegetarian section, significantly increased the proportion of people who chose a vegetarian dish in a prior online experiment (Bacon et al. 2018). Changing the language and framing of plant-based dishes, therefore, has the potential to be an easy and low-cost strategy for achieving sustainable diets.

The purpose of this study was to test the effect of alternative language to describe vegetarian dishes on the ordering behavior of meat-eating consumers in the UK. We take an exploratory research approach, aiming to identify broad categories of language that promote selection of plant-based dishes, extending existing research that has focused on testing pre-specified language sets rather than exploring a broader range of possible options for naming plant-based dishes.

The research, done in partnership with World Resources Institute’s (WRI) Better Buying Lab (BBL) and the Behavioural Insights Team (BIT), involved a series of online experiments that tested the impact of different language to describe vegetarian dishes on meat eaters’ ordering behaviors. The results from these tests are intended to provide insights into the power of language on food behavior and to inform subsequent randomized control field experiments to further validate the findings.

METHOD

Prior to the commencement of online tests, WRI worked with its UK industry partners to select a range of eight plant-based dishes from their menus, online recipes, or product offerings. A one-day creative workshop was run with marketing and communication executives to generate a list of eight to nine alternative names for each dish. We chose to generate this large number of alternative names given that our research was exploratory in nature. We intend for the results of this initial hypothesis-generating work to inform subsequent hypothesis-driven research to determine the effectiveness of identified language categories on sales of plant-based dishes directly.

To test the names, BIT developed a two-phase methodology comprising two online experimental studies.

Phase 1 Methodology

Dish Names and Survey Design

For each of the eight or nine dishes, a randomized survey design was used to present online participants with alternative dish names.

Each participant was shown one random name from the eight or nine alternatives tested and asked how likely they would be to order it. For example, referencing the list of names shown below, a single respondent may have been presented dish names 1.3, 2.1, 3.5, 4.4, 5.1, 6.7, 7.6, 8.3 and asked how likely they would be to order each one. No participant saw more than one name for a single dish. As such, when comparing the popularity of different names for a given dish, we undertook a between-subject comparison.

The price and dish description were also shown, consistent for all name variations of a given dish. Situational prompts were also added to each question, as indicated in orange in the list below. The name of the relevant partner organization, shown in blue, was not included on the survey. Figure 1 shows an example screenshot, with the full list of dish names, descriptions, prices, and prompts.
Vegetable Lasagna (£5.00) (Sainsbury’s)

“Imagine you want to buy a quick meal after your weekly food shop, so you pop into the café in the supermarket...”

(Vegetable lasagna with garlic bread and side salad)

- 1.1 Vegetable Lasagna (control name)
- 1.2 Layered Aubergine, Red Pepper, Tomato, and Cheese Pasta Bake
- 1.3 Creamy Mozzarella and Roasted Vegetable Lasagna
- 1.4 Hearty Aubergine, Red Pepper, and Tomato Lasagna
- 1.5 Triple Cheese and Slow-Roasted Vegetable Lasagna
- 1.6 Florentine Lasagna
- 1.7 Good Mama Lasagna
- 1.8 Mediterranean Pasta Bake
- 1.9 Tuscan Farm Lasagna

Black Bean Burger (£9.00) (Unilever)

“Imagine you’re going out for dinner with a good friend...”

(Black bean burger with ginger, pickled onions, and alfalfa sprouts served on a brioche bun)

- 2.1 Black Bean Burger (control name)
- 2.2 Sweet and Spicy Bean Burger
- 2.3 Spicy Bean Burger with Sweet Pickle Relish
- 2.4 Beijing Black Bean Burger
- 2.5 Szechuan Burger
- 2.6 Black Belt Burger
- 2.7 Big Black Bean Burger
- 2.8 Muscle Builder Bean Burger

Gnocchi (£10.95) (Unilever)

“Imagine you’re going out for dinner with a good friend...”

(Italian gnocchi in a mushroom, spinach, and parmesan sauce)

- 3.1 Gnocchi with Mushroom, Fresh Spinach, and Parmesan (control name)
- 3.2 Indulgent Gnocchi with Mushroom and Fresh Spinach in a Creamy Parmesan Sauce
- 3.3 Melt in the Mouth Gnocchi with Mushrooms and Fresh Spinach in a Creamy Parmesan Sauce
- 3.4 Gnocchi Rustica
- 3.5 Gnocchi Spinaci e Funghi
- 3.6 Gnocchi in a Punchy Parmesan Sauce with Moorish Mushrooms
- 3.7 Hand-rolled Gnocchi, Homemade Mushroom and Parmesan Sauce
- 3.8 Mama’s Hearty Homecoming Gnocchi

Jerk Curry (£8.80) (Unilever)

“Imagine you’re going out for dinner with a good friend...”

(Butternut squash and sweet potato curry with jerk seasoning served with rice and peas)

- 4.1 Jerk Butternut Squash and Sweet Potato Curry (control name)
- 4.2 Sweet and Spicy Butternut Squash and Sweet Potato Curry
- 4.3 Caribbean Sunset Curry
- 4.4 Nine Spice Jerk Curry
- 4.5 Mama’s Sunday Jerk Curry
- 4.6 Carnival Curry
- 4.7 Hearty Homestyle Jamaican Curry
- 4.8 Slowly Simmered Butternut Squash and Sweet Potato Curry
Encouraging Sustainable Food Consumption by Using More Appetizing Language

Veggie Burger (£7.00) (Quorn)
“Imagine you’re in a local pub, having a meal...”
(Quorn burger, with cheese, tomato, and lettuce in a white bap served with chips)

- 5.1 Veggie Burger (control name)
- 5.2 Loaded Veggie Burger with Grilled Cheese
- 5.3 Virgin Burger
- 5.4 Garden Burger
- 5.5 The Vurger
- 5.6 Sunshine Burger
- 5.7 Plant Power Burger
- 5.8 Smokey Quorn Burger

Chickpea and Potato Curry (£15.00) (Hilton)
“Imagine you’re having an evening meal at a hotel, before you fly out on holiday the next day...”
(Chickpeas and potatoes in a mild curry sauce served with pilau rice, naan bread, chutney and pappadums)

- 6.1 Chickpea and Potato Curry (control name)
- 6.2 Hearty Chickpea and Chunky Potato Curry
- 6.3 Mild and Sweet Chickpea and Potato Curry
- 6.4 Aloo Chana Masala Curry
- 6.5 Golden Temple Curry
- 6.6 Indian Summer Curry
- 6.7 Comforting Curry
- 6.8 Pukka Potato Stew

Figure 1 | Example Screen Shot from the Stage 1 Survey

Imagine you’re going out for dinner with a good friend...

How likely would you be to order the following dish?

Gnocchi with Mushroom, Fresh Spinach and Parmesan Sauce (£10.95)
(Italian gnocchi pasta in a mushroom, spinach and parmesan sauce)

- Extremely likely
- Moderately likely
- Slightly likely
- Neither likely nor unlikely
- Slightly unlikely
- Moderately unlikely
- Extremely unlikely

Source: WRI
Meat-free Breakfast (£3.50) (Sainsbury's)
“Imagine you want to buy a quick meal after your weekly food shop, so you pop into the café in the supermarket...”

(Two eggs, meat-free sausage, mushrooms, hash browns, fresh tomato, baked beans, and a slice of toast)

- 7.1 Meat-free Breakfast (control name)
- 7.2 Field-Grown Breakfast
- 7.3 Feel-good Fry Up
- 7.4 Better Brekkie
- 7.5 Garden Breakfast
- 7.6 Full Brighton Breakfast
- 7.7 Full Eden Breakfast
- 7.8 Bob's Better Fry Up
- 7.9 Super Value Breakfast

Meat-free Sausage and Mash (£5.00) (Sainsbury's)
“Imagine you want to buy a quick meal after your weekly food shop, so you pop into the café in the supermarket...”

(Meat-free sausage and mash with peas or carrots and gravy)

- 8.1 Meat-free Sausage and Mash (control name)
- 8.2 Cumberland Spiced Veggie Sausage and Mash
- 8.3 Red Onion and Rosemary Veggie Sausage and Mash
- 8.4 Feel-good Sausages and Mash
- 8.5 Better Sausages and Mash
- 8.6 Field-grown Sausages and Mash
- 8.7 Vangers and Mash
- 8.8 Country Vegetable Sausage and Mash

We also collected basic demographic information on participants’ age bracket, gender, and income level. At the end of the survey, we asked:

Do you eat meat?
- Yes, I eat meat for most meals
- I sometimes eat meat, but also frequently have meat-free meals
- I rarely eat meat; most of my meals are meat-free
- No, I never eat meat

How hungry were you when answering these questions?
- Very hungry
- A little hungry
- Not hungry

Please rate how important each of the following factors are to you when choosing a meal in a cafe, pub, or restaurant (measured on a 7-point Likert scale from “very important” to “not at all important”).

- Taste and texture
- Price
- Having a treat/occasional indulgence
- Quality of food and ingredients
- Health and nutrition
- Fillingness
- Environmental sustainability
- Animal welfare
- Trying something new
- Familiarity with the dish
Outcome Measures

The primary outcome measure is the stated likelihood of ordering the vegetarian dish, which was measured on a 7-point Likert scale as follows:

- Extremely likely – 7
- Moderately likely – 6
- Slightly likely – 5
- Neither likely nor unlikely – 4
- Slightly unlikely – 3
- Moderately unlikely – 2
- Extremely unlikely – 1

Participants

Participants were recruited from the Prolific online panel. No inclusion/exclusion criteria were applied other than that participants were living in the UK. Since we were interested in the likelihood of non-vegetarians ordering plant-based food, we excluded those who do not eat meat, but did so post-hoc (i.e. we only asked at the end of the survey), to avoid priming all survey respondents. Approximately 8 percent of participants were screened out. In our study, we also screened out pescatarians since we are only interested in those who eat meat. A total of 809 participants responded to the survey, with 82 screened out because they never ate meat, giving a final sample of 727. Each person saw one dish name for each of the eight dishes, equating to 80–90 responses per individual dish name (depending on whether there were eight or nine variants for a given dish).

Analyses and Criteria for Success

The purpose of Phase 1 was to reduce the number of dish names per dish, so a refined list of names could be taken forward to Phase 2 online experiments, and ultimately to subsequent randomized field trials.

To do this, we conducted separate linear regression analyses comparing each alternative dish name against the worst-performing name, including self-reported hunger, gender, age, and household income as covariates in these models. This resulted in our conducting seven separate regression models, each including a dummy variable representing comparison on the worst-performing dish name (e.g. coded 1) against each of the remaining alternative dish names (e.g. coded 2–8). We did not compare the control name with each of the alternative names during this initial phase of research as the control name was selected on the basis of pragmatic (e.g. the name most commonly used in restaurant settings), rather than statistical, considerations.

We had strict criteria for taking names forward to the next research phase:

- We take forward the control name since it will continue to be the baseline counterfactual in Phase 2 and any subsequent field trials.
- We take forward all names that are statistically significantly better than the worst-performing name, set as the standard threshold for statistical significance (p≤0.05).
- If this number is less than 3: In addition to the control, take forward the three names with the smallest p-values.
- If this number is greater than 5: In addition to the control, we only take forward the five with the smallest p-values.

Phase 2: Methodology

Starting with the three to four best-performing dish names from Phase one (plus the control name), for each of the eight vegetarian dishes, we used a randomized hypothetical choice experiment, presenting online participants with menus from which they were asked to choose one meal from the list. Figures 2 and 3 show two such examples.

Each menu contained one vegetarian dish name, alongside four other non-vegetarian dishes already found on the respective partner’s menus. With four to five dish names—including the control name—being tested for each of the eight vegetarian dishes, we had 34 menus in total.

Each of the 2,000 participants was shown five consecutive menus, covering one dish name for five of the eight dishes; no participant would see more than one name for a single dish. The survey showed a random five of the eight dishes, and the order of these dishes was randomized, as was the one name within each dish shown. Each dish, therefore, received an average of 1,250 responses, and each dish name received 250–350 responses.
Several important research considerations went into the design of the menus and the survey structure.

Each partner organization—Sainsbury’s, Hilton, Quorn, and Unilever—had their own un-branded menu design appropriate for the style of establishment and consistent for all the dishes and dish names being tested from that partner. For example, Figures 2 and 3 above show the menu design for Sainsbury’s and Hilton, respectively.

Four other dishes were included on each menu, consistent for all variations of a single vegetarian dish; i.e. all name variations of meat-free sausage and mash had the same other four dishes on the menu. In their alternative meals, menus included two chicken dishes, one beef dish, and one pork dish. However, as all dishes were taken from the actual menus of the partner organization, this was not always possible, with the breakfast menu being the obvious exception, with no beef or chicken options. The vegetarian dish was always in position four. This was to maintain consistency and avoid overly strong ordering effects (we would expect dishes in the first or last position to typically attract more attention). We considered randomizing the position in which the vegetarian option appeared, though with the eight dishes, four to five names per dish, and a limited sample size of 2,000, it was highly likely we would end up with some imbalance if we randomized on an additional variable. We therefore considered consistency a better approach, maintaining our ability to make like-for-like comparisons between names, even if subtle ordering effects boost or diminish the ordering rates of all vegetarian dishes as a whole. This does not actually matter, as we are not making claims about absolute rates of ordering, only that some names might lead to higher ordering rates than others.
No overt indication that dishes were vegetarian were included (such as “V” symbols), though all vegetarian dishes were obviously so when reading the description. The omission/inclusion of a “V” indicator could well have a significant effect on ordering since non-vegetarians may use it as a quick heuristic with which to rule out options and narrow down their choice. It also potentially signals “otherness” of the vegetarian options. However, these are separate research questions we did not want to conflate with the purpose of this particular research, and so for simplicity and clarity of interpretation of results, we omitted these elements.

We were conscious of the risk of between-menu ordering effects and fatigue. For example, participants are potentially less likely to choose a vegetarian meal if they have already chosen a vegetarian meal from previous menus they have been shown. For this reason, we randomize the order of menus shown to individuals, so that any ordering effects are balanced. We also only show each participant five of the eight dishes, striking a balance between limiting respondent fatigue, and getting as much data from our sample size as possible. Keeping the study short also reduces the risk that participants just “click through” without reading the menus properly.

We also include the same demographic and follow-up questions as in Phase 1.

Outcome measures and analyses

The primary outcome was binary, representing the proportion of people who did versus did not order the vegetarian dish. We conducted separate logistic regression analyses, including hunger, age, gender, and income as covariates, to compare each alternative dish name against the control dish name. We chose not to conduct an overall aggregate alternative dish name versus control dish name comparison as we are specifically interested in the differential effect of each individual name in this exploratory trial. Moreover, we anticipated that both facilitatory and suppressive effects of different label type would be present, potentially rendering an averaged effect null if combined together.

Participants

As with Phase 1, participants were recruited from the Prolific online panel. No inclusion/exclusion criteria were applied other than that participants were living in the UK. Again, we excluded those who do not eat meat, and we only asked at the end of the survey to avoid priming all survey respondents.

RESULTS

Phase 1 Results

Table 1 summarizes the results for all alternative names of the eight vegetarian dishes. This table shows an abbreviated name (see list on pages 4–6 to identify the full name), with the average stated likelihood of ordering the dish expressed as a number from a seven-point scale, to two decimal places. The top row of the table consists of all the control (current) names. The presence of a (W) indicates the worst-performing name for that dish, which was our benchmark comparator in linear regression models. The number in parentheses between 0 and 1 indicates the p-value—the degree of statistical significance with which the name is better than the worst-performing name. Smaller p-values indicate greater statistical significance of the result.

Dish names highlighted in blue were taken forward to the second phase. This includes all the control names.

Note that there is one deviation from our pre-specified criteria: “Comforting” (chickpea and potato curry) did not pass our criteria to be taken forward to phase two, but after discussion, it was decided it would be included because it was close to “Mild and Sweet” (which did meet our criteria) and that excluding it would have been highly arbitrary.
Table 1 | Results from Phase 1 Showing Average Stated Likelihood of Ordering the Dishes Under Alternative Names

Note: Dishes highlighted in yellow were taken forward into Phase 2.

<table>
<thead>
<tr>
<th>Dish</th>
<th>Average Likelihood (Standard Deviation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable Lasagna</td>
<td>4.36 (0.684)</td>
</tr>
<tr>
<td>Black Bean Burger</td>
<td>2.99 (0.616)</td>
</tr>
<tr>
<td>Gnocchi</td>
<td>3.85 (0.656)</td>
</tr>
<tr>
<td>Jerk Butternut Squash</td>
<td>3.96 (0.217)</td>
</tr>
<tr>
<td>Veggie Burger</td>
<td>3.11 (W)</td>
</tr>
<tr>
<td>Chickpea and Potato Curry</td>
<td>3.43 (0.373)</td>
</tr>
<tr>
<td>Meat-free Breakfast</td>
<td>3.66 (W)</td>
</tr>
<tr>
<td>Meat-free Sausage and Mash</td>
<td>3.50</td>
</tr>
<tr>
<td>Layered Pasta Bake</td>
<td>4.22 (W)</td>
</tr>
<tr>
<td>Sweet and Spicy</td>
<td>3.17 (0.257)</td>
</tr>
<tr>
<td>Indulgent</td>
<td>3.92 (0.491)</td>
</tr>
<tr>
<td>Sweet and Spicy</td>
<td>4.06 (0.109)</td>
</tr>
<tr>
<td>Loaded</td>
<td>3.85 (0.014)</td>
</tr>
<tr>
<td>Hearty</td>
<td>3.17 (W)</td>
</tr>
<tr>
<td>Field-grown</td>
<td>4.51 (0.008)</td>
</tr>
<tr>
<td>Cumberland Spiced</td>
<td>4.00 (0.008)</td>
</tr>
<tr>
<td>Creamy Veg</td>
<td>4.55 (0.29)</td>
</tr>
<tr>
<td>Spicy with Relish</td>
<td>3.60 (0.011)</td>
</tr>
<tr>
<td>Melt in Mouth</td>
<td>4.37 (0.027)</td>
</tr>
<tr>
<td>Caribbean Sunset</td>
<td>4.20 (0.04)</td>
</tr>
<tr>
<td>Virgin</td>
<td>3.27 (0.564)</td>
</tr>
<tr>
<td>Mild and Sweet</td>
<td>3.59 (0.153)</td>
</tr>
<tr>
<td>Feel-good</td>
<td>4.86 (0.000)</td>
</tr>
<tr>
<td>Red Onion</td>
<td>3.76 (0.063)</td>
</tr>
<tr>
<td>Hearty</td>
<td>4.35 (0.675)</td>
</tr>
<tr>
<td>Beijing</td>
<td>3.49 (0.03)</td>
</tr>
<tr>
<td>Rustica</td>
<td>4.06 (0.235)</td>
</tr>
<tr>
<td>Nine Spice</td>
<td>3.57 (W)</td>
</tr>
<tr>
<td>Garden</td>
<td>3.44 (0.262)</td>
</tr>
<tr>
<td>Aloo Chana</td>
<td>3.32 (0.618)</td>
</tr>
<tr>
<td>Better</td>
<td>4.57 (0.004)</td>
</tr>
<tr>
<td>Feel-good</td>
<td>3.74 (0.078)</td>
</tr>
<tr>
<td>Triple Cheese</td>
<td>4.95 (0.02)</td>
</tr>
<tr>
<td>Szechuan</td>
<td>3.27 (0.156)</td>
</tr>
<tr>
<td>Spinaci e Funghi</td>
<td>3.92 (0.461)</td>
</tr>
<tr>
<td>Mama’s Sunday</td>
<td>4.14 (0.059)</td>
</tr>
<tr>
<td>Vurger</td>
<td>3.54 (0.146)</td>
</tr>
<tr>
<td>Golden Temple</td>
<td>3.72 (0.068)</td>
</tr>
<tr>
<td>Garden</td>
<td>4.74 (0.001)</td>
</tr>
<tr>
<td>Better</td>
<td>3.82 (0.047)</td>
</tr>
<tr>
<td>Florentine</td>
<td>4.84 (0.055)</td>
</tr>
<tr>
<td>Black Belt</td>
<td>3.26 (0.148)</td>
</tr>
<tr>
<td>Punchy Parmesan Sauce</td>
<td>3.94 (0.448)</td>
</tr>
<tr>
<td>Carnival</td>
<td>4.12 (0.065)</td>
</tr>
<tr>
<td>Sunshine</td>
<td>3.58 (0.098)</td>
</tr>
<tr>
<td>Indian Summer</td>
<td>3.93 (0.013)</td>
</tr>
<tr>
<td>Full Brighton</td>
<td>4.50 (0.008)</td>
</tr>
<tr>
<td>Field-grown</td>
<td>4.21 (0.000)</td>
</tr>
<tr>
<td>Good Mama</td>
<td>4.64 (0.172)</td>
</tr>
<tr>
<td>Big Black</td>
<td>2.85 (W)</td>
</tr>
<tr>
<td>Hand-rolled</td>
<td>3.71 (W)</td>
</tr>
<tr>
<td>Hearty</td>
<td>3.65 (0.803)</td>
</tr>
<tr>
<td>Plant Power</td>
<td>3.67 (0.053)</td>
</tr>
<tr>
<td>Comforting</td>
<td>3.57 (0.167)</td>
</tr>
<tr>
<td>Full Eden</td>
<td>4.48 (0.012)</td>
</tr>
<tr>
<td>Vangers</td>
<td>3.22 (W)</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>4.74 (0.089)</td>
</tr>
<tr>
<td>Muscle Builder</td>
<td>2.98 (0.625)</td>
</tr>
<tr>
<td>Mama’s Hearty</td>
<td>3.89 (0.545)</td>
</tr>
<tr>
<td>Simmered</td>
<td>3.63 (0.848)</td>
</tr>
<tr>
<td>Smoky Quorn</td>
<td>3.37 (0.354)</td>
</tr>
<tr>
<td>Pukka Potato</td>
<td>3.19 (0.943)</td>
</tr>
<tr>
<td>Bob’s Better</td>
<td>4.57 (0.02)</td>
</tr>
<tr>
<td>Country Veg</td>
<td>3.54 (0.251)</td>
</tr>
<tr>
<td>Tuscan Farm</td>
<td>4.67 (0.170)</td>
</tr>
<tr>
<td>Super Value</td>
<td>4.89 (0.000)</td>
</tr>
</tbody>
</table>
Phase 2 Results

Figures 5 to 12 show the proportion of people choosing the vegetarian dish for each of the eight dishes, along with 95 percent confidence intervals for the comparison of each dish name compared to the control dish. We discuss the findings for each dish in turn.

Vegetable Lasagna (Sainsbury’s)
All name variations performed better than the control name, though none were statistically significant. “Triple Cheese” and “Florentine” performed best, 27 percent and 29 percent more popular than the control name, respectively.

While we cannot rule out the possibility that these results are the result of chance, it is reassuring to note that similar trends are evident in the Phase 1 results, with “Triple Cheese” and “Florentine” performing similarly well, and “Mediterranean” slightly below. This adds some confidence to our interpretation of the results as well as of the experimental design.

Black Bean Burger (Unilever)
“Spicy with relish” performed the best, being 42 percent more popular than the control name. However, despite this effect size, it is not statistically significant.

Both “Beijing” and “Black Belt” perform no better or worse than the control name. “Spicy with Relish” was also the best performer in Phase 1.
Gnocchi (Unilever)

We saw sizeable improvements over the control name, though none are statistically significant. “Melt in the Mouth” performed best, 31 percent more popular than the control name. However, “Rustica” and “Punchy Parmesan Sauce” also performed well.

In Phase 1, “Melt in the Mouth” was the highest performer by some margin, with “Rustica” second best, and “Punchy Parmesan” third best—the same trend seen here. This consistency across two different participant populations and two different experimental designs is encouraging and lends credence to the results.

Jerk Butternut Squash (Unilever)

Once again, we saw reasonably large effects, with “Mama's Sunday” 34 percent more popular than the control name, but with no statistical significance.

The performance of the three test names here is similar, as they were in Phase 1.

Veggie Burger (Quorn)

As with the other vegetarian burger on test, we did not see much improvement over the control name. The “Loaded Burger” performed best, at 12 percent better than the control, though the result is not statistically significant.

Despite these small effects, the ranking of performance (“Loaded” > “Plant” > “Sunshine”) is the same in Phase 1 and 2. However, in Phase 1, all three were significantly better than the control (p<0.1), whereas in Phase 2, there is no statistical significance, and “Sunshine” even appears to be doing slightly worse than the control.
Chickpea and Potato Curry (Hilton)
We saw strong results across all four names tested. “Mild and Sweet” performed best, more than twice as popular as the control name—a 108 percent improvement. Even the lowest-performing name of the four, “Golden Temple,” had a 64 percent improvement over the control dish and is weakly statistically significant.

Interestingly, however, the trend here is slightly reversed from Phase 1. Though all four did strongly in both Phase 1 and 2, in Phase 1 “Golden Temple” and “Indian Summer” outperformed “Mild and Sweet” and “Comforting.” This may be indicative of differences borne through the different experimental designs or sample populations, particularly as these trends seem to split the names into those which evoke eating experience versus those which evoke exotic connotations, or this may simply be due to noise and random variation.

Meat-free Breakfast (Sainsbury’s)
We see strong results across all four alternative breakfast names. All four performed significantly better than the control name, though there is relatively little difference between the four.

“Field-grown” performed most strongly, 93 percent more popular than the control. The other three test names were very similar, and all four results were very close in Phase 1.

Meat-free Sausage and Mash (Sainsbury’s)
All alternative names are statistically significantly much more popular than the control name. The best-performing name, “Better,” shows a 140 percent increase over the control name. The other two test names perform very similarly.
DISCUSSION

The results are broadly encouraging, with some clear differences emerging between the alternative names tested. Though many of the results are not statistically significant, effect sizes are often larger and reflect the trends seen in Phase 1. This consistency adds confidence to both the results and validity of the experimental design.

Beyond the specific findings outlined in the results section, a number of more general conclusions can be tentatively made. First, and most convincingly, “Meat-free” appears to be very ineffective language for selling vegetarian food to meat-eaters. “Field Grown” is a promising alternative and is particularly appealing since it still imparts the notion of vegetarianism, unlike some alternatives tested that focus more on value for money or health, for example.

Second, there are some successful themes emerging in the language. For example, experiential language highlighting the flavor, taste, or enjoyment of food seems to be emerging as a successful strategy. “Spicy with Relish,” “Melt in the Mouth,” “Mild and Sweet,” “Comforting,” “Punchy Parmesan Sauce,” and “Cumberland Spiced” all fall into this category, and on average out-perform other language. That said, it is worth noting that some dish names fitting into this theme did not make it through Phase 1, including “Indulgent Gnocchi with Mushroom and Fresh Spinach in a Creamy Parmesan Sauce,” and “Hearty Homestyle Jamaican Curry.” Existing literature supports the hypothesis that food described as indulgent is more popular than that described as virtuous. For example, one study found that vegetable dishes with indulgent names were chosen on average 41 percent more than healthy names, and 25 percent more than basic names (“Sweet Sizzlin” Green Beans and Crispy Shallots” and “Twisted Citrus-Glazed Carrots” were the indulgent names, compared against “Light ‘n’ Low-carb Green Beans and Shallots” and “Carrots with Sugar-free Citrus Dressing,” and against basic names “Green beans” and “Carrots”) (Turnwald et al. 2017). We are not aware of other research extending these findings into the sustainability context or to promote vegetarian food; however it certainly deserves to be tested further in the field.

Limitations

The key caveats to these findings relate to the nature of the experimental design, which, though given careful consideration to maximize internal and external validity, is nonetheless an online study dependent on self-reported responses. The sample was drawn from a large online panel, restricted to those who lived in the UK. This sample is not perfectly representative of the UK population, and with all participants asked about dishes from all establishments, is not representative of the typical clientele of each individual establishment. The sample size was also limited by project resources, inflating the risk of type two error, falsely accepting the null hypothesis of no difference in effect of dish names on dish choice.

Most important, external validity is limited due to the hypothetical nature of the study. Principally this emerges from the lack of consequence of respondents’ choice; i.e., not having to pay for, or eat, the dish selected. This may lead to respondents adding noise to the data by giving the decision less careful consideration or even answering randomly, or being more, or perhaps less, inclined to choose the perceived “virtuous” item on the menu than in reality. Similarly, the lack of real cost may gravitate participants toward more costly items than they would normally select. We intended, in part, to address the issue of external validity by prompting participants to imagine a context surrounding their dish selections (e.g. “Imagine you’re going out for dinner with a good friend...”), but recognize that this additional information may itself have influenced selection given that food choices likely differ by context and company (e.g. eating alone or with friends). We intend to address this limitation in future research by keeping context descriptions consistent across conditions.

A further limitation of the work is the fact that we conducted multiple tests using the same participants, so increasing the likelihood of committing a type one error—that is, failing to reject the null hypothesis, stating that dish names effect dish choice when they do not. To compensate for this, we also present the percentage of increase in sales (the effect size), in addition to emphasizing the fact that the findings of this work are exploratory (e.g., hypothesis generating), rather than definitive (e.g., hypothesis testing). Ultimately, we present this study as a first step in a wider program of research; the results are not absolutely robust on their own but rather strengthen the hypothesis that the use of language can help shift consumption toward more sustainable food and provide insight into the kind of language that might have the most impact at doing this and should therefore be tested in the field.
Conclusions

The results from these two studies provide encouraging evidence that it is possible to significantly increase the tendency of non-vegetarians to eat plant-based food by changing the language used to describe it. The individual results for each dish are promising and provide a good basis on which to replicate the findings in randomized, controlled field trials. Equally interesting is the tentative emergence of broader conclusions—particularly that experiential and indulgent language may be a better approach for making plant-based food appealing. This is in line with wider evidence that indulgent language out-performs healthy language. It also resonates with wider behavioral theory, implying that the themes of restraint, guilt, and “ought to” values that often appear as part of sustainable and public health campaigns are often not effective (Brennan and Binney 2010), and instead we should be appealing to other, stronger, positive motivations—such as the motivation to eat delicious and enjoyable food.

We are also very encouraged by the implication from these results that “Field Grown” might be used as a viable industry-wide alternative to “Meat-free,” and that this is something that warrants further research, alongside the use of more indulgent language to promote vegetarian foods that may be impaired by more puritanical descriptions.

ENDNOTE

1. Prolific is an online platform for connecting researchers with participants, providing a panel of hundreds of thousands of participants from around the world, with functionality for screening respondents based on numerous demographic characteristics and allowing incentivization and compensation.

REFERENCES


FAO. 2016. AQUASTAT Database. Rome: FAO.


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