HOW LANGUAGE CAN ADVANCE SUSTAINABLE DIETS

A Summary of Expert Perspectives on How Research into the Language of Plant-based Food Can Change Consumption

Jonathan Wise, Daniel Vennard, Linda Bacon

Executive Summary

Food production significantly impacts the environment, but different types of food have different effects. Generally, producing meat, especially from ruminants (cattle, sheep, and goats), uses more land and water and emits more greenhouse gases than producing plant-based foods. Therefore, in countries with high meat consumption, shifting diets to include more plant-based foods and less meat can reduce agriculture's pressure on natural resources.

One potentially high-impact but low-cost strategy to help consumers shift their diets is changing the language used to describe food. Existing research has shown that how food is described influences what people choose, and that many plant-based dishes have names that are not appealing to people who normally eat meat. However, this area is nascent. More research can reveal the potential of improved language to drive consumption of plant-based foods.

Over the course of two workshops held in the United States and United Kingdom, the Better Buying Lab convened more than 50 leading academics and practitioners from the food industry to identify the most powerful research questions that, if answered, can improve the language of plant-based food and shift more consumers toward more sustainable diets.

Through these workshops, participants identified five questions to guide future research:

1. How do we improve our knowledge base on how language influences food choice?

2. What can we learn from current plant-based food language?

3. What language is the most effective for plant-based food?

4. What are the key segments to target and how do we appeal to them?

5. What's the best way to get improved language adopted at scale?

This report also summarizes participant recommendations on the key actions required to advance this research and ensure findings are widely adopted by business and society. They include

- engaging research councils and relevant foundations;

- inspiring more academics to work in this area;

- facilitating links between academics and industry; and

- making the findings easy for industry to understand and act upon.

Introduction

High Meat Consumption Leads to High Environmental Impact

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; Searchinger et al. 2013).[1] 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 contributing only 37 percent of the protein in the global food supply (Ranganathan et al. 2016). And roughly half of all agricultural production emissions are from ruminant livestock (cattle, sheep, and goats), while pastureland expansion is a leading driver of deforestation (Searchinger et al. 2013; Kissinger et al. 2012; Henders et al. 2015).

As the world population climbs toward 9.8 billion by 2050 (United Nations 2017), 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).

Language Is a Potential Solution to Encourage People to Eat More Plant-based Foods

There is an active vegetarian and vegan movement, but the number of people adopting these diets amounts to a small minority in most countries (Leahy et al. 2010). To make headway, the food industry and those working to advance sustainable diets must explore new, innovative solutions to encourage mainstream meat-eating consumers to choose more plant-based foods.

One such potential area is language. Mainstream consumers perceive eating plant-based food as a socially abnormal activity that is restricted to people who self-identify as "vegetarian" or "vegan"

(Ruby and Heine 2011; Vartanian et al. 2007). The descriptions of plant-based foods can play a critical role in this negative perception. For example, recent research has shown that putting plant-based dishes in a vegetarian section of a menu can reduce consumer ordering by 56 percent (Holzer 2017). Similarly, calling a dish "healthy"—a typical term used for plant-based food—can suppress perceptions of taste (Raghunathan et al. 2006) and how filling a food will be (Suher et al. 2016). New research, however, is finding that changing the language of food on menus and in dining environments can help overcome these perceptions and significantly impact consumer behavior. For example, research by Stanford University (Turnwald et al. 2017) found that changing the names of vegetables to sound more indulgent (e.g., "slow-roasted caramelized zucchini bites") increased the number of diners choosing them by 25 percent versus basic labelling (e.g., "zucchini") and by up to 41 percent versus healthy labelling (e.g., "lighter choice zucchini" or "nutritious green zucchini").

Changing the language of plant-based foods represents a potentially high-impact but low-cost strategy for achieving more sustainable diets.

Language Is an Emerging Area of Interest for Different Groups

While existing research provides some indication of the power of language to drive consumption of plant-based foods, this agenda is nascent. Fortunately, members of the academic community, working in a variety of fields, can provide valuable insights on how language can increase consumers' affinity for plant-based foods. More research is needed to fully understand what language is effective and what is ineffective. At the same time, industry practitioners are increasingly aware of the market opportunity for plant-based foods and are keen to learn how changing language can be a low-cost way to sell more.

The **Better Buying Lab** is an initiative of the World Resources Institute, a global research organization that turns big ideas into action to sustain our natural resources. The Better Buying Lab brings together the brightest and best minds from consumer research, behavioral science, and marketing strategy, along with companies in the food industry, to research, test, and ultimately scale new strategies and actions that help consumers buy more sustainable products.

Convening to Accelerate the Research Agenda

More research is needed to reveal the potential of language to help enable a shift toward more sustainable diets. Motivated academics and practitioners are vital for facilitating this research.

The World Resources Institute's (WRI's) Better Buying Lab, with support from the Wellcome Trust, convened two workshops in March 2018 in London and Washington, DC, bringing together more than 50 leading academics and practitioners from the food industry with an interest in exploring the future research agenda for the language of food.

The Workshops' Design

The purpose of the workshops was to identify the most powerful research questions that, if answered, will help improve the language of plant-based food and shift consumption toward more sustainable diets.

Participants came from across academic institutions in the United States, United Kingdom, and Europe and represented a variety of disciplines with experience and interest in the topic of language and food—including linguists, psychologists, behavioral scientists, and health and marketing experts. Practitioners from across the food system—including branded manufacturers, food service providers, hotels, and retailers—also participated. Appendix A includes a full list of participants.

Ahead of the sessions, academics and practitioners submitted relevant academic papers, research, and articles, which were then shared with all participants prior to the workshops. To orient participants around the current research, in each workshop three academics shared the most important findings and limitations of existing research from their areas of expertise. A facilitated group discussion drew out additional views from participants. Appendix B includes the referenced academic papers, though research not yet published is not included.

With a shared understanding of the current knowledge landscape, participants, individually and then in small groups, identified key questions that, if answered, would advance our understanding of effective language for plant-based foods. Each workshop generated more than 30 research questions. Participants then grouped questions into common themes, and voted on areas to prioritize and discussed the actions needed to advance the identified research priorities.

The potential avenues of discussion were broad. The Better Buying Lab therefore defined the scope of the conversation during the workshops in the following way:
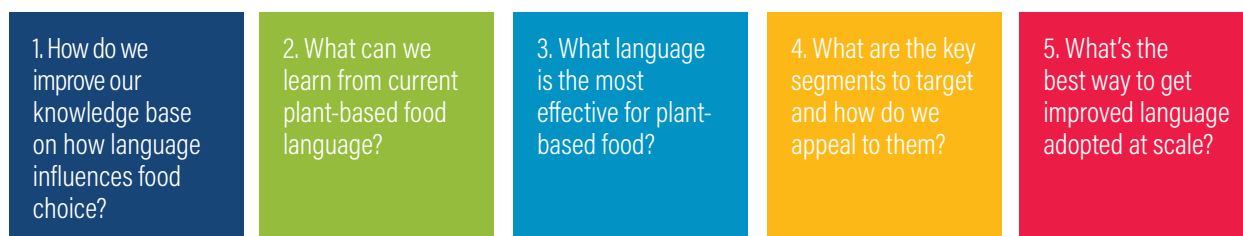
- **Shift people from meat, especially beef, toward plants.** Solutions should focus on increasing the relative proportion of plants people eat rather than just turning people exclusively vegetarian or vegan.

- **Shift mainstream consumers.** As the aim is to shift the majority of the population's diet, new solutions should have mass appeal.

- **Global.** Research should emphasize markets with established or emerging high meat consumption levels.

- **All sectors.** Research could be undertaken in all places where meat is served or sold (e.g., restaurants, retail, food delivery).

- **Focus on language.** Discussion is focused on the role of language of plant-based foods, but interdependencies with connected variables (e.g., imagery, iconography, price) could be considered.

- **Language to encompass the naming of plant-based and plant-forward dishes.** "Plant-forward" is defined as dishes (e.g., stir fry, sandwiches) that contain a smaller amount of meat and larger amount of plant-based foods than the conventional version of the dish.

- **Language of dishes and categories.** Research could include developing alternative language for individual dish names as well as the entire category of plant-based foods.

The two workshops provided rich discussions and stimulating debates. The conclusions of the U.S. and UK workshops had slight differences but contained strong similarities. Below is a synthesis of the workshops' discussions and the identified areas of research that, if advanced, will drive change in dietary habits, as well as a summary of actions needed to facilitate this research happening.

Future Research Agenda

Each workshop generated more than 30 research questions. These questions have been distilled into five important research themes, which are summarized in Figure 1 and represent the major areas of investigation the group believes are critical to advancing this effort. The five research themes are not sequential and research can happen independently and simultaneously across each.

Figure 1 | The Five Research Themes in the Language of Plant-based Food

| 1. How do we improve our knowledge base on how language influences food choice? | 2. What can we learn from current plant-based food language? | 3. What language is the most effective for plant-based food? | 4. What are the key segments to target and how do we appeal to them? | 5. What's the best way to get improved language adopted at scale? |

What follows is a summary of each research theme, including related questions generated at the workshops and associated quotes from participants.

1. How do we improve our knowledge base on how language influences food choice?

The group recognized there is a body of knowledge, across a range of disciplines, about how food choice and language interact that can help with this challenge. Existing theories and frameworks across the behavioral, marketing, and linguistic sciences might be particularly helpful.

The group noted, however, that the knowledge base about how language influences decisions around food is far from complete, and key gaps exist. These include an understanding of how language influences consumer expectations of food and how, in turn, these expectations influence choice. Within the area of expectation, it was understood that language can increase the appeal of a dish, but if the language creates an expectation that is not met (e.g., meat is expected but not present), this can create disappointment and consumer rejection. Several participants also felt that our knowledge of how language can influence consumers' value perceptions of food is limited. For example, if language encourages us to perceive a dish as indulgent, filling, or healthy, we might be willing to pay more (or less) for that dish. It was also noted that there is a lack of understanding of how language influences the buying behavior of people purchasing food for others (e.g., parents for a household).

Related questions include the following:

- How does the language of food influence expectations of what it will be like?

- To what extent do linguistically informed expectations go on to influence food choice behavior?

- How does language influence consumers' value perceptions of food?

- How do people make food choices for others?

> "
> This workshop has highlighted that whilst we don't know much about how language can encourage people to choose plant-based foods, the good news is there is a lot we do know about food and language generally that can help."
>
> –**Dr. Esther Papies**, University of Glasgow

> Dietitians and accredited nutritionists have been doing research for years on how to encourage people to eat more healthily. How can we use all that learning to influence how we can successfully name plant-based foods?"
>
> –**Dr. Judy Swift**, University of Nottingham

2. What can we learn from current plant-based food language?

The groups discussed that somewhere in the United Kingdom, United States, or wider world, compelling language may already be in use to describe plant-based food. This language may exist in different cultures or be found in a variety of places; for example, on menus, in conversation, or on social media. A range of methodologies can help find this language, such as "social listening" and computer learning that mines online texts.

It was recognized that certain groups might be particularly interesting to listen to for new language. For example, people who are actively reducing their red meat consumption in preference for plant-based dishes, or the chef community, which talks about ingredients, preparation, and cooking in a different way.

Related questions include the following:

- What range of language is currently used for plant-based foods in cultures around the world?

- How can we listen to current conversations about plant-based food (e.g., conversations in dining halls, online, or by influencers)?

- How can we use computational linguistics to characterize the meaning of food words across languages and groups?

- What language do people already use to describe their favorite plant-based dishes?

- What language is already used by consumers who are transitioning toward eating less meat and more plants?

- How does the chef community talk about plant-based food?

"

Every human being talks about food. We need to know what conversations are happening in order to understand what people think about foods. We can use methods from computational linguistics to mine texts and identify the language currently used for plant-based food."

–**Dr. Gabriella Vigliocco**, University College London

We should listen to chefs as they have great skill in talking about how they cook, the provenance of where their ingredients come from, and the flavor and taste experiences they produce."

–**Ylva Johannesson**, Sustainable Restaurant Association

3. What language is the most effective for plant-based food?

For language to be effective at encouraging people to choose more plant-based foods over meat, the most compelling language to describe plants must be determined and used. The groups recognized that while some research has been completed in this area, there is much to learn.

The groups agreed that research should understand what people's needs are when they want to eat and how plant-based dishes can be authentically described to meet them.

Research should also be conducted to identify new category language that helps make plant-based food attractive and socially "normal" to mainstream audiences. It was recognized that current category language of "vegan" and "vegetarian" is founded on "exclusive" groups, and new category language with a wider appeal should be explored. Similarly, participants believed it important to determine what of the current vocabulary for plant food is unattractive to consumers to understand what terms to avoid. However, it was acknowledged that any alternative new language needs to be clear on what ingredients are included, especially for the vegan and vegetarian communities.

Given the overall objective, the groups discussed that new language that can help increase uptake of plant-based foods and reduce red meat consumption should also be explored.

Related questions include the following:

- What are customers' key food needs and how can language indicate that plant-based foods satisfy them? In particular, how can language help meet people's hedonic short-term needs (e.g., indulgence, comfort)?

- How can language make the category of plant-based foods seem like part of a "normal" diet?

- What language currently used for plant-based foods is suppressing expectations and choice?

- How can we use language to reduce the desire for meat?

"

People want personal pleasure in the present moment and language can help deliver that. What are the 'luxury messages' we should be sending through the dish names we choose?"

–**Asifa Majid**, Radboud University Nijmegen

We know quite a lot about what language we shouldn't use to describe plant-based dishes, but very little about what we should be using. This is a critical area of learning."

–**Karen Davies**, Triniti Marketing

4. What are the key segments to target and how do we appeal to them?

When it comes to language, the group agreed that one size is unlikely to fit all. Key variations in consumer beliefs, gender, geographic location, and the occasion of consumption (e.g., breakfast, lunch, dinner) are likely to have an important influence on how language is interpreted. It is therefore important to understand the relative impact of these variables and then determine how to adapt language in light of them. Our workshops contained a bias toward Anglo-American perspectives and we understand that, if diets are to be shifted globally, the research agenda must include perspectives from cultures around the world. In particular, China was highlighted as a key market to extend into.

To achieve an impact at scale, it was recognized that it's impossible to cater to the linguistic preferences of every consumer variation. It was suggested that the key segments of the consumer population be determined, prioritized, and then targeted accordingly. In considering which segments to prioritize, both the relative size of a group and its propensity to modify its eating habits should be considered.

Related questions include the following:

- What language works best for diverse types of people (e.g., based on their values, beliefs, gender)?

- How does social context affect the language required to encourage plant-based-food consumption?

- Should the language we use change for different consumption circumstances (e.g., time of day or occasion)?

- How can we broaden the research agenda to include other cultures and countries (e.g., China)?

- Which are the most important segments of the population to prioritize?

"

There is a group of consumers in the U.S. that Matthew Ruby and I call 'conflicted omnivores.' They feel bad about eating meat for moral reasons (animal welfare and/or environmental) and want to buy less. They are really susceptible to change and represent as much as 20–30 percent of the population in the U.S."

–**Dr. Paul Rozin**, University of Pennsylvania

Choices are not made in isolation. In different situations, people are comparing different sets of choices based on different needs. To make progress on segmentation, we have to understand who are the most susceptible to change, when, and for which dishes."

–**Jonas House**, Wageningen University

5. What's the best way to get improved language adopted at scale?

To have an impact on mainstream audiences, any compelling new language for plant-based food needs to become widely adopted and the norm. That means moving beyond the academic community and a limited number of practitioners to a wider circle of influence.

To achieve this, participants discussed the need to engage with people and organizations that can propagate new food language into business and society. To do this, an understanding of how new language is spread through social settings must first be established and then specific groups that have a large impact on societies' language for food (e.g., chefs) be encouraged to adopt and promote it.

Specific questions include the following:

- Who are the key influencers in shaping societies' food vocabularies and how can they be engaged to scale new terms for plant-based foods?

- Who are the most effective messengers of the language of plant-based food to key decision-makers in the food industry?

- How can we educate chefs about the importance of language and get them to adopt and promote new terminology for plant-based food?

> "

We need to promote new language for plant-based foods through harnessing new styles of marketing and social influence. We can work with influencers on social media to promote new language with the consumer groups we want to target."

–**Dr. Marie Taillard**, ESCP Europe Business School

"Chefs are modern day superheroes. They have a massive power and responsibility to create delicious plant-based dishes, and then name them to reflect this. We need to get chefs and the culinary world excited about using new language that helps promote what they make."

–**Scott Giambastiani**, Food at Google

What Needs to Happen for the Research Areas to Progress?

Academics and practitioners at the workshops overwhelmingly agreed that using more compelling language to describe plant-based food could be a powerful strategy for shifting consumers toward more sustainable diets. However, as previously outlined, more research is needed within the five identified areas. But how can the wider community make the research happen and ensure the findings are adopted by industry and society?

During the workshops participants discussed this challenge and suggested a series of recommendations for how to address it. The Better Buying Lab has reviewed the groups' perspectives and consolidated them into four key recommended actions.

1. Engage research councils and relevant foundations

Research requires investment, but because this is a nascent topic, funding is currently limited. Academics across both workshops strongly recommended that research councils, charities, and other appropriate foundations become engaged in this agenda. This will include embedding research concerning the language of food among priorities for funders, developing joint international funding initatives, and increasing the availability of opportunities from seed funding to larger and longer grants to assess the impact of changes in the language used to shift diets.

2. Inspire more academics to work in this area

Shifting diets is one of the grand challenges of our time, and academic investigation into the language of plant-based food could play a vital role in advancing progress. Researchers from across behavioral science, psychology, marketing, and linguistics disciplines must be inspired about their capacity to create change and motivated to drive the research agenda forward.

It was clear from the workshops that the attending academics felt a desire to help upon learning about the importance of sustainable diets. Nongovernmental organizations working in this field should therefore communicate with this group, engage them in a dialogue about the problem, and inspire them about what could be possible.

3. Facilitate links between academics and industry

Conducting high-quality research requires access to commercial data and opportunities to do field trials in commercial settings. However, academics rarely have a large network of industry partners to call upon, and companies may be reluctant to share data with unknown institutions. To better enable collaboration, it was suggested that a network might be established to facilitate such connections. It was recognized that the Better Buying Lab, with its network of businesses and academics, is well-placed to play this critical role.

The companies participating in these workshops recognize the benefits of such collaboration with researchers, and that their scholarly insight and expertise in experimental design and data analytics can further their innovation around plant-based foods.

4. Make the findings easy for industry to understand and act upon

While academics can conduct insightful, impactful research, practitioners find it challenging to interpret and apply research findings. Research findings must therefore be translated into material that is easy for business practitioners and non-academics to understand and then act upon. This could include publications, blogs, and training materials that are then disseminated through communication channels they typically engage with (e.g., trade publications). Groups with an understanding of both academia and the food industry, such as the Better Buying Lab, would be well suited to facilitate this.

Conclusion

The purpose of the workshops was to identify the most powerful research questions that, if answered, will improve the language of plant-based food and shift more people's diets toward more sustainable foods.

The workshops successfully brought together a group of previously unconnected experts from a variety of relevant fields, generating five areas of research worthy of exploration and identifying four key actions to take the research forward.

The language of plant-based food is an exciting area that represents a low-cost, high-impact solution to help shift societies toward eating more sustainable diets. The Better Buying Lab is committed to this work and will continue to partner with academic institutes and companies to drive learning and action.

If you are interested in collaborating with us, we would be delighted to hear from you.

APPENDIX A

Workshop Attendees

U.S. Workshop, March 2

Linda Bacon, Behavioral Science Researcher

Ernest Baskin, Assistant Professor, Food Marketing, Saint Joseph's University

Jackie Bertoldo, Assistant Director, Food Choice Architecture, Stanford University

Adam Brumberg, Deputy Director, Cornell Food and Brand Lab, Cornell University

Christopher J. Bryan, Assistant Professor of Behavioral Science, Chicago Booth School of Business

Austin Clowes, Research Assistant, World Resources Institute

Frank R. Costantino, Vice President, Service and Culinary Development, Sodexo

Joy Dubost, North America Head of Nutrition and Health, External Engagement, Unilever

Scott Giambastiani, Global Food Program Chef and Operations Manager, Google

Courtney Hirota, Director, Market Development, Pulse Canada

Jillian Holzer, Communications Manager, Food, World Resources Institute

Caroline Meledo, Senior Manager, Corporate Responsibility and Human Rights, Hilton

Eleanor Putnam-Farr, Postdoctoral Associate, Marketing, Yale University

Janet Ranganathan, Vice President for Science and Research, World Resources Institute

Christina Roberto, Assistant Professor of Medical Ethics and Health Policy, University of Pennsylvania

Paul Rozin, Professor of Psychology, University of Pennsylvania

Elisa Schweiger, PhD Candidate, Centre for Business, Organisations & Society, University of Bath

Amelia Strobel, Global Strategic Insights and Innovation, Mars

Marie Taillard, L'Oréal Professor of Creativity Marketing, ESCP Europe Business School, London, UK

Rachel Sylvan, Director, Sustainability and Corporate Responsibility, Sodexo

Choua Vang, Associate Marketing Manager, Unilever Food Solutions North America

Daniel Vennard, Director, Better Buying Lab, World Resources Institute

Richard Waite, Associate, World Resources Institute

Jonathan Wise, Senior Research Associate, Better Buying Lab, World Resources Institute

Daniel Zarin, Director of Programs, Climate and Land Use Alliance

UK Workshop, March 9

Linda Bacon, Behavioral Science Researcher

Riaz Bhunnoo, Director, Global Food Security Programme

Filippo Bianchi, DPhil Student, Nuffield Department of Primary Care Health Sciences, University of Oxford

Brian Cook, Senior Researcher, Livestock, Environment and People (LEAP), University of Oxford

Karen Davies, Partner, Triniti Marketing

Kris de Meyer, Research Fellow, Neuroscience, King's College London

Julie Doyle, Professor of Media and Communication, University of Brighton

Frank Galestien, Cluster Category Director at Unilever Food Solutions, Unilever

Emma Garnett, PhD Candidate, Department of Zoology, University of Cambridge

Tara Garnett, Principal Investigator, Oxford Martin Programme on the Future of Food

Saskia Heijnen, Portfolio Lead, Our Planet, Our Health, Wellcome Trust

Jonas House, Lecturer, Sociology of Consumption and Households Group, Wageningen University

Ylva Johannesson, Head of Consultancy, Sustainable Restaurant Association

Sandra Lindh, Global Commercial Manager, IKEA

Asifa Majid, Professor of Language, Communication, and Cultural Cognition, Radboud University Nijmegen

Alexa Masterson-Jones, Product Development Manager, Sainsbury's Supermarkets Ltd.

Esther Papies, Senior Lecturer in Psychology, University of Glasgow

Christina Potter, Senior Researcher, LEAP, University of Oxford

Carolin Reiner, Associate Advisor, The Behavioural Insights Team

Christian Reynolds, Knowledge Exchange Research Fellow (N8 AgriFood Project), Department of Geography, University of Sheffield

Kirsty Saddler, Brand & Sustainability Director, LEON Restaurants

Ryoko Sasamoto, Assistant Professor in the School of Applied Language and Intercultural Studies, Dublin City University

Alexandra Sexton, Postdoctoral Researcher, LEAP, University of Oxford

Judy Swift, Associate Professor of Behavioural Nutrition, University of Nottingham

Claire Thompson, Assistant Professor, London School of Hygiene and Tropical Medicine

Ria van der Maas, Global Nutrition and Health Manager, Unilever Food Solutions

Daniel Vennard, Director, Better Buying Lab, World Resources Institute

Caroline Verfuerth, PhD Student, Sheffield University Management School

Gabriella Vigliocco, Professor of the Psychology of Language, Division of Psychology and Language Sciences, University College London

Giulia Watson, Account Manager, Revolt London

Tim Wharton, Course Leader of the BA in English Language and Linguistics, University of Brighton

Jim Wilkie, Assistant Professor of Marketing, University of Notre Dame

Jonathan Wise, Senior Research Associate, Better Buying Lab, World Resources Institute

Paul Woodgate, Portfolio Developer, Wellcome Trust

APPENDIX B

Academic Bibliography

From U.S. participants:

Bryan, C.J., D.S. Yeager, C.P. Hinojosa, A. Chabot, H. Bergen, M. Kawamura, and F. Steubing. 2016. "Harnessing Adolescent Values to Motivate Healthier Eating." Proceedings of the National Academy of Sciences 113 (39): 10830–35.

Hormes, J.M., and P. Rozin. 2010. "Does 'Craving' Carve Nature at the Joints? Absence of a Synonym for Craving in Many Languages." Addictive Behaviors 35 (5): 459–63.

Rozin, P. 1990. "Development in the Food Domain." Developmental Psychology 26 (4): 555.

Rozin, P., M. Ashmore, and M. Markwith. 1996. "Lay American Conceptions of Nutrition: Dose Insensitivity, Categorical Thinking, Contagion, and the Monotonic Mind." Health Psychology 15 (6): 438.

Roberto, C.A., and I. Kawachi. 2014. "Use of Psychology and Behavioral Economics to Promote Healthy Eating." American Journal of Preventive Medicine 47 (6): 832–37.

Roberto, C.A., J. Baik, J.L. Harris, and K.D. Brownell. 2010. "Influence of Licensed Characters on Children's Taste and Snack Preferences." Pediatrics 126 (1): 88–93.

From UK participants:

Brough, A.R., J.E. Wilkie, J. Ma, M.S. Isaac, and D. Gal. 2016. "Is Eco-friendly Unmanly? The Green-Feminine Stereotype and Its Effect on Sustainable Consumption." Journal of Consumer Research 43 (4): 567–82.

Champniss, G., H.N. Wilson, and E.K. Macdonald. 2015. Why Your Customer's Social Identities Matter. Doctoral Dissertation. Cambridge, MA: Harvard Business School Publishing.

Champniss, G., H.N. Wilson, E.K. Macdonald, and R. Dimitriu. 2016. "No I Won't, but Yes We Will: Driving Sustainability-related Donations through Social Identity Effects." Technological Forecasting and Social Change 111: 317–26.

Doyle, J. 2016. "Celebrity vegans and the lifestyling of ethical consumption", Environmental Communication, 10 (6): 777–790,

Eden, S. 2011. "Food Labels as Boundary Objects: How Consumers Make Sense of Organic and Functional Foods." Public Understanding of Science 20 (2): 179–94.

Gal, D., and J. Wilkie. 2010. "Real Men Don't Eat Quiche: Regulation of Gender-Expressive Choices by Men." Social Psychological and Personality Science 1 (4): 291–301.

Garnett, T., S. Mathewson, P. Angelides, and F. Borthwick. 2015. "Policies and Actions to Shift Eating Patterns: What Works." Foresight 515: 518–22.

Garnett, T. 2014. Changing Consumption: How Can We Change the Way We Eat? A Discussion Paper. Food Climate Research Network. Oxford: University of Oxford.

House, J. 2018. "Insects Are Not 'the New Sushi': Theories of Practice and the Acceptance of Novel Foods." Social & Cultural Geography: 1–22.

Johnston, J., M. Szabo, and A. Rodney. 2011. "Good Food, Good People: Understanding the Cultural Repertoire of Ethical Eating." Journal of Consumer Culture 11 (3): 293–318.

Kousta, S.T., G. Vigliocco, D.P. Vinson, M. Andrews, and E. Del Campo. 2011. "The Representation of Abstract Words: Why Emotion Matters." Journal of Experimental Psychology: General 140 (1): 14.

Majid, A. 2015. "Cultural Factors Shape Olfactory Language." Trends in Cognitive Sciences 19 (11): 629–30.

Majid, A., L. Speed, I. Croijmans, and A. Arshamian. 2017. "What Makes a Better Smeller?" Perception 46 (3–4): 406–30.

Malt, B.C., and A. Majid. 2013. "How Thought Is Mapped into Words." Wiley Interdisciplinary Reviews: Cognitive Science 4 (6): 583–97.

Papies, E.K. 2016. "Goal Priming as a Situated Intervention Tool." Current Opinion in Psychology 12: 12–16.

Papies, E.K., M. Best, E. Gelibter, and L.W. Barsalou. 2017. "The Role of Simulations in Consumer Experiences and Behavior: Insights from the Grounded Cognition Theory of Desire." Journal of the Association for Consumer Research 2 (4): 402–18.

Papies, E.K. 2016. "Health Goal Priming as a Situated Intervention Tool: How to Benefit from Nonconscious Motivational Routes to Health Behaviour." Health Psychology Review 10 (4): 408–24.

Perniss, P., and G. Vigliocco. 2014. "The Bridge of Iconicity: From a World of Experience to the Experience of Language. Philosophical Transactions of the Royal Society B 369 (1651).

Potter, C., R.L. Griggs, D. Ferriday, P.J. Rogers, and J.M. Brunstrom. 2017. "Individual Variability in Preference for Energy-dense Foods Fails to Predict Child BMI Percentile." Physiology & Behavior 176: 3–8.

Potter, C., D. Ferriday, R.L. Griggs, J.P. Hamilton-Shield, P.J. Rogers, and J.M. Brunstrom. 2017. "Parental Beliefs about Portion Size, Not Children's Own Beliefs, Predict Child BMI." Pediatric Obesity.

Rapley, C.G., K. De Meyer, J. Carney, R. Clarke, C. Howarth, N. Smith, J. Stilgoe, S. Youngs, C. Brierley, A. Haugvaldstad, and B. Lotto. 2014. Time for Change? Climate Science Reconsidered. Report of the UCL Policy Commission on Communicating Climate Science.

Reynolds, C.J. 2017. "Energy Embodied in Household Cookery: The Missing Part of a Sustainable Food System? Part 1: A Method to Survey and Calculate Representative Recipes." Energy Procedia 123: 220–27.

Sexton, A. 2016. "Alternative Proteins and the (Non)stuff of 'Meat.'" Gastronomica: The Journal of Critical Food Studies 16 (3): 66–78.

Thompson, C., S. Cummins, T. Brown, and R. Kyle. 2013. "Understanding Interactions with the Food Environment: An Exploration of Supermarket Food Shopping Routines in Deprived Neighbourhoods." Health & Place 19: 116–23.

Thompson, C., S. Cummins, T. Brown, and R. Kyle. 2016. "Contrasting Approaches to 'Doing' Family Meals: A Qualitative Study of How Parents Frame Children's Food Preferences." Critical Public Health 26 (3): 322–32.

Vigliocco, G., D.P. Vinson, F. Paganelli, and K. Dworzynski. 2005. "Grammatical Gender Effects on Cognition: Implications for Language Learning and Language Use." Journal of Experimental Psychology: General 134 (4): 501.

Wharton, T. 2010. "Recipes: Beyond the Words." Gastronomica 10 (4): 67–73.

Wharton, T. 2006. "The Evolution of Pragmatics." The Elsevier Encyclopaedia of Language and Linguistics: 338–45.

REFERENCES

FAO (Food and Agriculture Organization of the United Nations). 2011. The State of the World's Land and Water Resources for Food and Agriculture. Rome: FAO.

Henders, S, et al. 2015. "Trading Forests: Land-Use Change and Carbon Emissions Embodied in Production and Exports of Forest-Risk Commodities." Environmental Research Letters 10: 125012.

Holzer, J. 2017. "Don't Put Vegetables in the Corner: Q&A with Behavioral Science Researcher Linda Bacon." World Resources Institute blog. June 12. http://www.wri.org/blog/2017/06/dont-put-vegetables-corner-qa-behavioral-science-researcher-linda-bacon.

Kissinger, G. et al. 2012. A Synthesis Report for REDD+ Policymakers. Vancouver, Canada: Lexeme Consulting.

Leahy, E., S. Lyons, and R. Tol. 2010. An Estimate of the Number of Vegetarians in the World. ERSI Working Paper, Series No. 340.

Raghunathan et al. 2006. "The Unhealthy = Tasty Intuition and Its Effects on Taste Inferences, Enjoyment, and Choice of Food Products." Journal of Marketing 70 (4): 170–84.

Ranganathan, J., D. Vennard, R. Waite, P. Dumas, B. Lipinski, T. Searchinger, and GlobAgri-WRR model authors. 2016. Shifting Diets for a Sustainable Food Future. Working Paper. Installment 11 of Creating a Sustainable Food Future. Washington, DC: World Resources Institute.

Ruby, M., and S. Heine. 2011. "Meat, Morals and Masculinity." Appetite 56 (4): 447–50.

Searchinger, T., C. Hanson, J. Ranganathan, B. Lipinski, R. Waite, R. Winterbottom, A. Dinshaw, and R. Heimlich. 2013. Creating a Sustainable Food Future: A Menu of Solutions to Sustainably Feed More than 9 Billion People by 2050. Interim Findings. Washington, DC: World Resources Institute.

Suher, J., R. Raghunathan, and W. Hoyer. 2016. "Eating Healthy or Feeling Empty? How the 'Healthy=Less Filling' Intuition Influences Satiety." Journal of the Association for Consumer Research 1 (1): 26–40.

Turnwald, B., D. Boles, and A. Crum. 2017. "Association between Indulgent Descriptions and Vegetable Consumption: Twisted Carrots and Dynamite Beets." JAMA Internal Medicine 177 (8): 1216–18.

United Nations. 2017. "Revision of World Population Prospects 2017." DESA/Population Division. https://esa.un.org/unpd/wpp/.

Vartanian, L.R., C.P. Herman, and J. Polivy. 2007. "Consumption Stereotypes and Impression Management: How You Are What You Eat." Appetite 48 (3): 265–77.

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