Targeted Messaging for Plant-Based Diet Change

Animal
Think Tank

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Animal Think Tank

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You can find the accompanying guide with practical advice here.

Table of Contents

Introduction

A great deal of effort has been spent on reducing meat consumption by trying to match plant-based alternatives in terms of their price, taste, and convenience (PTC). However, despite this parity, these factors alone have been insufficient to drive major shifts in consumption patterns (Peacock, 2023). In addition to PTC, research shows that a raft of social, psychological, and identity factors, beyond basic sensory or economic attributes, strongly influence meat consumption decisions. For example, Donato et al. (2024) found that priming a common identity increases willingness among meat-eaters to choose plant-based foods. Similarly, the “4 Ns” - that eating meat is natural, normal, necessary or nice are dominant and widespread beliefs used to disengage from the harms of meat consumption (Piazza et al., 2015). Individuals higher in social dominance orientation, a trait characterised by a preference for hierarchical social relations and group-based inequality, are consistently associated with higher levels of meat consumption and stronger opposition to vegetarianism (Dhont & Hodson, 2014). Finally, meat consumption is culturally associated with masculinity, strength, and dominance. Men who endorse traditional masculine norms show higher meat consumption and greater resistance to plant-based diets (Rozin et al., 2012).

An argument can therefore be made that effective food transition messaging requires a degree of tailoring to people’s underlying motivations, values, and identities, rather than relying solely on uniform appeals, or treating consumers as purely rational actors. This view builds on a broader body of work suggesting that populations can be meaningfully segmented along psychological lines, not only demographic ones. In marketing and strategic communications, this approach is often described in terms of *psychographics*, that is, shared patterns of values, beliefs, motivations, identities, and world-views that shape how individuals interpret information and respond to messages (Hattaway Communications, 2020). Psychographic segments are not assumed to be mutually exclusive or rigid, but to represent clusters of tendencies that are salient for

communication and persuasion. Within the political sphere, public attitudes on contentious issues can be more effectively understood, and engaged, by grouping people according to shared values and emotional orientations rather than traditional political labels (More in Common, 2019). Taking this argument to its logical conclusion, it should be possible to identify population segments based on how people psychologically relate to plant-based foods and animal product consumption, including the meanings they attach to food, the justifications they use, and the identities they seek to protect or express. If such segments can be reliably identified, messaging can then be tailored to address the specific concerns, aspirations, and moral frameworks that characterise each group. In principle, this approach should increase messaging effectiveness beyond generic strategies.

Within the broader health communication literature, there is evidence that tailored messages outperform generic materials on intermediate outcomes such as attention, message processing, and behaviour change. However, this literature has not yet directly established the effectiveness of segment-tailored messaging for plant-based diet adoption (Bol et al., 2020; Ryan et al., 2019). Reviews of food-based dietary guideline communication note that effectiveness is often limited by a lack of targeting, and explicitly recommend greater audience segmentation and tailored communication to improve impact, implying that existing practice remains largely one-size-fits-all (Culliford & Bradbury, 2023). Within plant-based advocacy and food transition efforts, applied reviews similarly argue that messages aimed at an undifferentiated “average consumer” are unlikely to be maximally effective, and call for strategies that speak to the distinct motivations and barriers of different audience groups (Good Food Institute, 2020).

In the specific context of meat reduction and plant-based promotion, experimental studies frequently compare different message frames, such as health- versus environment-focused appeals, rather than testing full segmentation-based designs that identify audience segments, tailor messages to those segments, and then compare

their effects against generic messaging (Lim et al., 2021). As a result, there remains limited experimental evidence demonstrating whether, and under what conditions, tailored messaging systematically outperforms generic approaches in realistic advocacy and marketing contexts.

The primary aim of this research is to identify effective ways of segmenting the population in order to support the development of targeted messaging that can more effectively encourage shifts towards plant-based diets. Rejecting the assumption of a homogeneous audience, this research proceeds from the premise that dietary choices are shaped by heterogeneous motivations, values, and constraints, and that messaging is therefore likely to be more effective when aligned with the psychological and social profiles of distinct population groups. To this end, the study seeks to identify a small number of key population segments within the general public using a combination of demographic, psychographic, and behavioural indicators, including dietary habits, beliefs, motivations, and openness to change, with the aim of producing segments that are both empirically grounded and practically usable. We then examined how these segments differ in their values, perceptions, and attitudes towards animal products and plant-based alternatives, in order to clarify which narratives are likely to resonate, be ignored, or provoke resistance. Finally, the research evaluates the relative effectiveness of different messages and narratives across the identified segments through experimental message testing, assessing whether particular frames generate stronger shifts in dietary intentions within specific groups, and whether these effects differ meaningfully from those observed under generic, non-tailored messaging, thereby generating evidence-based guidance for the design and deployment of more effective plant-based communication strategies.

We hope this research will contribute to the development of an evidence-based framework for population segmentation in food transition messaging, offering a structured alternative to generic approaches by linking distinct audience profiles to

messages that are more likely to resonate with their values and motivations. The findings are intended to have clear practical relevance for advocates, marketers, and organisations seeking to reduce animal product consumption, by supporting more informed decisions about which narratives to deploy, for which audiences, and in which contexts. Ultimately, the research is aligned with broader efforts to support a transition in the food system towards reduced reliance on animal agriculture, by strengthening the effectiveness of communication strategies that aim to shift dietary preferences and practices over time.

Method

Two studies were undertaken, one to identify distinct audience segments and map how people relate to food, animals, and diet change (study 1), and another to test how different messages resonated with those segments in practice (study 2). Study 1 was split into two research phases: the first was to develop the audience model (phase 1), and the second was to ask further questions about the demographics of those audiences (phase 2).

Study one

Participants

1,564 participants were recruited to take part in an online survey about diet through Prolific.co. 1,501 completed the survey. A further 88 participants were removed for either failing one of six attention checks or by completing the survey too slowly (more than 5 standard deviations above the median completion time). After this pre-processing, 1,413 participants were kept for analysis. For the second phase of the study, we invited 1,000 of the original participants back to take part in another survey. After the same pre-processing procedure, we had 948 participants who took part in both

phases.

Phase one

Stage of change

Participants were only able to choose one option from the list. Information inside the square brackets was not shown to the participants.

Which of the following statements do you most strongly agree with?

1. I currently eat animal products, and am not thinking about reducing my consumption of animal products in the future. [Pre-contemplation]
2. I currently eat animal products, but I am open to changing my mind about how much I do eat. [Pre-contemplation]
3. I am unsure whether I want to reduce or stop eating animal products, but I'm considering it. [Contemplation]
4. I am seriously thinking about reducing my consumption of animal products, but I haven't decided when I'll start. [Contemplation]
5. I have a plan to reduce my consumption of animal products and will start in the next few weeks. [Preparation]
6. I've decided to try a plant-based diet and have already started preparing by buying plant-based alternatives. [Preparation]
7. I have reduced my consumption of animal products and am actively choosing plant-based options. [Action]
8. I have cut out animal products from my diet and am following a plant-based diet. [Action]
9. I've fully adapted to my plant-based diet, and it's now a regular part of my life. [Maintenance]

Diet identity

Participants were only able to choose one option from the list.

Which of the following labels best describes your diet?

- Carnivore (only eats animal products, no plant foods)
- Meat lover (regularly eats meat and enjoys it as a key part of meals)
- Omnivore (eats both animal- and plant-based foods without restrictions)
- Reducetarian (eats all types of food but is intentionally reducing animal products)
- Flexitarian (mostly eats plant-based foods but occasionally eats animal products)
- Pescetarian (eats fish and other seafood but no meat from land animals)
- Plant-based (mostly or entirely avoids animal products, but not necessarily for ethical reasons)
- Vegetarian (does not eat meat or fish, may eat eggs and dairy)
- Vegan (avoids all animal products including meat, fish, eggs, and dairy)
- Other (Please specify)

Plant-based food consumption

The order of the list was randomised for each participant. The response options were: Never, One meal a week, Two meals a week, Three meals a week, Four meals a week, Five meals a week, Six meals a week, Seven meals a week, 8+ meals a week.

In a typical week, how often do you eat the foods in the list below? Please select the option that best matches your usual habits. Count the number of meals that include this type of meal, not the number of days the meal is eaten.

1. Legumes (E.g. lentils, chickpeas, beans)
2. Tofu or Tempeh
3. Seitan (wheat gluten)
4. Wheat-based food (e.g., bread, pasta)
5. Nuts and seeds (e.g. Pumpkin seeds, cashews, walnuts, flaxseed, and nut butters)
6. Whole grains (e.g. Quinoa, rice, barley, oats)
7. Plant-based meat alternatives (e.g. Beyond burger, Linda McCartney, VFC)
8. Mushrooms
9. Fruits and vegetables
10. Plant-based dairy (e.g., soya milk, oat milk, almond milk)

Plant-based food perceptions

This question was repeated for all items on the plant-based food consumption scale, except for "fruits and vegetables" and "plant based dairy." Each item was rated on a 1 (Strongly disagree) to 7 (Strongly agree) scale. The order of questions was randomised for each food and participant.

Thinking about [food from the list above], please rate it on the following scales.

1. I could see myself replacing animal-based foods with (more of) this food
2. It's convenient
3. It's familiar
4. It's healthy
5. It's environmentally sustainable
6. It's artificial
7. It's disgusting
8. It's boring
9. It's expensive

10. It's highly processed
11. It avoids cruelty to animals
12. It's high in protein
13. It's filling
14. It's nutritious
15. It's fake
16. This is an attention check, please select "Strongly agree"

Motivations for reducing or avoiding meat-eating

This scale is an adaptation of the vegan eating motivations inventory plus (VEMI+, Stahlmann et al., 2024), which measures seven motivations: health, environment, animal rights, disgust, social, disease, worker's rights. Items marked with an asterisk were not in the original scale. The order of all items was randomised for each participant.

Please rate the importance of each of the following reasons for you to eat less meat or animal products. If you do not plan to change your diet, please rate how important these reasons might be for someone considering doing so.

1. I don't intend to eat less meat or animal products. *

[Taste]

1. I am interested in trying new foods. *
2. I like the taste. *

[Health]

1. I want to be healthy.
2. I care about my body.

3. My health is important to me.

[Environment]

1. Plant-based diets are better for the environment.
2. Plant-based diets are more sustainable.
3. Plant-based diets are environmentally-friendly.

[Animal rights]

1. Animals' rights are respected.
2. I am concerned about animal rights.
3. I don't want animals to suffer.
4. I am concerned about animal welfare. *

[Meat disgust]

1. The idea of eating meat disgusts me.
2. I don't want animal meat in my body.
3. Meat is gross.

[Social]

1. I want to be like people in my social group.
2. I want to be more like people I admire.
3. I want to be more popular.

[Disease]

1. Eating meat increases the risk of pandemics.
2. Pandemics are usually caused by eating animals.
3. Eating meat can cause disease in humans.

[Worker's rights]

1. I want to protect the rights of people who work in animal agriculture.
2. People who work in animal agriculture are not treated well.
3. I want to avoid supporting exploitation of people working in animal agriculture.

[Industry boycott]

1. I want to boycott a harmful industry. *
2. I don't want to give money to an industry owned by corporations. *

Enablers of plant-based meals

This scale was taken from Truninger et al., (2019). For each item, responses were on a 1 (Extremely unlikely) to 7 (Extremely likely) scale. The order of statements was randomised.

Considering the following specific features, please indicate to what extent each feature would make it more likely for you to eat plant-based meals more often.

[Capability]

1. Knowing more recipes for plant-based meals.
2. Knowing how to prepare these meals.
3. Having information about the nutritional properties of plant-based meals.

[Opportunity]

1. Ensuring that close others support me (e.g., family; friends).
2. Ensuring that plant-based meals are more accessible and convenient (e.g., supermarkets, restaurants).
3. Knowing more people who follow a plant-based diet.

[Motivation]

1. Feeling pleasure for eating plant-based meals.
2. Feeling that these meals benefit myself.
3. Feeling that these meals benefit the planet.
4. Feeling that these meals benefit animals.

Meat eating justifications

We used the motivations to eat meat inventory (MEMI) by Hopwood et al. (2021). Responses were on a 1 (Least important) to 7 (Most important) scale. The order of items were randomised for each participant.

Below, there is a list of reasons people give to eat meat and other animal products like eggs and dairy. Please rate how important different reasons are for you, personally. You should give a range of ratings to indicate the reasons that are especially important for you, those that are relatively unimportant, and those that are moderately important.

[Natural]

1. It goes against nature to eat only plants.
2. It's natural to eat meat.
3. It's human nature to eat meat.

4. Eating meat is part of our biology.

[Necessary]

1. Our bodies need animal protein.
2. It makes people strong and vigorous.
3. It is necessary for good health.
4. I want to be sure I get all of the vitamins and minerals I need.
5. It gives me strength and endurance.

[Normal]

1. I want to fit in.
2. I don't want other people to be uncomfortable.
3. It is just one of the things people do.
4. Everybody does it.
5. I don't want to stand out.

[Nice]

1. It is delicious.
2. It is in all of the best tasting food.
3. It gives me pleasure.
4. It has good flavour.
5. Meals without it don't taste good.

Food neophobia

Food neophobia is the reluctance or refusal to eat or try new or unfamiliar food. We used the scale developed by Szakály et al. (2021). The order was randomised for each

participant. Responses were on 1 (Strongly disagree) to 7 (Strongly agree) scale. Items marked with an asterisk were reverse coded. Scale items were also intermixed with items from the manly meat scale and meat-animal dissociation scales (below).

Please rate how strongly you agree or disagree with the following statements.

1. I am constantly sampling new and different foods. *
2. I don't trust new foods.
3. If I don't know what is in a food, I won't try it.
4. I like foods from different countries. *
5. Ethnic foods look too weird to eat.
6. At dinner parties, I will try a new food. *
7. I am afraid to eat things I have never had before.
8. I am very particular about the foods I will eat.
9. I will eat almost anything. *
10. I like to try new ethnic restaurants. *

Manly meat scale

We used the scale developed by Lax & Mertig (2020) to measure masculine gender associations with eating meat.

The following statements talk about attitudes toward eating food. Please indicate the extent to which you agree or disagree with each statement.

1. Men need to eat meat more than women do.
2. A real man would never turn down a thick, juicy steak.
3. Meat is “men’s food”.
4. Men would probably struggle to give up meat more than women would.
5. Vegetarianism is wimpy.

6. Flipping burgers is a manly thing to do.
7. Giving up meat is a girly thing to do.

Meat-animal dissociation

Taken from Benningstad et al. (2024).

For each item, please indicate your agreement with the statements.

[Passive Meat-Animal Dissociation]

1. Animals rarely come to mind when I eat meat.
2. I don't reflect on the connection between animals and meat.
3. I have almost never thought about an animal when consuming meat.
4. When I eat meat, I never think about the life of the animal I am eating.
5. The thought of animals is totally irrelevant when I eat meat.
6. The animal origin of meat is something I seldom think about.

[Active Meat-Animal Dissociation]

1. I make a big effort not to think about animals when I consume meat.
2. When I look at meat, I try hard not to connect it with an animal.
3. To be able to eat meat, I suppress the thought that it came from an animal.
4. I actively avoid meat that visibly reminds me of an animal.
5. I actively avoid food products that may remind me that meat actually comes from animals.
6. I try to ignore thoughts about animals when eating meat with visible blood, bones or skin.

Please rate how strongly you agree or disagree with the following statements. We want

to know your honest opinions. There are no right or wrong answers.

1. Thinking about animals being slaughtered is horrific.
2. I believe that animals feel joy, sadness, grief, and curiosity.
3. I can imagine that many animals would suffer long-term conditions, such as psychosis or stress, if put behind glass for humans to look at.
4. The life of an animal is not of equal value as the life of a human being.
5. Animals are inferior to humans.
6. There is nothing unusual at all in the fact that humans dominate other animal species.

Phase two

How likely are you to reduce your consumption of animal products in the next two months? Highly unlikely - Highly likely

How strongly would you support or oppose the following policies? We want to know your honest opinions. There are no right or wrong answers.

Strongly oppose - Strongly support

1. A policy to ban intensive farming of animals (also known as factory farming), where large numbers of animals are kept in confined conditions?
2. A policy to ban the killing of animals for food?
3. A policy to prohibit killing healthy animals, including those kept on farms, when they are no longer economically useful?
4. A policy that promotes plant-based meals in hospitals to improve public health?
5. A policy of mandatory health warning labels on red and processed meat?
6. A policy to tax unhealthy animal products, including high-fat animal products, red meat, and highly processed animal products?

7. A policy to prioritise public funding for plant-based food production to reduce greenhouse gas emissions?
8. Limiting the expansion of animal farming to protect forests, wildlife and oceans?
9. A policy to invest in rewilding former pastureland to capture carbon and restore ecosystems?
10. This is an attention check, please select strongly support?

Which region do you currently live in?

1. North East
2. North West
3. Yorkshire and the Humber
4. East Midlands
5. West Midlands
6. East of England
7. London
8. South East
9. South West
10. Wales
11. Scotland
12. Northern Ireland
13. Other

What is your highest level of education?

1. No formal qualifications
2. GCSEs (or equivalent)
3. A-Levels (or equivalent)
4. Vocational qualification (e.g. BTEC, NVQ)

5. Undergraduate degree (e.g. BA, BSc)
6. Postgraduate degree (e.g. MA, MSc)
7. Doctorate (e.g. PhD)

What is your total household income before tax, per year?

1. Less than £15,000
2. £15,000 to £29,999
3. £30,000 to £44,999
4. £45,000 to £59,999
5. £60,000 to £74,999
6. £75,000 to £99,999
7. £100,000 or more

Which of the following best describes your religious affiliation?

1. Christian
2. Muslim
3. Hindu
4. Buddhist
5. Jewish
6. Sikh
7. Spiritual
8. No religion
9. Other

How would you describe your ethnicity?

1. White

2. Black or African Caribbean
3. Asian or Asian British
4. Mixed or multiple ethnic groups
5. Other

Do you live in an urban or rural area?

1. Urban (City or large town)
2. Suburban (Suburban area within or near to a large town or city)
3. Rural/countryside

Who would you vote for in the next general election, if it were held today?

1. Conservative Party
2. Labour Party
3. Liberal Democrats
4. Green Party
5. Scottish National Party (SNP)
6. Plaid Cymru
7. Reform UK
8. Democratic Unionist Party (DUP)
9. Sinn Fein
10. Other
11. Would not vote

Study two

Participants

A new sample of 2,006 participant were recruited to take part in the study. After pre-processing (see study 1), 78 were removed, and 1,928 were analysed.

Procedure

First, participants completed the same measures used in Study 1, including the question on how likely they were to reduce their consumption of animal products within the next two months. There were also attention checks throughout.

Each participant then saw one of eighteen messages designed in the style of a social movement campaign ad (Appendix one). The messages were designed to emphasise one of six themes: Capability-opportunity-motivation (COM), disease, health, taste, veganism, workers rights. There were three messages per theme. These themes were chosen based on the distinguishing features of the segments identified in phase one.

After viewing the message, they were asked: "After seeing this message, how likely are you to reduce your consumption of animal products within the next two months?". Responses were on a 1 (Very unlikely) to 7 (Very likely) scale with an additional option of "Not applicable: I don't eat any animal products".

Each message contained a mock QR code linking with the tagline "To find out more, please visit". They were also asked to rate (again on a 1-7 scale), that if they came across this message in your daily life, how likely would you be to follow the link to find out more.

Results

First we analysed perceptions of different plant-based foods, and openness to replacement animal products with plant-based proteins. Figure 1 shows the

distributions of agreement with the statement "I could see myself replacing animal-based foods with (more of) this food" for each type of eight plant-based proteins. Figure 2 shows the proportion of participants who at least somewhat agree with each statement about each of the plant-based foods.

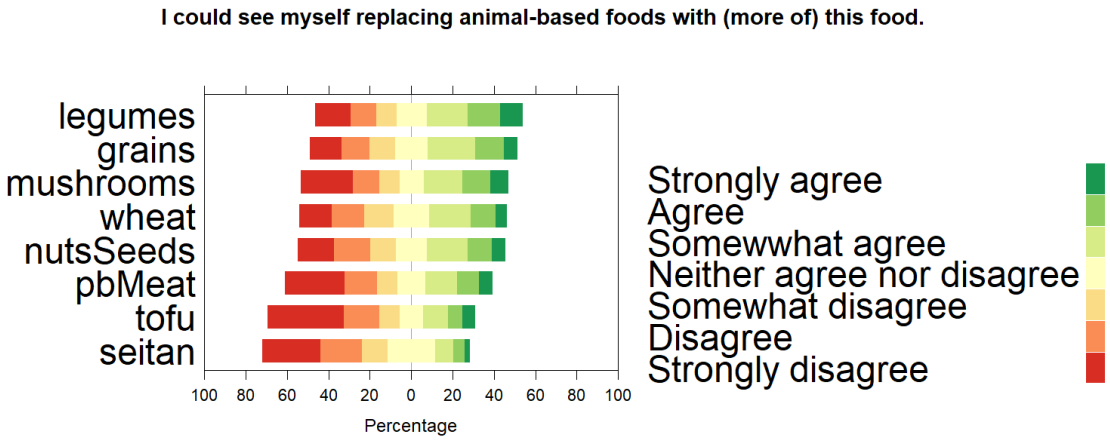

Figure 1. *Distributions of agreement with the statement "I could see myself replacing animal-based foods with (more of) this food" for each type of eight plant-based proteins.*

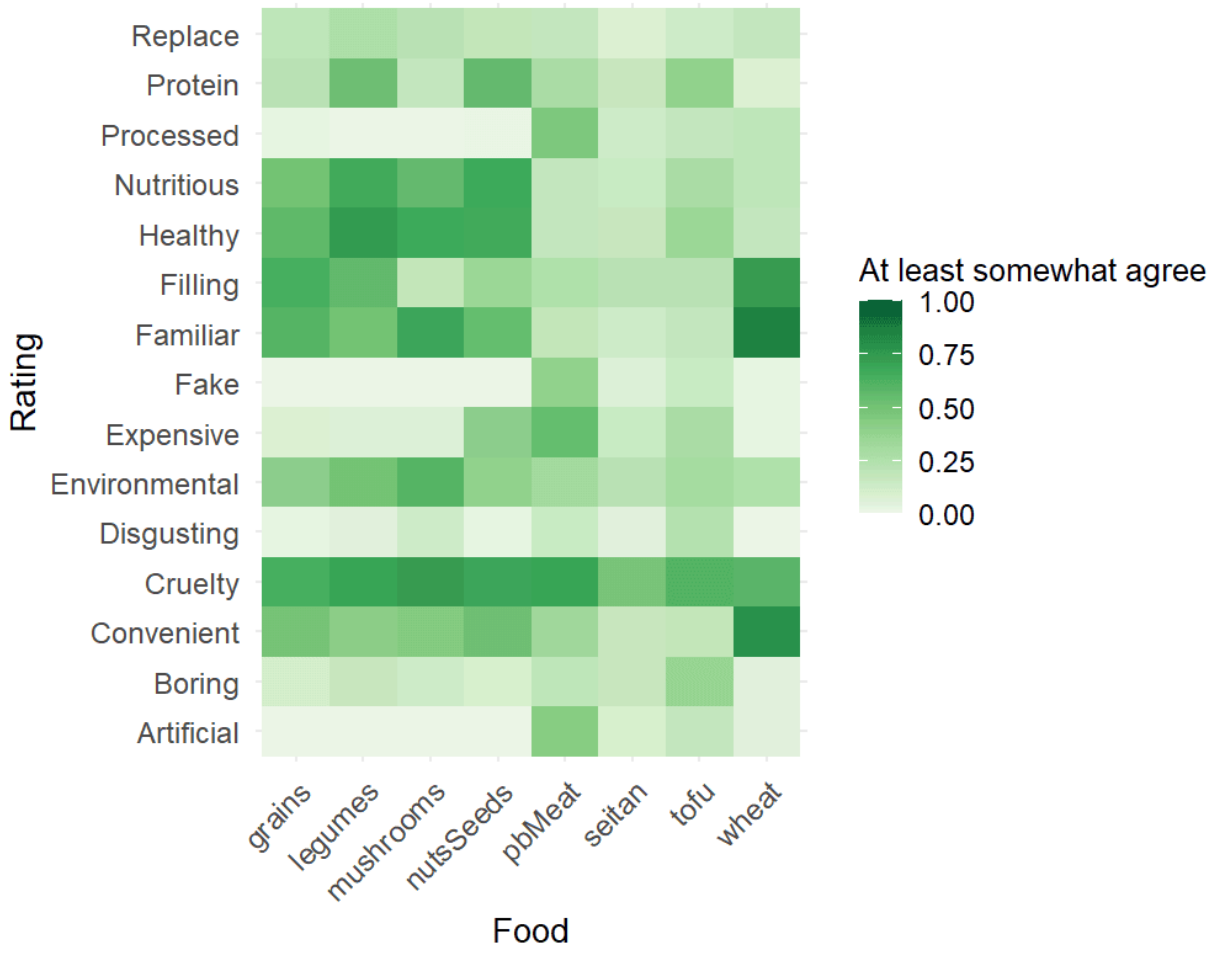

Figure 2. *proportion of participants who at least somewhat agree with each statement about each of the plant-based foods.*

Next, we performed an exploratory factor analysis on intentions to replace meat with different types of plant-based foods. The number of factors was selected using parallel analysis, which indicated the optimal number to retain. Factors were extracted using oblimin rotation, since correlated factors were expected.

We found three correlated factors (Figure 3), representing affinity towards whole-foods, processed foods (including tofu and tempeh), and wheat-based foods. The sampling adequacy of the data was high, with a KMO value of 0.90. Bartlett's test indicated that the correlation matrix was suitable for factor analysis, $\chi^2(28) = 337.72$, $p < .001$.

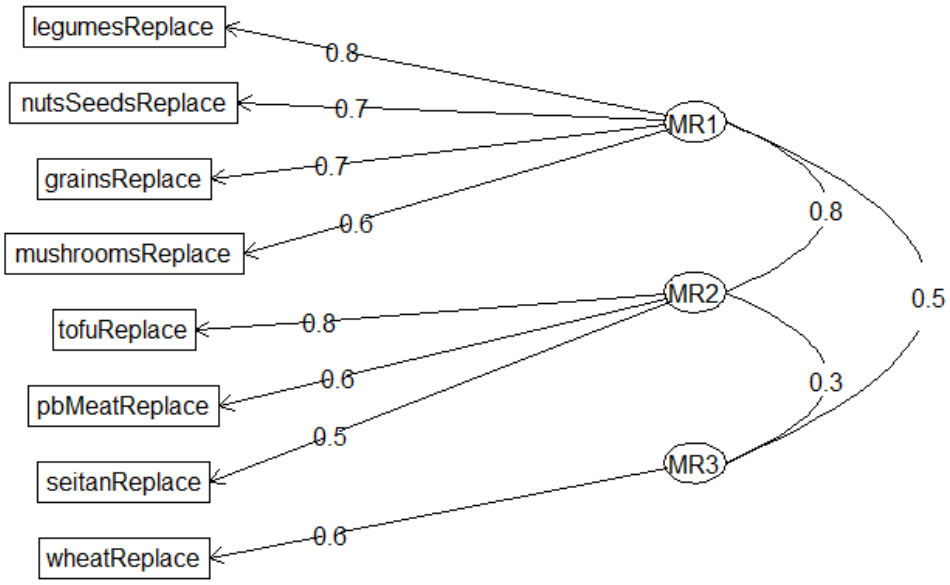

Figure 3. *Factor structure of the exploratory factor analysis on openness to replacing animal-based foods with different types of plant-based foods.*

Regression scores were computed for later analysis. Items were interpreted using a loading threshold of 0.4; loadings below this value were set to zero for interpretation. Factor loadings are presented in Table 1.

Food type	Whole-foods affinity	Processed foods affinity	Wheat-based affinity
Legumes	.82	-	-
Tofu	-	.83	-
Seitan	-	.52	-
Wheat	-	-	.64
Nuts and seeds	.75	-	-
Grains	.72	-	-
Plant-based meat	-	.6	-
Mushrooms	.65	-	-

Table 1. *Factor loadings for each question about openness to replacing animal-based foods with different plant-based foods across three of the extracted factors. Loading values with an absolute value below 0.4 are repressed.*

We then repeated the analysis on the psychometric variables (averaged across scale items), which produced 13 factors (Table 2), although one was removed later because none of its items met the loading threshold.

Factor	COM	Natural-necessary	Passive dissocation	Food neophobia	Manly meat
COM					
Natural-Necessary					
Passive dissocation		.45			
Food neophobia					
Manly meat		.45	.34		
Motive: Animals	.39	-.32	-.36		
Meat is nice		.62	.47		
Motive: Social				.35	
Active dissociation					
Motive: Disease	.33				.44
Motive: Health	.39				
Motive: Workers					

Table 2*. Correlations between factors. For readability, correlations with an absolute value below 0.3 have been removed. Similarly, columns or rows with low absolute correlations have not been presented.*

The KMO measure indicated that the data was suitable for factor analysis, with an overall KMO value of 0.96. Bartlett's test of sphericity was significant, $\chi^2(3570) = 4382.16$, $p < .001$, which confirmed that the correlation matrix departed from an identity

matrix and that the variables shared sufficient common variance for factor extraction.

In order to segment the sample, we performed latent profile analysis on the extracted factors. Latent profile models specifying between one and twenty classes were estimated. Model quality was evaluated using AIC, BIC, sample size adjusted BIC, and entropy, and class size distributions were inspected to guard against empirically unstable solutions. For each model, the proportion of participants assigned to each class was calculated, and any solution in which the smallest class contained less than five percent of the sample was excluded from further consideration. This ensured that the retained models represented substantively meaningful and sufficiently populated profiles rather than artefacts of over fitting.

Among the models meeting the minimum class size criterion, BIC was used as the principal indicator of fit, given its stronger penalty for model complexity and its common use in determining the number of latent profiles. The model with the lowest BIC within this restricted set was selected as the optimal solution. Class membership for this solution was then extracted to enable follow up analyses based on the identified latent profiles.

The optimal solution we found included five classes, who differed in numerous psychological and demographic variables (Figures 4-7). The following paragraphs characterise each segment.

Ardent meat-eaters (Very low potential)

This segment comprises 12.18% of the population. They are omnivores who are closed to diet change, they do not see change as possible or necessary, they feel no conflict about eating animals, they strongly endorse harmful cultural narratives such as “manly meat” and the 4Ns.

Meat-lovers (low potential)

This segment comprises 28.6% of the population. They are not currently thinking about changing their diet, but they are not completely closed off to the idea. They feel no conflict about eating animals and they enjoy the taste of meat. They might consider change for health reasons.

Conflicted conformists (medium potential)

This segment, which comprises 28.97% of the population, enjoy eating meat but feel conflicted about doing so. They are not actively thinking about changing their diet, but they may shift for socially motivated reasons such as fitting in, improving public health, or supporting workers in exploitative industries. They remain influenced by dominant narratives including “manly meat” and the 4Ns.

Hesitant ethical-eaters(high potential)

Comprising 18.77% of the population, this segment do not particularly enjoy eating animals and feel conflicted about doing so. They are already thinking about changing their diet and may have started making changes already. Their motivations are primarily animal ethics, public health, and personal health, and they see change as possible and worth doing. They are not swayed easily by hegemonic cultural narratives.

Active ethical-eaters (very high potential)

This segment comprises 10.48% of the population. They may already be actively avoiding, or strongly considering avoiding, animal products. Their motivations are

primarily animal ethics, public health, and personal health. They are not swayed by cultural narratives.

The following plots provide the data we used to characterise the segments. Figure 4 situates each segment in terms of people's current diet and readiness to change, showing that the classes are not abstract statistical groupings but map onto recognisable positions in the food transition journey. This shows how segment membership corresponds to both present behaviour and openness to future change.

Figure 4. *Scatter plot of current diet type (x-axis) and stage of change (y-axis). Because the data are ordinal, a small amount of jitter has been added for better visualisation. Data are colour coded according to their class assignment. The diamonds represent the mean for each class and 95% confidence intervals. The diet labels were forced choice options in the survey.*

Figure 5 shows that openness to plant-based foods varied systematically by segment,

and that this pattern was not uniform across food types. Less receptive segments were relatively more open to familiar whole-food options, whereas more receptive segments were more open to processed substitutes, producing an inversion effect in which the apparent ranking of food types reversed across segments.

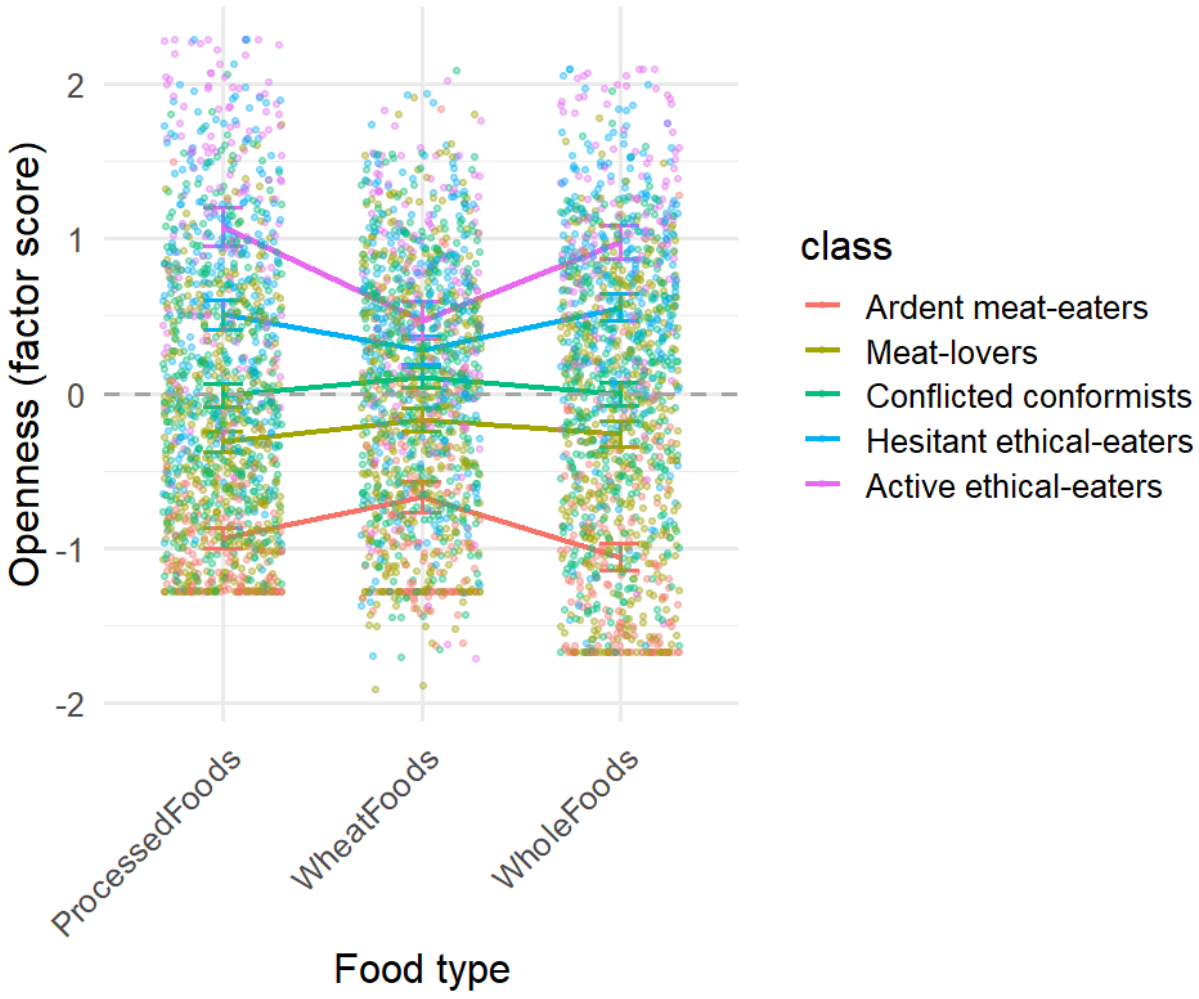

Figure 5. *Factor scores for openness to eating each type of food identified in the previously described factor analysis, colour coded by class. The horizontal dashed line represents the mean factor score.*

Figure 6 displays the psychometric profile of each segment across the main factors from the analysis, showing clear and consistent differences in underlying beliefs,

motivations, and perceived barriers. The two ethical eater segments score highest on capability, opportunity, and motivation, indicating that they both see reducing animal products as possible and worthwhile, whereas ardent meat-eaters score very low on this dimension.

Conflicted conformists and hesitant ethical eaters score relatively high on active dissociation, suggesting a more effortful suppression of the animal–meat link and, potentially, greater underlying conflict around consumption.

The less receptive segments, especially ardent meat-eaters and conflicted conformists, also score higher on manly meat and meat-eating justifications, indicating stronger alignment with dominant cultural narratives that normalise and defend animal consumption. Motivations to reduce animal products also differ sharply by segment. Ardent meat-eaters show little evidence of being moved by any of the measured motives; meat lovers appear only somewhat responsive to health and worker-related concerns; conflicted conformists are more responsive to human-centred reasons such as disease, fitting in, and workers; and the two ethical eater segments are more strongly motivated by animals, disease, and health, with worker protection appearing less relevant for the most active ethical eaters. Taken together, these patterns suggest that the segments are differentiated not only by degree of receptiveness, but by distinct motivational structures.

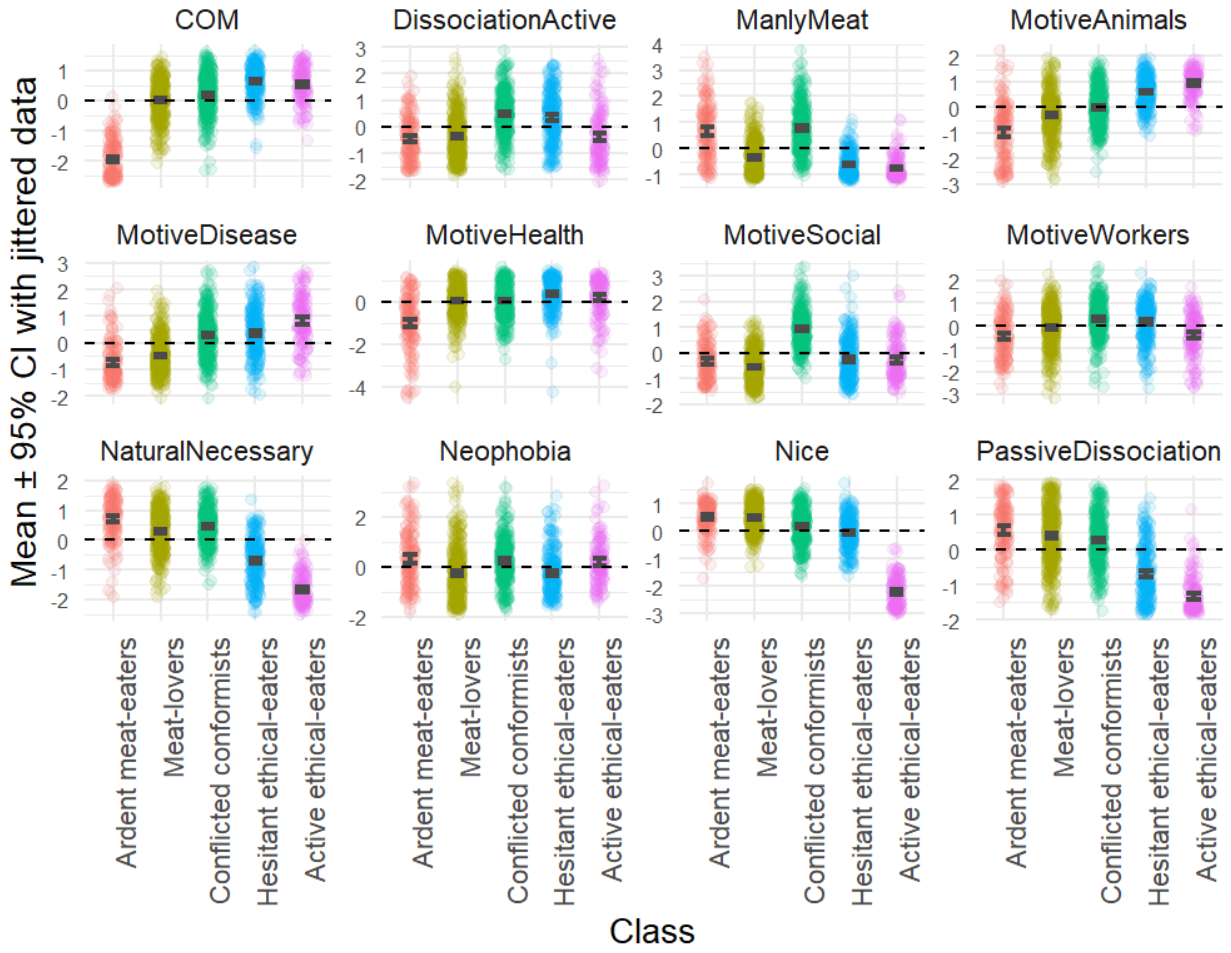

Figure 6. *Factor scores for each of the psychometric factors identified in the previously described factor analysis, split by class assignment. The horizontal dashed line represents the mean factor score.*

Figure 7 shows that active meat–animal dissociation does not decline linearly across stages of change. Instead, it appears highest among the conflicted segments in the earlier and middle stages, particularly those who are open to change or already seriously contemplating it, whereas it is lower both among ardent opposition and among those who have already reduced animal products or reached maintenance. This pattern suggests that active dissociation is most characteristic of people experiencing ambivalence, rather than of those who are either firmly resistant or already further along in dietary change. In other words, dissociation appears to peak where conflict is

greatest, and to recede once people are either settled in opposition or have begun to resolve that conflict through behaviour change.

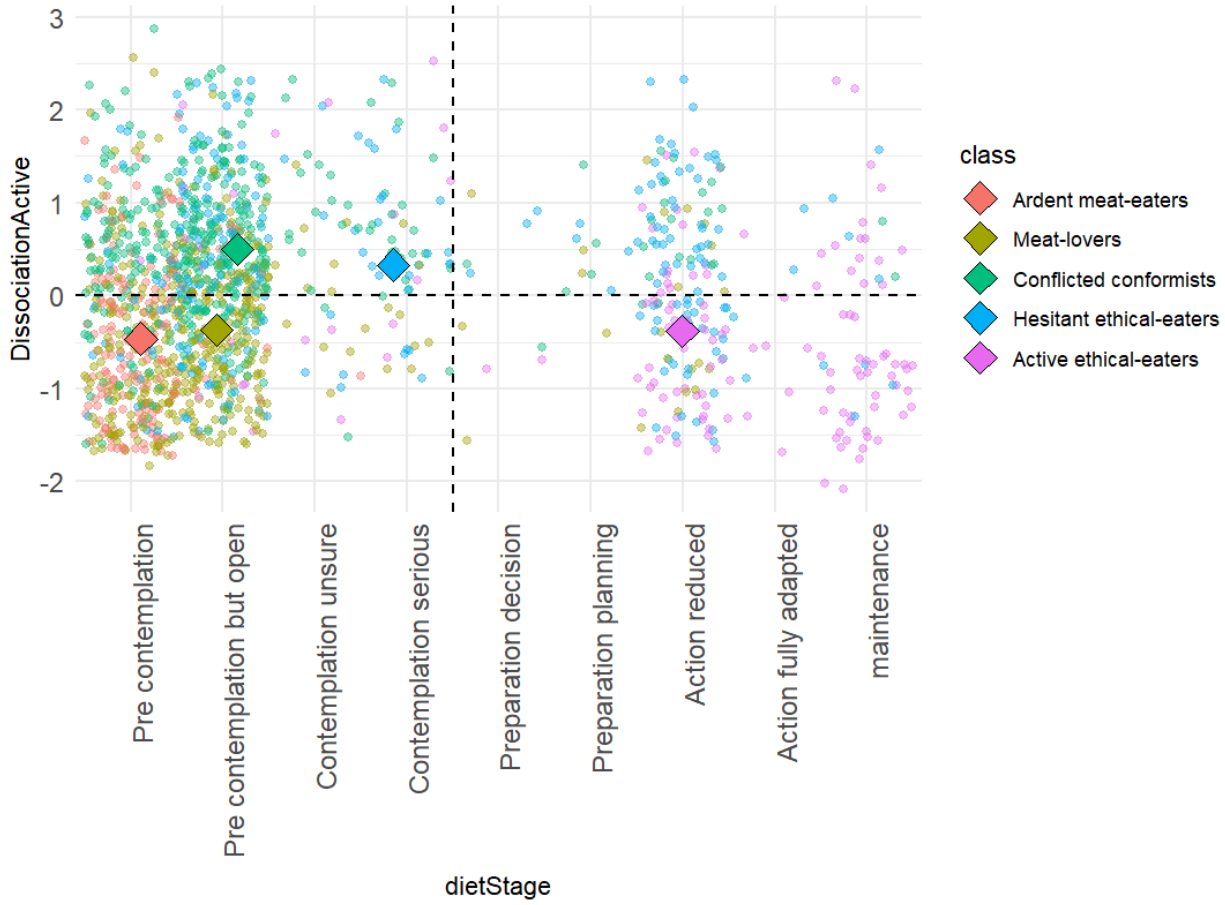

Figure 7. *Scatter plot stage of change (x-axis) and a active meat-animal dissociation factor score (y-axis).*

In order to create a compact and efficient typing tool, we ran all psychometric variables through a random tree analysis, with class membership as the outcome variable. We used a classification tree with a complexity parameter of 0.02, which constrained the model to retain only splits that produced a meaningful reduction in classification error, resulting in a smaller and more interpretable tree suitable for practical typing purposes. Figure 8 shows the resulting tree.

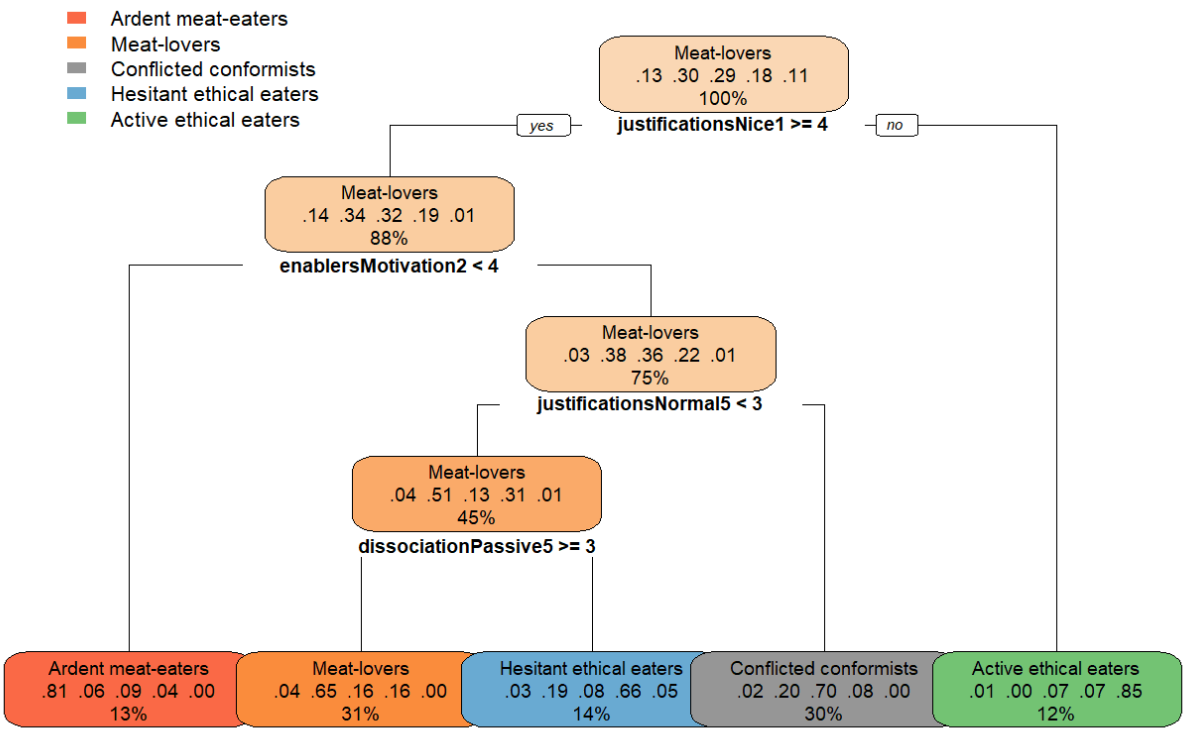

Figure 8. *Classification tree. Each box contains the proportion of participants within each class at that split level and the percentage of the total sample within that split. The bottom row shows the five class assignments.*

We then used this model to classify participants who completed Study 2. We then examined the effect of different message framings on participants' intentions to change their diet, measured immediately before and after message exposure. We modelled intention to change their diet as an ordered outcome. An ordinal logistic regression was estimated with message, segment, and their interaction as predictors. This allowed us to assess whether the effect of different messages on shifts in diet change intention varied across psychographic segments.

To interpret the interaction, we estimated the modelled effect of each message within each segment. Figure 9 visualises these estimates in a heat-map, with positive values indicating higher intention to change diet after exposure, negative values indicating

lower intention, relative to the average intention for the whole sample.

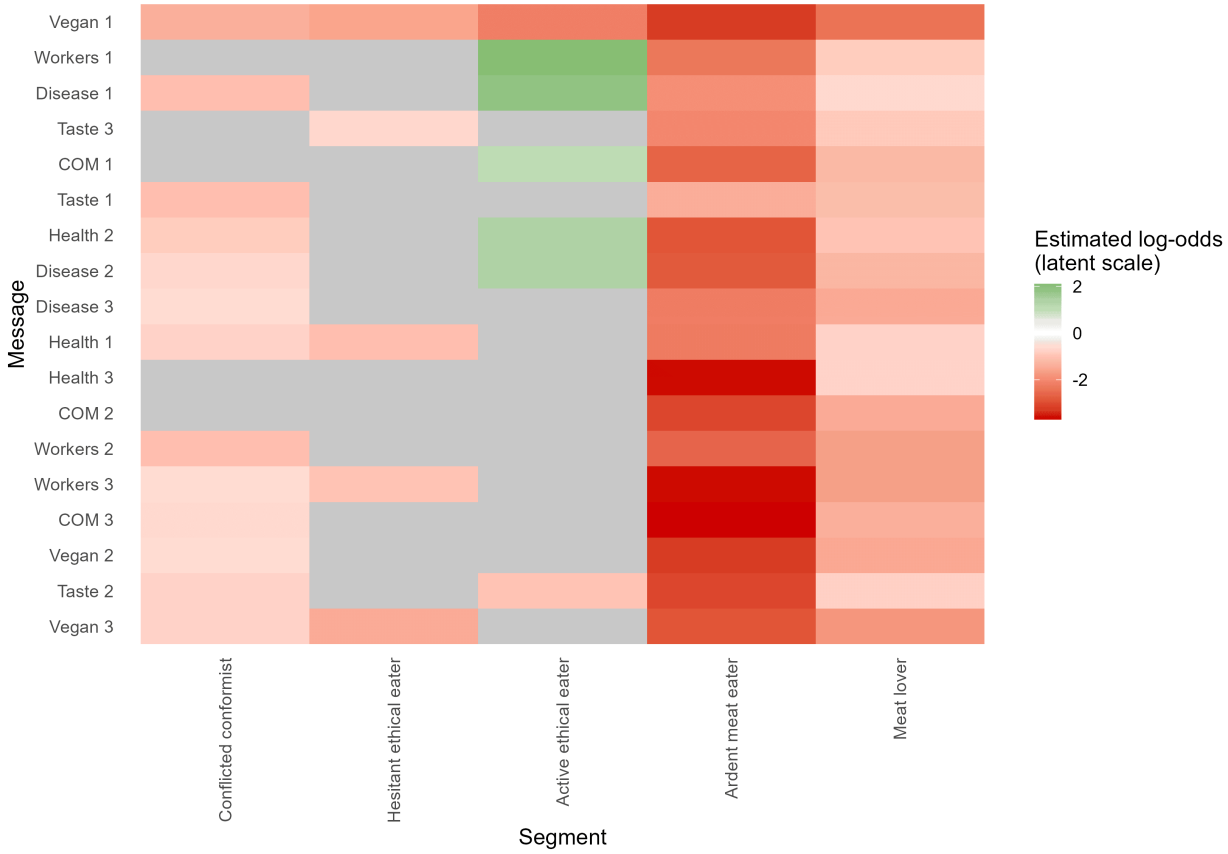

Figure 9. *Estimate log-odds of a change in intentions to change diet after seeing the message (y-axis) for each segment (x-axis). The sign of the log-odds reflects the sign of the change magnitude. Comparisons which did not reach statistical significance (p>.1) are grey.*

Discussion

The purpose of this research was to test whether thinking in terms of audience segments meaningfully improves our ability to encourage diet change away from animal products. The project combined two elements. First, it identified a small number of psychologically distinct segments based on people's beliefs, motivations, habits, and openness to change around food. Second, it tested whether messages framed around different themes perform better when matched to these segments, compared with using the same messages across a broad audience. The underlying question was practical rather than descriptive: does segmentation help us choose better narratives, or are broad messages that move more receptive audiences just as effective in practice.

The analysis shows that segments are quantitatively identifiable, people cluster in systematic ways, such as dietary behaviour, openness to reducing animal products, beliefs about health, environment and animals, perceived barriers, and identity.

At one end are highly resistant segments, characterised by strong attachment to meat, low perceived moral or environmental relevance, higher identity threat, and low motivation to change. In the middle are conflicted or ambivalent segments, people who express concern about animals or health, recognise some problems with current diets, but feel constrained by habits, taste expectations, social norms, or uncertainty about alternatives. At the other end are receptive or engaged segments, who already reduce consumption or actively seek plant-based options, show higher efficacy beliefs, and experience little identity threat from change.

These segments differ not only in attitudes but in how they evaluate plant-based foods. Less receptive groups favour familiar whole foods and more receptive groups are more open to alternative substitutes. The segmentation therefore captures meaningful psychological differences in how people understand, value, and respond to plant-based

food, rather than superficial demographic variation.

Tailoring appears to work only in a limited and tentative way. The strongest predictor of intention was segment assignment, with ardent meat eaters showing the lowest intentions and active ethical eaters showing the highest intentions, regardless of the specific message they saw. Overall, intentions to reduce animal product consumption tended to decline after message exposure, meaning the dominant effect across the study was pushback rather than persuasion.

There was some evidence that tailoring may reduce harm among more receptive or conflicted groups. For hesitant ethical eaters and conflicted conformists, most messages did not produce an overall negative effect. However, for meat lovers and ardent meat eaters, all messages produced some degree of pushback. Most of the combinations that were expected to work did not produce the intended effect. Within this broader pattern, a small number of message combinations produced above-chance increases in intentions among active ethical eaters. This suggests that messages tailored to the most receptive audience can have some effect. However, we did not find beneficial effects for any other segment.

There were also no clear “double dissociations” in the results. In other words, we did not find a consistent pattern where one message worked especially well for one segment, while a different message worked especially well for another. Instead, any uplift was isolated, while most messages either had no effect or reduced intentions across multiple segments. This suggests there may be limited value in developing strictly segment-specific messages with the assumption that different segments reliably require different frames, at least within the set of messages tested here.

Despite the lack of strong evidence that tailored messaging consistently works, the typing tool still has clear practical value. It provides a fast and efficient way to

understand someone's mindset and to characterise where they are in relation to diet change and plant-based food. This allows practitioners to identify whether someone is resistant, conflicted, or already receptive, which is often the most important distinction for strategy and engagement. The segments can therefore be useful in crafting communications, especially by helping practitioners calibrate tone, level of friction, and overall approach for different audiences. While the tool may not reliably predict how well a person will respond to a particular message, it is still valuable for situational awareness, prioritisation, and avoiding obvious mismatches, such as pushing high-friction frames on people who are not psychologically ready. We give more practical advice in the guide that accompanies this research report.

The ardent meat-eaters group show no intention to change, they also showed no meaningful shift after seeing the messages, which suggests this group is currently low potential for diet-change messaging. By contrast, people who feel conflicted about eating animals appear to be the highest-potential audience overall. Within this conflicted population there are two distinct profiles, those who are already contemplating diet change, and those who are not.

The most receptive group in practice appears to be the conflicted conformists segment. They report feeling conflict about eating animals, but they may not have spent much time actively thinking through diet change, they nonetheless show openness to reducing animal products. Those who feel conflicted and have already been contemplating change also look promising on baseline measures, they start with high intentions to reduce animal products, but they showed substantial pushback after message exposure. This suggests a different approach is needed for this group, one that is gentler and lower pressure, focused on supporting self-directed progress rather than trying to persuade through heavier frames that may trigger reactance.

There are important limitations to these findings. First, message effects may be highly

dependent on the specific messages that we tested, the results should not be read as evidence that segment-tailored communications cannot work, only that they did not work reliably within this particular set of messages and executions. Different wording, tone, or overall framing choices could plausibly produce different interaction patterns between segment and message.

Second, the typing tool involves inevitable classification errors. The typing tree has a misclassification rate, meaning some people will be assigned to the wrong segment, and this reduces the apparent effectiveness of any true tailoring effects. There is also an inherent trade-off between accuracy and ease of use, a more complex tool could classify more accurately, but would be slower and harder to deploy in real-world settings, whereas a simpler tool is operationally useful but will be noisier.

Overall, the findings suggest that segmentation is useful for understanding where people are at, and for making smarter strategic choices about who to prioritise and what kinds of asks to make, but it is not a reliable recipe for segment-specific persuasion at the level of broad message themes. The clearest opportunity lies in focusing on the conflicted groups, particularly conflicted conformistss, while treating conflicted conformistss as a high-potential but high-sensitivity audience that may require gentler, lower-pressure engagement. In practice, this means using the typing tool as a rapid diagnostic to guide targeting, tone, and calls to action, while investing more in refining and testing creative to avoid unintended pushback, and treating the current results as a cautious basis for iteration rather than a final verdict on tailoring.

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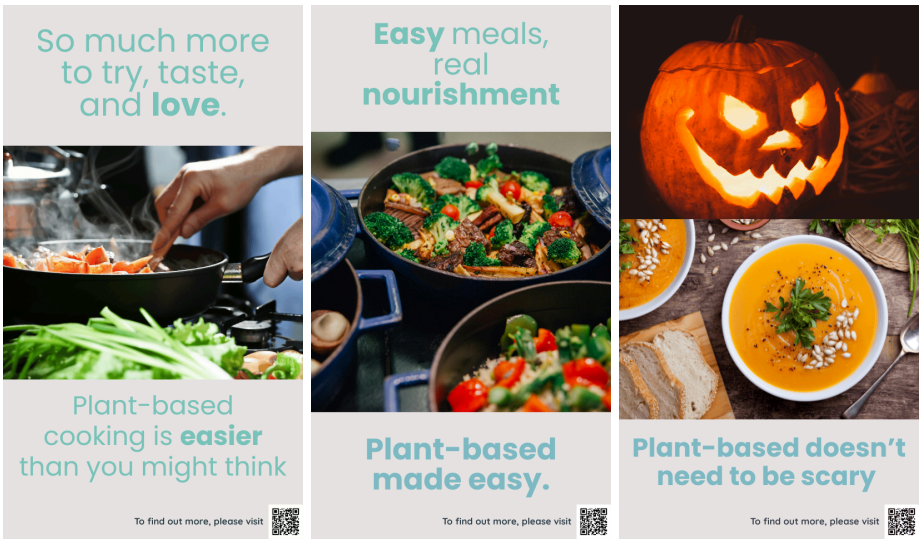
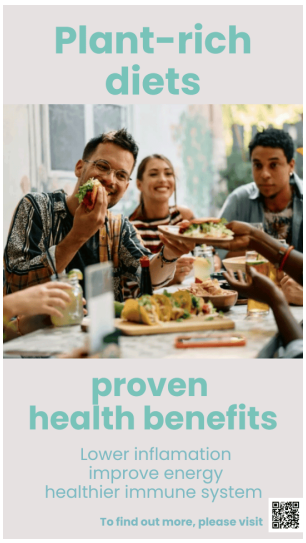
Appendix one

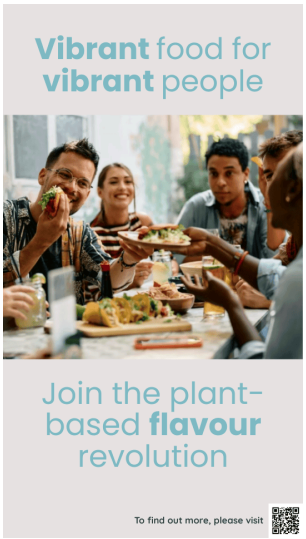


Capability, Opportunity, Motivation 1-3

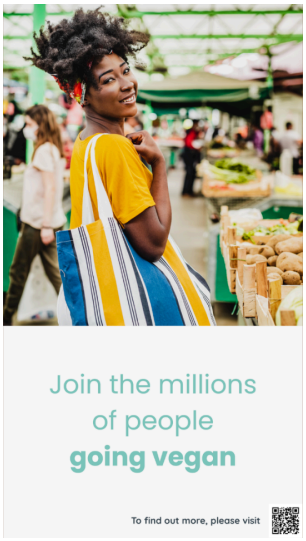
Disease 1-3

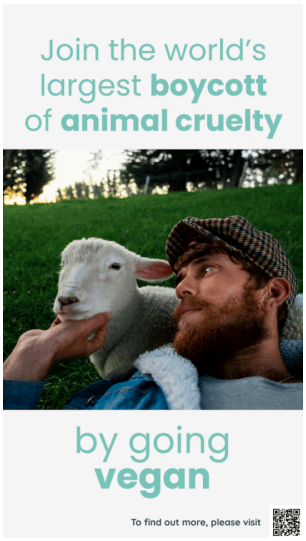


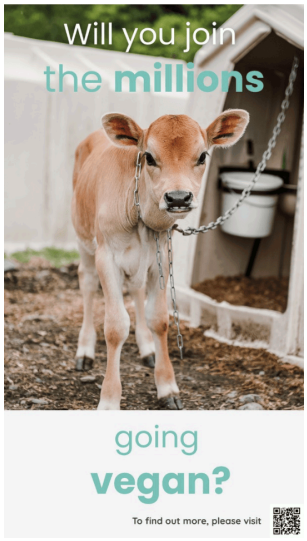
Health 1-3



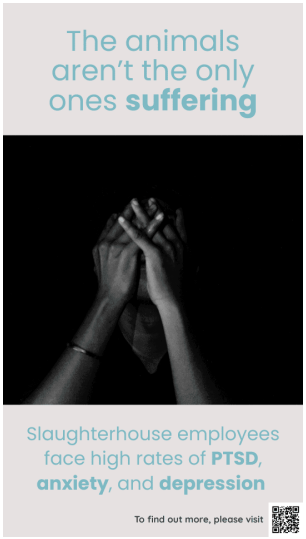
Taste 1-3

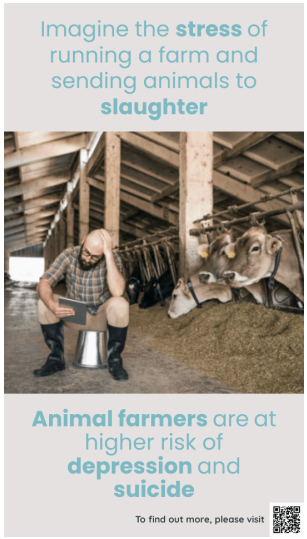






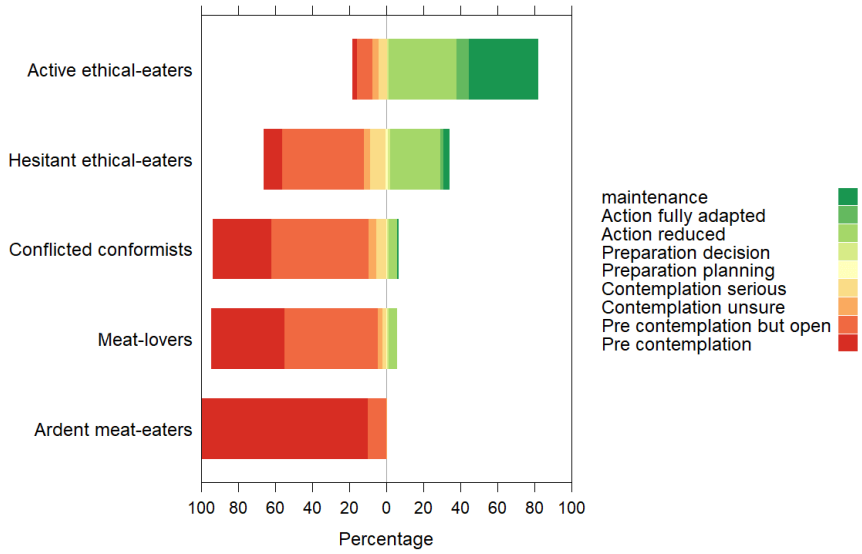
Vegan 1-3



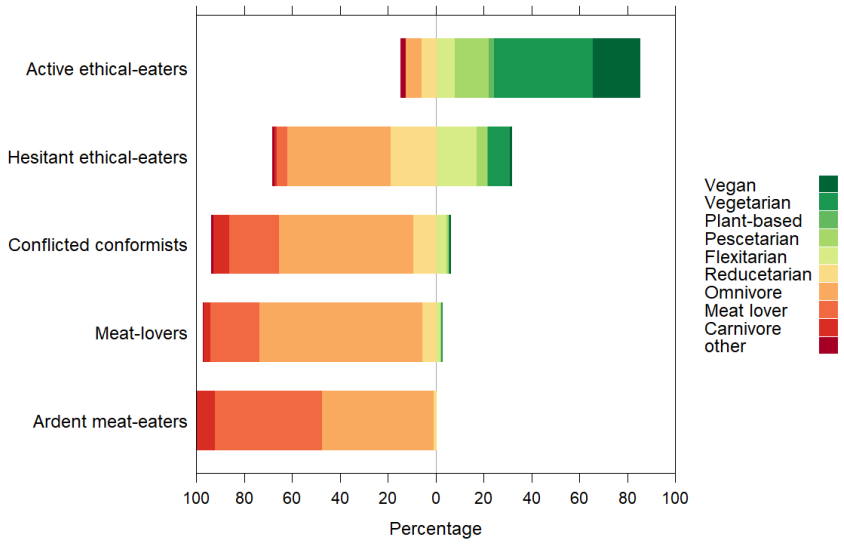


Workers 1-3

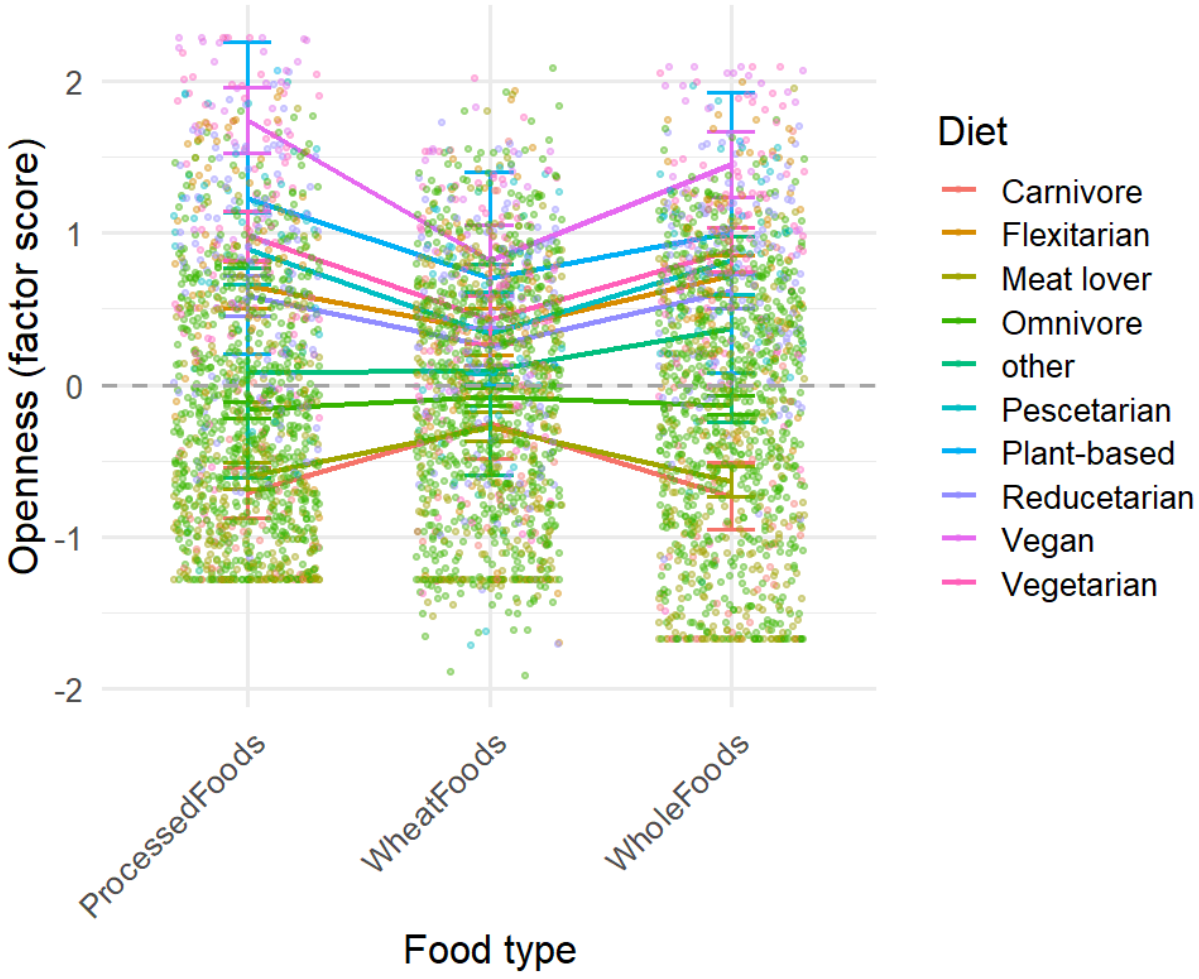
Appendix Two



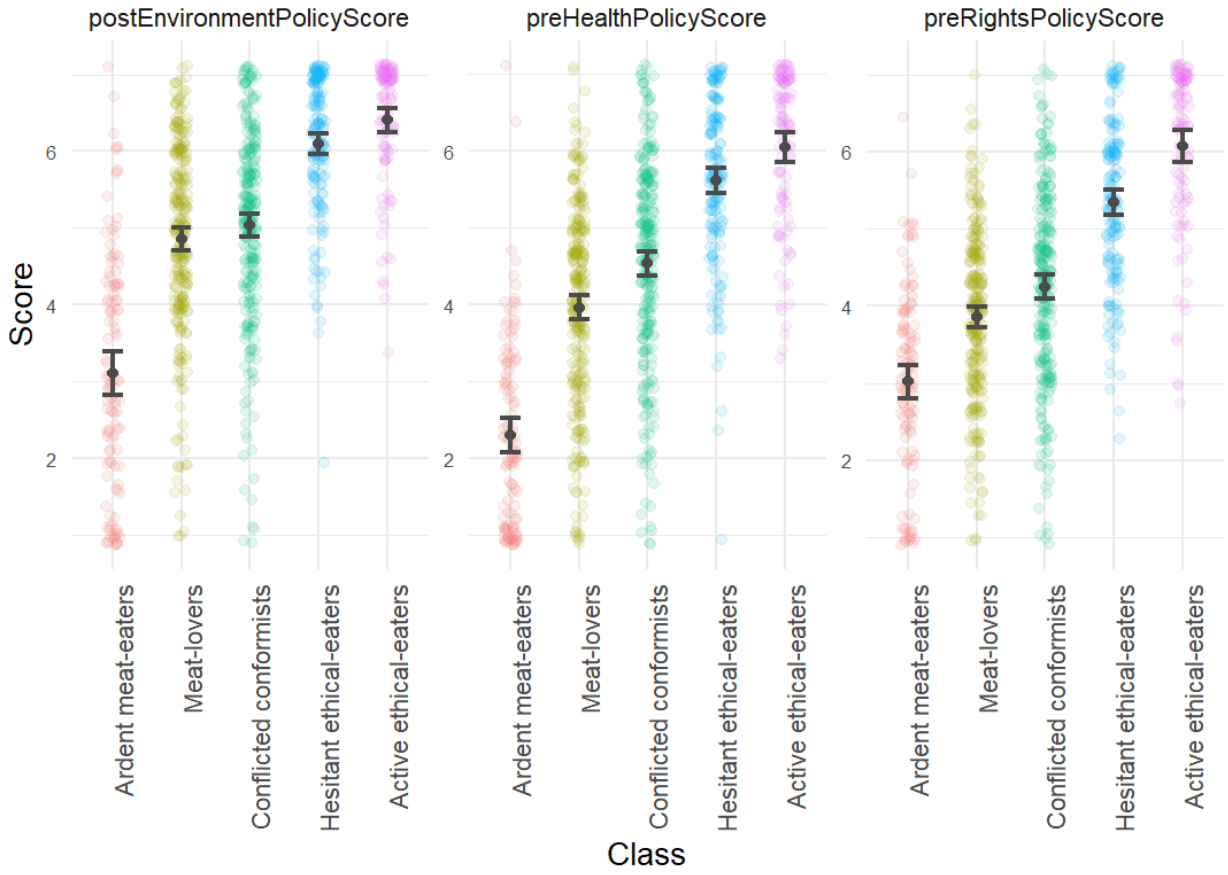
Breakdown of diet stage (trans-theoretical model) by segment



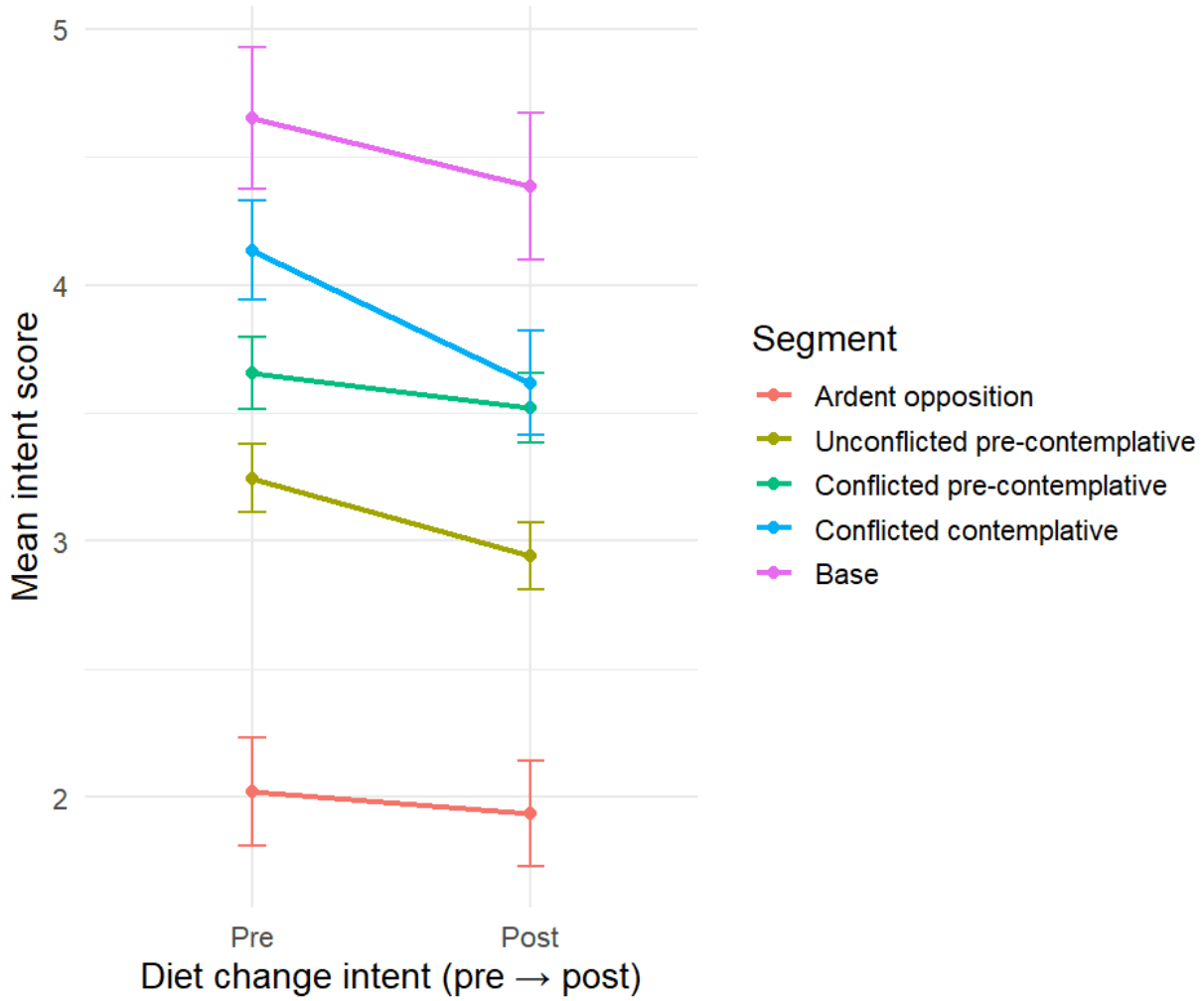
Breakdown of diet by segment.



Openness to different types of plant-protein, split by current diet identity.



Policy support scores split by segment. The scores were calculated by averaging responses to three proposed policies of each policy type. The data were taken from the pre-test of the message testing experiment.



Mean diet change intent scores, measured before and after seeing the message (x-axis), split by segment type. Error bars are 95% confidence intervals.