Preregistration: "Promoting Sustainable Dietary Choices Through Label Awareness and Product Trial Incentives: Evidence from a Randomized Controlled Trial"

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1 General Information

A growing body of research highlights that current dietary patterns, particularly high levels of meat consumption in high-income countries, contribute substantially to greenhouse gas emissions, land and water use, biodiversity loss, and adverse health outcomes (Clark et al., 2020; Crippa et al., 2021; IPCC, 2022; Scarborough et al., 2023; Willett et al., 2019). Thus, there is a growing consensus in the literature that a demand-side shift toward more plant-based diets is a key lever to sustainably change the food system and dietary patterns (Jetzke et al., 2020; Rosenzweig et al., 2020; Willett et al., 2019). One promising pathway to facilitate such dietary transitions is the adoption of plant-based meat substitutes (PBMS) (Auclair et al., 2024; Grummon et al., 2023; Springmann, 2024). These products aim to replicate the taste, texture, and culinary uses of conventional meat while relying on plant-derived ingredients and rather novel processing techniques (Fesenfeld et al., 2023; Jahn et al., 2024). By offering familiar formats such as burgers, nuggets, or minced products, PBMS may lower behavioral barriers for meat eaters and enable gradual dietary shifts without requiring major changes in cooking practices or meal structures (Jahn et al., 2024; Qaim et al., 2024; Siegrist & Hartmann, 2020). Recent assessments suggest that, despite ongoing debates about their level of processing, PBMS tend to generate lower environmental impacts than animal-based meat products and can therefore contribute to reducing the environmental footprint of food consumption (Springmann, 2024).

Despite rapid market growth, the extent to which PBMS can effectively substitute for conventional meat remains uncertain. Consumer adoption is shaped by a range of factors, including perceived taste and texture, price, convenience, health perceptions, and environmental considerations (Harguess et al., 2020; Michel et al., 2021; Onwezen et al., 2022; Siegrist & Hartmann, 2020; Taylor et al., 2022). While some consumers have embraced PBMS as substitutes for meat, others remain skeptical due to concerns about product quality, processing, or unfamiliarity (Cuffey et al., 2023; Hartmann et al., 2022; Jahn et al., 2024; Michel et al., 2021; Onwezen et al., 2022; Safdar et al., 2022; Siegrist & Hartmann, 2020, 2023; Slade, 2018; Szenderák et al., 2022a). As a result, the degree to which PBMS replace meat consumption rather than simply complement existing diets is still debated. A key barrier to wider adoption is that food choices are strongly influenced by habits and experiential learning (Happer & Wellesley, 2019; Siegrist & Hartmann, 2020).

Everyday dietary decisions are often made under time constraints and information overload, leading consumers to rely on heuristics, past experiences, and established routines rather than extensive deliberation (Happer & Wellesley, 2019; Schösler et al., 2012; Siegrist & Hartmann, 2020). Dual-process models of decision-making and insights from behavioral economics emphasize that such decisions are frequently governed by intuitive and experience-based processes rather than purely analytical reasoning (Chaiken & Trope, 1999; Kahneman, 2011). According to dual-process theory, decisions emerge from the interplay of two cognitive systems: System 1, which is fast, intuitive, and largely automatic, drawing on habits, learned associations, and past experiences; and System 2, which is slower, more deliberate and reflective, relying on conscious reasoning and deeper information

processing (Godfray et al., 2018; Kahneman, 2011). Food-related decisions are frequently governed by System 1 processes, as information complexity, habitual consumption, and time constraints limit extensive deliberation and favor the reliance on simplified decision rules and learned behavior (Happer & Wellesley, 2019; Siegrist & Hartmann, 2020). Consequently, limited experience with novel foods, such as plant-based meat substitutes, can slow their adoption.

Providing opportunities for low-effort experiential exposure may therefore play an important role in facilitating behavioral change. Direct experiences with PBMS can help consumers evaluate sensory characteristics such as taste and texture, which are central determinants of food acceptance (Michel et al., 2021; Onwezen et al., 2022; Siegrist & Hartmann, 2020). Positive experiences may increase familiarity with these products and reduce uncertainty about their use in everyday meals (Fesenfeld et al., 2024; Graça et al., 2019; Hoek et al., 2013; Siegrist & Hartmann, 2020). We argue that experiences with PBMS primarily engage System 1 processes, activating affective learning and automatization processes that are particularly influential in habitual food decision-making contexts. Provided that product experiences are perceived as positive, such experiential learning can lead to more favorable product evaluations – including improved perceptions of taste, texture, and quality – and reduce the uncertainty and unfamiliarity that currently constitute key barriers to PBMS adoption. As updated experience-based preferences become more established and contribute to new consumption habits, gradually meat purchases may be reduced, thereby generating a substitution effect alongside the adoption effect. While repeated experiences can be necessary to form new consumption habits (Hoek et al., 2013), positive experiences may nonetheless increase the salience and purchase likelihood of PBMS in subsequent choice situations, generating an adoption effect. Over time, as experience-based preferences become more established and contribute to new consumption habits, they may gradually reduce conventional meat purchases, thereby also generating a substitution effect.

At the same time, some product attributes, such as climate and environmental impacts or health implications, cannot be directly experienced through consumption and instead require informational cues to be communicated effectively (Dillard & Shen, 2012; Hornibrook et al., 2015). These insights suggest that interventions targeting both experiential and informational aspects of food decision-making may be particularly promising. Experiential interventions, such as providing opportunities or incentives to try plant-based products, primarily engage intuitive decision processes by allowing individuals to update preferences based on direct experience (Maier et al., 2026, under review). In contrast, informational interventions, such as providing information about available sustainability labels, provide cognitive inputs about non-experiential product attributes that may increase the likelihood that such labels are actively used as decision criteria in subsequent purchase situations, thereby influencing more reflective evaluation processes (Hornibrook et al., 2015). However, given the habitual and System 1-driven nature of everyday food purchasing behavior (Happer & Wellesley, 2019), providing information alone may be insufficient to directly alter established consumption patterns. Rather, increasing sustainability label awareness may at most increase the cognitive accessibility of certain product attributes and shift general purchasing tendencies toward comparatively more sustainable products within existing choice sets, especially in stimulus-rich decision environments such as retail settings, without necessarily triggering more fundamental behavioral changes such as cross-category substitution toward plant-based diets (Maier & Fesenfeld, 2026, under review). Nevertheless, when label information is additionally accompanied by a direct and salient product comparison that illustrates how the label can be used as a decision aid to differentiate between products based on their environmental impact, it may further increase the salience of environmental sustainability as a purchase criterion and lower the psychological distance to adopt more sustainable products, potentially shifting purchase likelihood toward specific, more sustainable product categories. However, even with such a targeted product comparison, deeply entrenched consumption habits are unlikely to be fully overcome through

information provision alone, and cross-category substitution away from conventional meat toward plant-based alternatives may therefore remain limited in the absence of direct product experience.

This suggests that informational and experiential interventions may be most effective when combined, as they target complementary pathways of food decision-making: while experiential interventions work by reducing unfamiliarity and updating preferences through System 1 processes, informational interventions increase the cognitive accessibility of non-experiential product attributes such as environmental impact through more reflective System 2 processes. Importantly, we argue that the combination of informational and experiential interventions may amplify behavioral change beyond what either approach achieves in isolation. Together, these two mechanisms may be mutually reinforcing: As experience-based preferences become gradually more established, subsequent reflective evaluations may increasingly align with these updated preferences through post-hoc rationalization processes that emerge from the interplay of System 1 and System 2 (Kahneman, 2011). Taken together, the combination of experiential and informational interventions is therefore expected to trigger both experiential learning and post-hoc rationalization processes, generating larger and potentially more durable changes in consumer behavior than either intervention alone.

However, empirical evidence comparing these different intervention approaches remains limited. Existing studies often examine information-based interventions (Fesenfeld et al., 2023; Maier, 2024; Vanclay et al., 2011; Vlaeminck et al., 2014), experiential interventions (Hoek et al., 2013; Tal & Wansink, 2015), or incentive-based interventions aimed at increasing product experience (Pizzo et al., 2026), but mostly study these approaches in isolation. In addition, many studies rely on self-reported intentions rather than observed behavioral outcomes (Fesenfeld et al., 2023; Maier, 2024; Nielsen et al., 2021). While some studies combine informational and experiential components (Flynn et al., 2013; Holloway et al., 2012; Malan et al., 2022; Pizzo et al., 2026), they typically do not systematically examine the independent and joint effects of these interventions and are often conducted in restaurant or household contexts rather than retail environments. This is an important limitation, as retail settings are characterized by high choice complexity, frequent purchasing decisions, and information-rich environments, where consumers typically rely heavily on heuristics and habits (Happer & Wellesley, 2019; Schösler et al., 2012; Siegrist & Hartmann, 2020), making them a particularly relevant context to study real-world food choices and behavioral change. Moreover, large-scale experiments in retail settings that examine how incentive-based experiential exposure and information provision jointly influence real-world purchasing behavior remain scarce.

The present study addresses this gap by implementing a randomized controlled trial (RCT) conducted in collaboration with one of Switzerland's largest grocery retailers that evaluates the causal effects of two intervention components: (1) information about the Eco-Score sustainability label together with an illustrated comparison between a conventional meat product and a plant-based alternative and (2) a one-time voucher redeemable free of charge at any store operated by the retail collaboration partner store that enables participants to obtain two PBMS products free of charge, thereby directly lowering the financial barrier to first trial. By experimentally varying these components in a 2×2 factorial design, the study allows us to separately estimate the effects of information provision, voucher-induced product trial, and their combined influence on consumer behavior. The information treatment is expected to primarily operate through label awareness and salience mechanisms: by increasing consumers' awareness of the Eco-Score label as a decision aid and illustrating how it differentiates products by environmental impact, including a direct visual comparison between a conventional meat product and a plant-based alternative, the treatment increases the cognitive accessibility of environmental sustainability as a decision criterion. Because PBMS tend to receive more favorable Eco-Score ratings than conventional meat products, increased label awareness and Eco-Score salience are expected to shift

the relative appeal of PBMS in subsequent purchase situations, potentially increasing their adoption. The voucher treatment introduces a temporary financial incentive that lowers the cost of trying PBMS and thereby directly affects the short-term cost–benefit calculus of consumers. Beyond this immediate effect, voucher redemption is expected to induce experiential learning that may update sensory preferences and reduce uncertainty about PBMS, thereby increasing the salience and likelihood of adoption of PBMS in subsequent purchase situations. The combination of both treatments is expected to amplify these effects through several reinforcing mechanisms. First, the illustrative product comparison embedded in the information treatment creates an explicit cognitive link between conventional meat products and PBMS as more sustainable alternatives, increasing the salience of cross-category substitution and making the voucher-enabled PBMS product trial more likely to be interpreted through a sustainability lens. Second, this shared product reference across both treatments may strengthen the adoption effect of the combined intervention, as consumers who have been primed to consider PBMS as a more sustainable alternative are more likely to positively evaluate and integrate their PBMS product experience. Third, the combination of label awareness and direct product experience may trigger post-hoc rationalization processes, whereby positive sensory experiences with PBMS reinforce and consolidate the sustainability considerations introduced by the information treatment. Together, these mutually reinforcing mechanisms are expected to generate larger and potentially more durable changes in purchasing behavior than either intervention alone, not only increasing PBMS adoption but also potentially facilitating cross-category substitution away from conventional meat products.

In addition, the study investigates how product attributes and naming conventions influence consumer preferences for plant-based food products. Ongoing regulatory and public debates in several countries, including the United States and Switzerland, concern the use of meat-related terminology for plant-based foods (Szenderák et al., 2022b). Such naming conventions may shape how consumers perceive plant-based products and the extent to which they consider them acceptable substitutes for conventional meat (Jaeger et al., 2025; Ketelings et al., 2025; Szenderák et al., 2022b). Building on the broader literature showing that food acceptance is strongly influenced by familiarity and that unfamiliarity with novel foods is a key barrier to adoption (Siegrist & Hartmann, 2020), product names that reference familiar meat products, such as "Chicken" or "Beef", may reduce the perceived novelty of PBMS and lower the psychological distance to conventional meat for habitual meat eaters, thereby facilitating product trial and acceptance. In contrast, product names without meat references may reinforce the perception of PBMS as fundamentally different from conventional meat, potentially reducing purchase likelihood among consumers not already predisposed toward plant-based diets. Furthermore, the study examines consumers' willingness to pay for different types of plant-based products. Price is a consistently identified barrier to PBMS adoption (Cuffey et al., 2023; Harguess et al., 2020; Nguyen et al., 2022; Siegrist et al., 2024), and willingness to pay is likely to vary across product types – for instance between minimally processed products such as Tofu and more highly processed PBMS – as well as across the origin of raw materials. Understanding whether consumers are willing to pay a premium for plant-based products made from Swiss or European raw materials is particularly relevant for producers and retailers seeking to assess the market potential of domestically sourced plant-based products and to support the transition toward more sustainable food systems.

To examine these questions, the study embeds a discrete choice experiment in the survey that varies six product attributes (product type, price, protein source, origin of raw materials, Eco-Score rating, and organic certification) across three repeated choice rounds. The product set includes both PBMS (plant-based mince, strips, kebab, and nuggets) and Tofu, where the latter is included as a widely available plant-based protein product that does not aim to replicate meat, allowing for comparisons across more and less processed plant-based products. To examine the effects of naming conventions, participants are

additionally randomly assigned to one of four naming conditions in a 2×2 between-subjects design that varies (1) whether product names follow a hybrid English-national language convention (e.g., Plant-based Geschnetzeltes in German), reflecting common practice among Swiss retailers, or use purely national-language naming, and (2) whether names include meat-referencing terminology (e.g., "Chicken" or "Beef") or not. This results in four conditions: national-language names without meat references, hybrid names without meat references, national-language names with meat references, and hybrid names with meat references. Note that Tofu appears identically across all four naming conditions, as meat-referencing terminology is not applicable to this product type.

By combining an RCT, which provides causal evidence on the effects of label information provision and voucher-induced product trial on real-world purchasing behavior, with a discrete choice experiment that elicits stated preferences for specific product attributes and naming conventions, this study advances understanding of the determinants of consumer adoption of PBMS and other plant-based products. The findings contribute to the growing literature on sustainable dietary transitions and inform policy discussions on labeling practices, product positioning, and strategies to promote more sustainable food consumption.

1.1 Main Question and Hypotheses

The study addresses two complementary sets of research questions and hypotheses, corresponding to the RCT and the discrete choice experiment respectively.

RCT: Information and Voucher Treatments
Building on the theoretical and empirical considerations outlined above, this study aims to investigate how the Eco-Score information treatment and the voucher treatment influence consumer behavior. The study addresses the following research questions:
RQ1.1: What is the effect of providing information about the Eco-Score sustainability label on consumers' real-world food purchasing behavior?
RQ1.2: What is the effect of providing a voucher that enables individuals to obtain two plant-based meat substitutes free of charge on consumers' real-world food purchasing behavior?
RQ1.3: Do the Eco-Score information treatment and the voucher treatment have interactive effects on consumer behavior when combined?
Based on the existing literature on experiential learning, food habits, and information interventions, we formulate the following testable hypotheses.

- H1a: Providing information about the Eco-Score sustainability label will improve the average Eco-Score rating of consumers' food purchases during the post-treatment period.
- H1b: Providing information about the Eco-Score sustainability label, including an illustrative comparison between a conventional meat product and a plant-based alternative, will increase subsequent observed purchases of plant-based meat substitutes (i.e., a positive observed adoption effect).
- H1c: Providing information about the Eco-Score sustainability label, including an illustrative comparison between a conventional meat product and a plant-based alternative, will have no significant effect on subsequent observed purchases of conventional meat products (i.e., a no observed substitution effect).
- H2a: Offering a one-time voucher that enables individuals to obtain two plant-based meat substitutes free of charge will increase subsequent observed purchases of plant-based meat substitutes (i.e., a positive observed adoption effect).

- H2b: Offering a one-time voucher that enables individuals to obtain two plant-based meat substitutes free of charge will have no significant effect on subsequent observed purchases of conventional meat products (i.e., a no observed substitution effect).
- H3a: Participants assigned to the combined Eco-Score information and voucher treatment will show larger increases in observed plant-based meat substitute purchases than participants assigned to either treatment alone.
- H3b: Participants assigned to the combined Eco-Score information and voucher treatment will show larger reductions in observed conventional meat purchases than participants assigned to either treatment alone.

Choice Experiment: Product Attributes and Naming

Furthermore, as part of the choice experiment included in the survey, the study addresses the following research questions:

RQ2.1: Do key product attributes of PBMS and other plant-based products – specifically product type, price, protein source, origin of raw materials, Eco-Score ratings, and organic certification – influence consumers' stated purchase likelihood?

RQ2.2: How do product attributes, particularly product type and origin of raw materials, influence consumers' willingness to pay for PBMS and other plant-based products?

RQ2.3: Does prior exposure to the Eco-Score information treatment increase the weight consumers place on the Eco-Score attribute when evaluating plant-based products in the choice experiment?

RQ2.4: How does the use of meat-referencing terminology in PBMS product names influence stated purchase likelihood?

Based on the existing literature we formulate the following hypotheses:

- H4a: Price and product type will be the most influential attributes affecting purchase likelihood.
- H4b: Consumers on average will exhibit a higher willingness to pay for PBMS and other plant-based products made from Swiss raw materials compared to those made from European or non-European raw materials.
- H4c: Individuals who receive the Eco-Score information treatment will place greater weight on the Eco-Score attribute in the choice experiment than individuals in the control group.
- H5a: The use of meat-referencing terminology in product names, such as references to "Chicken" or "Beef", will increase the stated purchase likelihood of PBMS compared to product names without meat-related terminology.

Additionally, the study explores in an exploratory fashion whether hybrid English-national language naming conventions influence stated purchase likelihood differently than purely national-language naming.

2 Sponsors and Partners

The study forms part of a broader long-term scientific project conducted in collaboration with a major Swiss retailer. Importantly, funding for the project is independent and not provided by the collaboration partner. While the partner will receive access to the aggregated and anonymized results of the independent scientific analyses, they had no influence on the study design, data analysis, or reporting. The authors declare no competing interests related to this study.

3 Experimental Details

3.1 Independent variable: Experimentally varied treatment

RCT: Information and Voucher Treatments

The independent variables consist of two experimentally assigned interventions designed to influence consumers' purchasing behavior. Participants are randomly assigned to one of four conditions in a 2×2 factorial design, varying the presence of (1) an informational intervention and (2) an incentive-based experiential exposure intervention.

The four treatment conditions are:

1. **Control group:** Participants receive no intervention and proceed directly to the choice experiment.
2. **Information treatment (Eco-Score sustainability label information)**: Participants are shown a screen explaining the Eco-Score sustainability label, which summarizes the environmental impact of food products based on multiple life-cycle indicators (greenhouse gas emissions, water use, land use, biodiversity impacts, transport distance, storage and packaging, and animal welfare). The screen explains the label's A+ to E− scale and that it is developed by Beelong. To illustrate how the label enables comparisons across products, the screen displays two product images side by side: one plant-based product with an A+ Eco-Score (randomly drawn from: Tofu, plant-based strips, or plant-based mince) and one conventional meat product with an E- Eco-Score (randomly drawn from: chicken or beef). Both images are independently randomized across respondents and are zoomable for closer inspection.
3. **Voucher treatment (incentive-based experiential exposure intervention)**: Participants once receive a voucher with plant-based meat substitutes redeemable free of charge at any at any store operated by the retail collaboration partner store for the following two products per voucher: (1) Plant-Based Vegan Alternative to Mince and (2) Plant-Based Organic Vegan Alternative to Kebab. The voucher is designed to lower financial and behavioral barriers to trial, thereby inducing direct product experience with PBMS. Participants can download the voucher directly within the survey; providing an email address to receive the vouchers by email is optional.
4. **Voucher + Information treatment**: Participants in this group receive both the information intervention and the voucher intervention described above.

This 2×2 design allows the study to separately identify the causal effect of information provision, the causal effect of incentivized product trial, and their potential interaction. Random assignment ensures that outcome differences across groups can be interpreted causally.

Choice Experiment: Product Attributes and Naming

The survey includes a discrete choice experiment (DCE) examining how consumers evaluate key attributes of plant-based meat substitutes (PBMS) and how linguistic framing influences product preferences. Participants complete three choice rounds. In each round, two hypothetical PBMS products are presented side by side in a comparison table, varying across six experimentally randomized attributes. Participants indicate which product they would be more likely to purchase and additionally rate the purchase likelihood of each product on a 7-point scale (1 = very unlikely to 7 = very likely).

The six product attributes and their levels are:

Attribute	**Levels**
Product type	Tofu · Plant-based strips · Plant-based mince · Plant-based kebab · Plant-based nuggets
Price	CHF 2.50 (1.00/100g) · CHF 3.75 (1.50/100g) · CHF 5.00 (2.00/100g) · CHF 6.25 (2.50/100g) · CHF 7.50 (3.00/100g)
Protein source	Pea protein · Lentil protein · Soy protein · Lupin protein
Origin of raw materials	Switzerland · European countries · Non-European countries
Eco-Score rating	A+ · A− · B+ · B−
Organic certification	Yes · No

The Attribute levels are randomly and independently drawn for each product in each round, ensuring independent variation across attributes.

Naming treatment (2×2 between-subjects):

In addition to the attribute variation, participants are randomly assigned to one of four product naming conditions that manipulate (1) the language of product names (Hybrid vs. Swiss national language) and (2) whether names include meat-referencing terminology (e.g., "chicken" or "beef") or not. This results in the following conditions:

Condition	**Language**	**Meat reference**	**Example (GER)**
T1	National language	No	Pflanzliches Geschnetzeltes
T2	Hybrid	No	Plant-based Geschnetzeltes
T3	National language	Yes	Pflanzliches Poulet-Geschnetzeltes
T4	Hybrid	Yes	Plant-based Chicken Geschnetzeltes

This design allows the study to estimate both the relative importance of individual product attributes for stated purchase likelihood and whether linguistic framing independently affects consumer evaluations of PBMS.

3.2 Dependent variables

The following describes the key dependent variables of the study.

Primary Outcome

RCT: Information and Voucher Treatments

The primary outcomes relate to observed food purchasing behavior, measured using individual-level purchasing data obtained from our retail collaboration partner. The data include detailed information on product purchases over time and allow us to track changes in purchasing patterns before and after the experimental intervention. Our main outcomes of interest are:

- Eco-Score of food purchases: Using product-level Eco-Score ratings, we measure the overall environmental sustainability of purchased food products, operationalized as the average Eco-Score value across purchased items or as the share of purchased products with favorable Eco-Score ratings. This is the primary outcome corresponding to the information treatment, as the treatment is expected to increase the cognitive accessibility of the Eco-Score as a decision criterion.
- Plant-based meat substitute purchases: We measure the quantity and spending on plant-based meat substitute (PBMS) products purchased by individuals. This outcome captures the adoption effect of the interventions, reflecting whether participants increase their consumption of plant-based alternatives following exposure to the treatments.
- Conventional meat purchases: We measure the quantity and spending on conventional meat products purchased by individuals. This outcome captures the substitution effect, indicating whether participants reduce meat consumption after receiving the interventions.

Choice Experiment: Product Attributes and Naming
The survey also includes a discrete choice experiment designed to measure stated preferences for plant-based products.

- Product choice: In each choice task, respondents select the product they would be most likely to purchase from two alternatives. The primary outcome in the choice experiment is the probability that a given product profile is chosen.
- Purchase likelihood ratings: After each choice task, respondents rate the likelihood that they would purchase each product on a 7-point scale ranging from "very unlikely" to "very likely." These ratings provide an additional measure of stated consumer preferences.

These outcomes allow us to estimate how different product attributes, specifically product type, price, protein source, origin of raw materials, Eco-Score rating, organic certification, and naming conventions, influence consumer preferences for PBMS and other plant-based products.

Secondary Outcomes

RCT: Information and Voucher Treatments
In addition to the primary outcomes, we examine the following secondary outcomes:

- Voucher redemption: We measure whether participants in the voucher treatment groups redeem the voucher provided in the experiment. This variable serves as a compliance measure and allows us to assess the extent to which participants actually engage with the experiential component of the voucher treatment, which is a necessary condition for the experiential learning mechanism to operate.
- Survey-based measures: The survey includes measures of Eco-Score familiarity and prior use, sustainability attitudes, and label awareness. These are used as covariates in heterogeneity analyses to examine whether treatment effects differ across consumer segments with varying levels of prior familiarity with the Eco-Score or differing sustainability orientations.

3.3 Experimental design

Randomization Method
Study participants are drawn from the population of customers enrolled in the loyalty program of our retail collaboration partner. The retailer holds the largest market share among food retailers in Switzerland, accounting for approximately 43% of the market (Statista, 2020). The target sample size for the present study is 15,000 customers. Randomization is conducted at the individual customer level. Participants will be randomly assigned to the experimental treatment conditions with the aim of achieving balanced group sizes. Specifically, randomization will be conducted such that participants are approximately evenly distributed across the four RCT treatment conditions (Control, Information only,

Voucher only, Voucher + Information). In addition, participants will be independently and approximately evenly assigned to one of the four linguistic framing conditions in the discrete choice experiment (national-language without meat references, hybrid without meat references, national-language with meat references, hybrid with meat references).

Randomization Unit
The unit of randomization is the individual customer.

Was the treatment clustered
No.

3.4 Experiment Characteristics

Sample size: planned number of clusters
The sampling design is not clustered

Sample size: planned number of observations
The target sample size for the present study is 15,000 customers from the loyalty program of our retail collaboration partner. The final achieved sample size is expected to depend on survey response rates. Recruitment will remain open for three weeks after survey launch, after which data collection will be closed. The final sample will therefore include all eligible customers who complete the survey within this predefined recruitment period. The study uses individual-level purchasing data collected through the retailer's loyalty program and sales system, which allows us to observe food purchases over time and look into short-term, mid-term and long-term effects of the interventions. The total observation period will cover approximately one year prior to the experimental intervention and one year after the intervention. Because purchasing data are recorded continuously, each participating customer may contribute multiple purchase observations during the observation period. Consequently, the number of product-level purchase observations is expected to substantially exceed the number of participating individuals.

Sample size (or no. of clusters) by treatment arms
RCT: Information and Voucher Treatments
Participants will be randomly assigned to one of four experimental groups with the aim of achieving balanced group sizes.

- Control group: approximately 3,750 customers
- Information treatment: approximately 3,750 customers
- Voucher treatment: approximately 3,750 customers
- Voucher + Information treatment: approximately 3,750 customers

Actual sample sizes may vary slightly due to randomization and participation patterns.

Choice Experiment: Product Attributes and Naming
All participants who complete the survey will take part in the choice experiment. Respondents will be randomly assigned to one of four naming-framing conditions with the aim of achieving balanced group sizes across these conditions.

4 Supporting Documents and Materials

5 IRB (Institutional Review Board)

IRB Name: ETH Ethics Commission Office
IRB Approval Date: 11.05.2025

IRB Approval Number: 24 ETHICS-275

6 Analysis Plan

To perform the analysis, we will mainly use the statistical software R. To get an overview and better understanding of the underlying data, different exploratory analyses will be conducted. To assess whether randomization resulted in comparable groups, we will conduct balance checks by regressing pre-treatment characteristics on treatment assignment. Specifically, demographic variables (e.g., age, gender, education), pre-treatment consumption patterns, and other relevant baseline characteristics will be regressed on indicators for treatment assignment. Any substantial imbalances will be reported and may be controlled for in the regression analyses.

RCT: Purchasing Data Analysis
To estimate the causal effects of the interventions on purchasing behavior, we use panel regression models with individual and time fixed effects. The baseline specification is:

$$Y_{it} = \beta_1 Treatment_{it} + \alpha_i + \lambda_t + u_{it}$$

where:

- Y_{it}represents the outcome variable for individual i at time t (e.g., quantity or spending on plant-based meat substitutes or conventional meat products)
- $Treatment_{it}$indicates whether the individual has been exposed to the treatment
- α_i represents individual fixed effects
- λ_t represents time fixed effects

Standard errors will be robust to heteroskedasticity and autocorrelation. The observation period covers approximately one year prior to the experimental intervention and one year after the intervention, allowing us to estimate changes in purchasing behavior relative to individual baseline consumption patterns.

We plan to test for heterogeneous treatment effects based on consumer characteristics elicited in the survey (i.e. label familiarity, demographics, sustainability attitudes, baseline purchase patterns).

Choice Experiment Analysis
To analyze the discrete choice experiment, we follow the estimation strategy proposed by Hainmueller et al. (2014) for conjoint analysis. Because attribute levels are randomly assigned across product profiles and respondents, we estimate Average Marginal Component Effects (AMCEs), which capture the causal effect of each attribute level on the probability that a product is chosen.

Specifically, we estimate least-squares regression models of the form:

$$Choice_{ijt} = \alpha + \sum_k \beta_k \, Attribute_{kijt} + \varepsilon_{ijt}$$

where:

- $Choice_{ijt}$ indicates whether product profile j was chosen by respondent i in choice task t
- $Attribute_{kijt}$ represents indicator variables for each attribute level

One level of each attribute is omitted as the reference category. Standard errors will be clustered at the respondent level to account for repeated choices by the same individual. The analysis will be implemented using the cjoint package in R (Barari et al., 2023). In addition, we will estimate marginal

means to examine average predicted choice probabilities across attribute levels following Leeper and Barnfield (2020) using the cregg package.

7 Post-Trial Information

Study Withdrawal
Participants may withdraw from the study at any point without providing any reason. To withdraw and request the deletion of their data, participants can contact the study team via an email provided in the consent form.

Intervention completed?
No. The intervention has not yet been completed at the time of preregistration.

Data Collection complete?
No. Data collection has not yet been completed at the time of preregistration.

8 Data Publication

Is public data available? No. Due to the sensitivity of individual-level purchasing data and data-sharing restrictions with the retail collaboration partner, individual-level data will not be made publicly available. Only aggregated and anonymized results will be reported or shared.

Program Files

9 Reports, Papers & Other Materials

Relevant Papers
Reports & Other materials

References

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