

### Background

Food waste has become a critical global issue. Upcycled Foods which transform ingredients that would otherwise be discarded into new, value-added products offer a promising solution within the circular economy. However, a key paradox hinders their market acceptance: consumers who embrace sustainability often reject these products. This suggests that conventional ecological appeals are failing to address a deeper, unaddressed psychological barrier.

### Objectives

- To examine the negative impact of upcycling disclosure on consumer purchase intention and product preference.
- To investigate the mediating role of Healthfulness Perception.
- To assess the moderating effect of Pro-environmental Concerns as an individual difference.
- To test the effectiveness of Health-related Taglines as an intervention strategy.

### Method

We conducted four independent experiments to systematically test our hypotheses. The research employed a between-subjects experimental design, recruiting over 1,400 Chinese consumers as participants.

**Stimuli:** A series of fictional food advertisements were created for products like cookies, cupcakes, plant-based milk, and bread to avoid brand bias.

**Manipulation:** Information disclosure was manipulated by including or omitting a description that the food was "upcycled" (e.g., "made from surplus grains from beer production"). In Study 4, we further manipulated the presence or absence of a health tagline (e.g., "Healthy and Nutritious: The Perfect Bread for Your Well-Being").

**Measures:** A 7-point Likert scale was used to measure participants' purchase intention, product preference, and perceptions of the product's healthfulness.

**Analysis:** Data were analyzed using independent samples t-tests, ANOVA, and regression-based analyses via the PROCESS macro to test for mediation and moderated mediation.

### Reference

1. Abell, A., Smith, L., & Biswas, D. (2022). What's in a "happy" meal? The effects of smiley faces in restaurant logos on price and healthfulness perceptions. *Journal of Advertising*, 53(1), 54–69.
2. Lu, P., Parrella, J. A., Xu, Z., & Kogut, A. (2024). A scoping review of the literature examining consumer acceptance of upcycled foods. *Food Quality and Preference*, 114, 105098.

### Results

Algorithm analysis and experimental data clearly show the psychological processes behind consumer decisions.

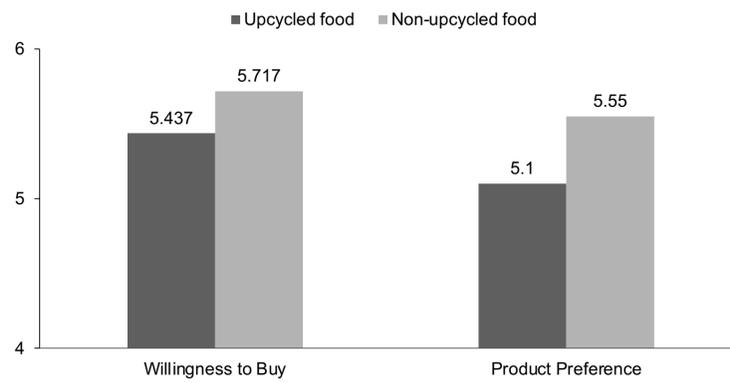
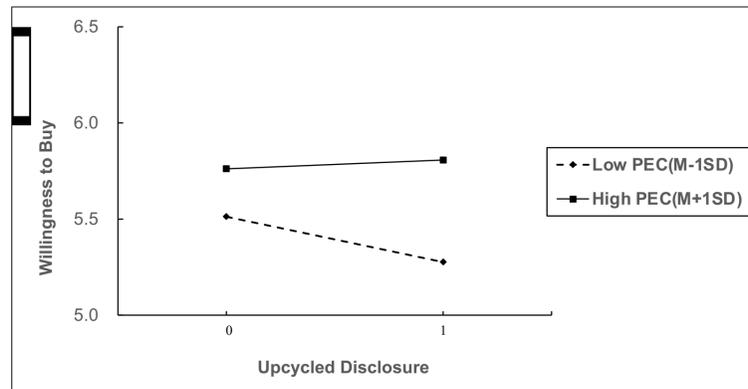


Figure 1: The effect of consumers' perceptions of upcycled foods on willingness to buy and product preference (Study 1).



Note: PEC refers to Pro-environmental concerns. "0" refers to non-upcycled condition; "1" refers to upcycled condition.

Figure 2: The moderating effect of individual pro-environmental concerns (Study 3).

#### Healthfulness Perception as the Key Mediator:

Study 2 confirmed that when consumers learn a food is "upcycled," their perception of its healthfulness significantly decreases, which in turn directly leads to lower purchase intention (Indirect Effect  $\beta = -0.233$ , 95% CI [-0.363, -0.120]).

#### Moderating Role of Pro-Environmental Concerns:

Study 3 found that the negative effect of upcycling information was stronger for consumers with low pro-environmental concerns and significantly weaker for those with high concerns.

#### Intervention Effect of Health Taglines:

Results from Study 4 showed that adding an explicit health tagline effectively neutralized the negative impact of the upcycling message. With a health tagline, there was no significant difference in purchase intention between upcycled (M=5.70) and non-upcycled (M=5.78) food.

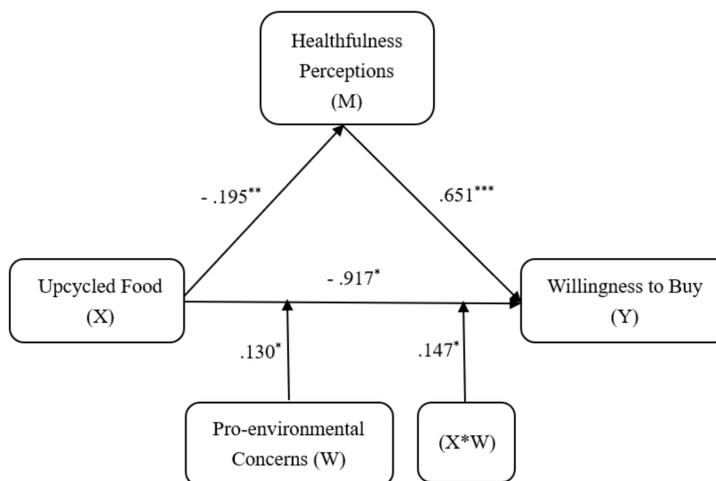


Figure 3: The diagram of the mechanics.

### Conclusion

The core of the paradox surrounding consumer acceptance of upcycled foods is a healthfulness perception deficit triggered by the upcycling process itself. Through four experiments, this study demonstrates that proactively promoting a product's health attributes is a more effective path to breaking down this consumer barrier than amplifying its ecological benefits. Through targeted, health-focused communication, the negative perception of "scraps" can be successfully transformed into the positive perception of "sweets".

### Implications

#### For Marketers:

**Shift the Narrative Core:** Change the focus of marketing communication from "How we save the planet" to "How this product benefits your health." Proactively highlight nutritional value, high quality, and safety.

**Leverage Health Cues:** Explicitly use taglines and visual elements like "healthy," "nutritious," and "natural" in packaging and advertising to build positive mental associations and counter potential negative biases.

**Utilize Expert Endorsements:** Collaborate with nutritionists and health-focused influencers to leverage their professional credibility and enhance consumer trust in the product's health attributes.

#### For Policymakers:

**Establish Certification Standards:** Promote an official certification system for upcycled foods that not only guarantees traceable sourcing and environmental contribution but also explicitly confirms compliance with food safety and nutritional standards, providing a seal of trust for consumers.

**Guide Public Perception:** Launch public education campaigns to position upcycled food as an innovative, smart, and healthy consumption choice, rather than merely a compromise made for environmental obligation.

### Discussion

Our findings reveal that consumer hesitation toward upcycled foods stems not from an indifference to environmental values, but from a profound healthfulness perception deficit. The term "upcycled" inadvertently activates negative associations with waste, uncleanness, and over-processing, triggering concerns about the product's health and safety. This study moves beyond vague explanations like food neophobia to precisely identify healthfulness perception as the core psychological bridge connecting information disclosure and consumer behavior.

Directly addressing consumer health anxieties is a more targeted and effective communication strategy than repeatedly emphasizing environmental benefits. A simple health tagline can reframe a consumer's initial impression, repositioning the product from a questionable use of waste to a healthy, nutritious choice. The results deepen the Theory of Planned Behavior (TPB) by unpacking the "black box" of attitude.

### Acknowledgements

This work is supported by the Faculty Research Grant of Macau University of Science and Technology (Grant number FRG- 23- 028- MSB).

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