



Research proposal: 'From Waste to Taste'

Doctorate Candidate: Drs. Anna de Visser-Amundson

Introduction and research questions

Imagine a bowl of apples. Some apples are perfectly round with a tantalizing green color. Others however, are slightly deformed or have a deviating color but their taste is the same. Like most other consumers you would probably, despite intentions to make pro-social choices, choose a perfect apple leading to the imperfect apples being thrown away.

In the fear of contagion and pathogens, this focus on aesthetic perfection has evolved as a survival strategy (Huang, Ackerman and Newman, 2017), particularly in a food context where visual inspection is usually the only means to evaluate product quality (Delwiche, 2012). Consumers have even developed an 'over perception' bias where also superficial and harmless features are perceived as contamination cues (White et al., 2016). Prior research supports that aesthetic deviations in food are detrimental to consumer evaluations and choice (e.g., Symmak, Zahn and Rohm, 2018; De Hooge et al., 2017). To drive sales, retailers therefore typically offer perfection and reject aesthetically imperfect foods. Such practices are a major cause of food waste which in turn, is one of the most pressing environmental, social and financial challenges society faces (Block et al., 2016).

In an effort to have a scalable solution for this problem, a new generation of entrepreneurs (e.g., In-Stock, Kromkommer, Verspillingsfabriek) are increasingly trying to capitalize on food waste as a business opportunity. Powered with a mission of social entrepreneurship, these companies 'rescue' food that is about to be wasted, often because of cosmetic reasons. This is reprocessed into what is known as 'rescued' or 'rescued-based' products (e.g., In-Stock.nl). They are fully, or partly, made out of imperfect food and re- enter the human food chain either as supermarket products or restaurant dishes. Coming back to the apple example, this means that the aesthetically deviant apples are rescued rather than discarded and reprocessed into rescued-based products like cider, apple sauce, or apple pie (see e.g., www.verspillingsverrukkelijk.nl). Rescued-based products are focal products for this research.

Despite consumers' general resistance towards aesthetically deviant food (e.g., De Hooge et al., 2017), disclosing the imperfect origin of rescued-based food is imperative. It is often part of the company's DNA and pro-social mission as well as an important point of differentiation (Nidumolu et al., 2009). It also aligns with today's society demanding (hyper) transparency, product background information and more sustainable

practices (Nidumolu et al., 2009). To that point, large supermarket chains like 'Jumbo' now actively promote and sell for example ketchup made 'from rescued tomatoes' (Dessling, 2017).

Relevant to this research is product cue utilization when marketing rescued-based products. Intrinsic cues are inherent product characteristics which significantly change when the product is altered whereas extrinsic cues are related product features but not intrinsically connected (Bhatt et al., 2017). Consumers use both intrinsic (e.g., the physical product state, pureed vs chunky) and extrinsic product cues (e.g., food presentation and marketing appeals) to evaluate products (e.g., Bredahl, 2004). Both cues can influence the salience the imperfect origin of rescued-based products with prior research suggesting that product cues associated with waste and imperfections can elicit contaminating properties and generate feelings of disgust (Huang et al., 2017; Rozin and Fallon, 1987). The association of food spoilage is in fact one of the strongest triggers of disgust (e.g., Rozin and Fallon, 1987). Thus, despite good intentions to act pro-socially, consumer concerns about deviations from prototypical product standards (like food imperfection) frequently preclude consumption of such products (e.g. Luchs et al., 2010). To bridge that gap, it is key to uncover the underlying effect of disgust to find product cues that drive consumer preferences for rescued-based products. This doctorate research therefore investigates:

Central Research Question:

How does disgust influence consumer preference for rescued-based products and how is this relationship impacted by intrinsic and extrinsic product cues that affect the salience of the imperfect origin?

This is with the objective to:

Research Objective:

Address the food waste challenge by focusing on rescued-based products as an important solution and examine how food service companies can capitalize on consumers' desires to act pro-socially while overcoming their inherent resistance to imperfect foods.

Existing literature to answer this research question is extremely scarce with urgent calls for more research on rescued-based food as a scalable solution to the food waste problem (Bhatt et al., 2017). More specifically, research is needed on the "psychological factors behind consumer perceptions of and attraction toward manufacturer- and retailer-based strategies" with regard to food perfection and imperfection (Block et al., 2016, p. 298). For example, consumers perceive cosmetic discoloring worse than deformations (e.g., a bent cucumber) (De Hooge et al., 2017) but

there is a limited insight in which mechanisms drive this effect. Considering prior research showing that disgust (often operating on an unconscious and irrational level) is a common phenomenon influencing consumer product evaluations (e.g., Morales and Fitzsimons, 2007) and that food associated with waste is a strong influencer of disgust, there is an urgent need to study this construct in the context of rescued-based products. Particularly, how disgust relates to different product cues and how it might perpetuate in a reprocessed form.

This doctorate research contributes to these voids in literature by exploring how the salience of the imperfect origin (1) influences consumer preferences for rescued-based food (versus conventional food) and (2) can trigger disgust or in contrast, mitigate such feelings. The candidate specifically investigates three different types of product cues relevant to rescued-based food, divided into three projects as outlined in Figure 1, followed by a short introduction and description of each project.

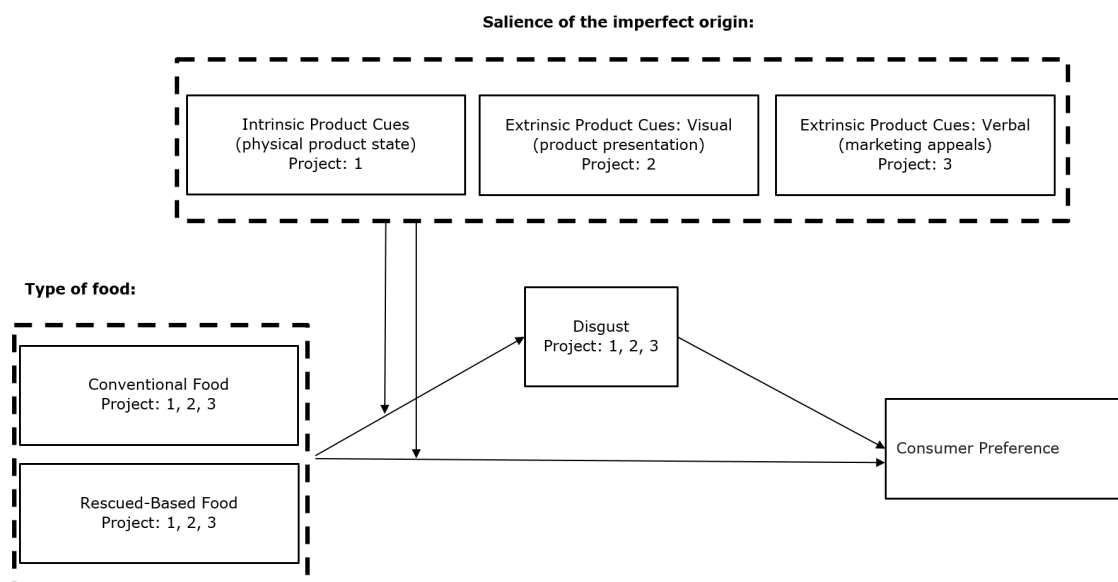


Figure 1: Conceptual Model

Introduction

The rationale for all projects, is that by making the imperfect origin through various cues more salient in rescued based products, the contamination cue associated with that origin becomes more salient and is this likely to trigger disgust and negatively impact consumer preferences. E.g., a rescued-based product that is e.g., chunky (pureed) or presented with the imperfect food fully visible (invisible) can increase (decrease) the salience.

Project 1

Intrinsic Product Cues: Physical Product State

In order to study the effects of product cues, it is important to first explore the main effect (Figure 1). Thus:

SQ:1.1 What is the effect of rescued-based (versus conventional) products on consumer preferences?

Considering that disgust is likely to influence consumer preferences for rescued based products, the main effect is likely to be influenced by product cues like the physical product state through a pathway of disgust. Disgust is a basic reaction to food perceived to be contaminated in some way (Rozin and Fallon, 1987). Contagion in turn, entails that a 'contaminated' object has transferable and perpetuating properties (Huang et al., 2017) where even harmless features can be perceived as contamination cues (White et al., 2016), like e.g., food deformations. This means that the imperfect food has the potential to 'contaminate' and make the entire rescued-based product disgusting. Therefore, this project also explores:

SQ:1.2 How is the main effect impacted by disgust and how is, in turn, this relationship influenced by the salience of the imperfect origin through changing the physical state of the food? ¹

Project 2

Extrinsic Product Cues: Visual Food Presentation

Project 2 builds on Project 1 by considering how extrinsic products cues in the visual food presentation influence the same pathway of salience -> disgust -> consumer preferences. For instance, displaying those 'ugly' apples beside a rescued-based apple-pie affects the salience of the imperfect origin of that same pie. Therefore:

¹ A preliminary pre-study shows that the preference for rescued-based food is influenced by the salience of the original imperfect products where a pureed (chunky) soup increases (decreases) consumer preferences.

SQ:2.1 How is the effect of disgust on consumer preference influenced by the salience of the imperfect origin through changing the visual food presentation?

This project also introduces food background color (e.g., receptacles, promotional material) as an extrinsic visual cue because of its profound influence on how consumers experience flavor, taste, and smell and as a result, their evaluations (Spence, 2018; Delwiche, 2012). Specifically, a white background color (e.g., the plate), makes the food look natural and "associated with cleanliness" hence more appealing and tasty (Spence, 2018, p. 162). Consumers who experience disgust (e.g., through rescued-based products) are motivated to cleanse and purify (Douglas, 1966), thus:

SQ:2.2 What is the effect of the visual cue of the color white on consumer preferences for rescued-based (vs conventional) products as a cleansing mechanism to mitigate disgust?²

² N.B. A preliminary pre-study, shows that consumers more (less) likely choose a white (green) bowl when choosing a rescued soup. For the conventional soup, there was no preference for the color of the bowl.

Project 3

Extrinsic Product Cues: Verbal Marketing Appeals

Project 3 builds on Project 2 by introducing marketing appeals as extrinsic verbal cues influencing preferences. Specifically, it starts with benefits as an important element of appeals to achieve consumption goals and positively influence pro-social choices (White and Peloza 2009). Consumers are motivated by: (1) self-benefits whereby the individual consumer benefits from the product (e.g., quality, healthiness, flavor) or for example (2) environmental benefits which entail that the environment (e.g., reduced water wastage and landfills) is the main beneficiary. Environmental benefits have a more positive impact in a public setting as a result of impression management (e.g., Green and Peloza, 2014). Yet in this context, the formulation of environmental benefits might trigger disgust because their association with waste (even in a diminished form) and instead call for a cleansing mechanism (e.g., white). Hence:

What is the effect of benefit appeals on consumer choice for rescued-based (vs conventional) products and how can environmental benefits induce disgust and in turn increase the need for cleansing?