Breaking taboos for sustainability

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Dissertation written under the supervision of professor Cláudia Simão

Dissertation submitted in partial fulfilment of requirements for the MSc in Management with Specialization in Strategic Marketing, at Universidade Católica Portuguesa

January 2022

Abstract

Title of the dissertation: Breaking taboos for sustainability

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Food waste is a global problem that has been gaining significant importance because it contributes considerably to carbon footprint. One of the main actions responsible for food waste is the discarding of food by the consumer. Some of this discarded food is expired but perfectly edible. The reasons for throwing the food away might be because the food is spoiled or just expired and people confuse “best before” and “use by” labels. Households might even feel disgusted towards the food. Little is known about disgust towards expired food and how to overcome it in order to reduce food waste. Therefore, the present research aims to understand how feelings of disgust associated to these taboo products can block consumers from making or supporting more sustainable alternatives. To this end, six hypotheses were elaborated and tested. The key findings show that affective and cognitive framings do not diminish the disgust towards expired food compared to the control framing. However, it was also found that consumers who trust in science tend to support policies that would increase the consumption of expired food. Science reliability turns to be a critical factor for a change in consumption patterns to a more sustainable way of life. Increasing science-related populist movements represent substantial threats for sustainability. For future research, social norms are discussed as an effective way of promoting consumption of expired food.

Keywords: Food Waste, Disgust, Best Before, Use By, Expired Products, Cognition, Emotion, Policies

Sumário

Título: Quebrar tabus pela sustentabilidade

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O desperdício alimentar é um problema global que tem vindo a ganhar relevância pois contribui consideravelmente para a pegada de carbono. Uma das principais ações responsáveis pelo desperdício alimentar é o descarte de alimentos pelo consumidor. Parte desse desperdício são alimentos fora de prazo mas perfeitamente comestíveis. As razões para deitar fora a comida podem ser por estar estragada ou ter acabado de expirar e as pessoas confundem os rótulos "consumir de preferência antes de" e "consumir até". As famílias podem até sentir nojo da comida. Pouco se sabe sobre o nojo em relação a alimentos fora de prazo e como superá-lo de modo a reduzir o desperdício alimentar. Por isso, a presente pesquisa visa compreender como é que a repulsa associada a produtos tabu pode impedir os consumidores de fazer ou apoiar alternativas mais sustentáveis. Com este intuito, seis hipóteses foram elaboradas e testadas. As principais conclusões mostram que os enquadramentos afetivos e cognitivos não diminuem o nojo em relação à comida expirada em comparação com o enquadramento de controlo. No entanto, também foi verificado que consumidores que confiam na ciência tendem a apoiar políticas que aumentem o consumo de alimentos expirados. A confiabilidade da ciência torna-se um fator crítico para uma mudança nos padrões de consumo para um estilo de vida mais sustentável. Os crescentes movimentos populistas relacionados com a ciência representam ameaças substanciais para a sustentabilidade. Para pesquisas futuras, as normas sociais são discutidas como uma forma eficaz de promover o consumo de alimentos expirados.

Palavras-chave: Desperdício Alimentar, Nojo, Consumir de Preferência Antes De, Consumir Até, Produtos Expirados, Cognição, Emoção, Políticas

Acknowledgements

I would like to thank very much to my thesis supervisor, Professor Cláudia Simão. Without your help I am sure I could not make it to the end. Thank you for your nice words of motivation along the process.

I would also like to thank my parents for supporting me and putting education always in the first place giving me the opportunity to take this master's degree. Thank you for always being there.

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1. INTRODUCTION

1.1. Background and Problem Statement

Food waste is a problem that has been lighted on given the social, environmental and economic challenges it involves to the sustainable management of food (Collart & Interis, 2018). In the EU28, around 88 million tons of food are wasted every year, which involves approximately 143 billion euros. Up to 10% of the total amount of the food waste generated annually in the EU is associated with misunderstanding the expiration dates (Secondi, L. 2019).

The worldwide trends on the food sector contribute greatly for food waste. In terms of dietary choices, the increasing consumption of meat (Alexandratos & Bruinsma, 2012) results in food waste since animal feed could be consumed by humans (e.g. cereals like grain). Also, in the future a higher share of population will be living in metropoles (Zhang, 2016) which implies long-distance transportation and distribution in cities causing more emissions (Aschemann-Witzel, Giménez & Ares, 2018).

However, a major source of food waste is the discarding by end consumer of food that are perceived to be undesirable compared to other similar foods. Regarding data labelling, studies show that consumers do not fully understand the concept of "use by" and "best before" dates. They end up interpreting both dates differently depending on the food category (Aschemann-Witzel, Hooge, Amani, Bech-Larsen & Oostindjer, 2015). There are multiple psychographic factors of great relevance related to household food wastage such as feeling of disgust (Aschemann-Witzel et al., 2015).

These feelings of disgust are shared across a set of domains, like the stigmatization around menstrual products. According to Kissling (1996), social taboos prevent society from speaking about menstruation openly. This stigmatization has a prejudicial effect on how both menstruaters and menstrual products are comprehended (Johnston-Robledo & Chrisler, 2013). Adding to this, alternative menstrual products (such as menstrual cups) have atypical product features, which requires a more physical approach (e.g., re-use and wash). These alternative products that combine the stigma of menstruation and the atypical features, create a huge marketing challenge (Coe-Björsell & Jansson, 2015). Menstrual cups produce less waste comparing to conventional menstrual products since reusable period cups last up to 10 years, while disposable menstrual products are designed for a single use. Therefore, when considering financial and environment costs, taking into account the lifetime of a menstrual cup (10 years), purchase costs and waste from using a menstrual cup would represent a small fraction of the purchase costs and waste of pads or tampons. For example, if compared with using 12 pads per

period, the use of a menstrual cup would entail 5% of the purchase costs and 0,4% of the plastic waste (van Eijk et al, 2019).

The focus of this dissertation is to understand how feelings of disgust associated to these taboo products can block consumers from making more sustainable decisions. Understanding how to overcome such feelings is crucial for managers, as it is necessary to reinvent new ways of communicating its products in order to minimize unnecessary food waste. A taboo-breaking is demanded on communication strategies about taboo products, by communicating that these products that have exceeded the date of minimum durability by a relatively short period may lose sensory qualities (change in smell, consistency), but their consumption does not imply any health risk (Ankiel & Samotyja, 2020). This is going to be a massive change to reduce food waste.

1.2. Aim and Scope

The aim of this dissertation is to analyze the extent to which feelings of disgust prevent people to discuss and find effective solutions to taboo-breaking behaviors, such as the replacement of toilet paper by more sustainable alternatives or the consumption of products that, although still edible, are after the expiration date. To achieve this objective, the following research questions are addressed:

Research Question 1: Are feelings of disgust preventing people from adopting and supporting sustainable alternatives to taboo-breaking behaviors?

Research Question 2: Is it possible to design more effective messages that address taboo-breaking behaviors?

By taboo-breaking behaviors, this study is focusing on the consumption of food near its expiry date or expired food, more specifically, the food labelled with “best before” dates.

Evidence suggests that discounting products as they approach their expiration dates may be the most valuable strategy (Tsiros & Heilman, 2005) to convince consumers to buy them. However, marketers still need to educate consumers about the quality of a product that approached its “best before” date.

To answer the research questions, the current approach addressed the framing effect in order to test whether presenting information about food waste in three different ways would have an impact on disgust towards expired food. In this sense, participants were exposed to an

educational flyer about food waste and "use by" vs "best before" labels framed either affectively or cognitively or were shown a neutral description of food waste.

1.3. Research Methods

With the purpose of answering the research questions stated above, quantitative research was conducted using primary data. More precisely, with an experimental approach, I investigated the role of message framing on perceived feelings of disgust, and willingness to accept products that were approaching their expiration date. Statistical analyses were performed through the software SPSS. The main findings show that there is no significant difference of level of disgust towards expired food, neither affective or cognitive framings diminish the anticipated disgust compared to the control group. The second relevant finding is that, although people do not usually consume expired food, they would support policies that would increase consumption of expired food. Consumers want a decision maker before they act.

1.4. Relevance

This research will contribute to a growing understanding of the role of emotion in decision making about consuming expired products, while also improving the marketers' strategies of communicating sustainable behaviors within their products. It is estimated that a grocery store increases its profits by 15% when reducing the shrinkage of perishable goods (Tsiros & Heilman, 2005). Hence, this dissertation is targeting especially marketers in the food retail sector. Consumers can also benefit from this study because they have an active role as agents of sustainable behavior. Sustainability is one of the biggest concerns of the times we live in, and most of the work done in promoting sustainable behaviors does not focus on taboo behaviors. Additionally, there is lack of knowledge and education about environmental issues among consumers (Carrete, Castaño, Felix, Centeno & González, 2012). Therefore, the relevance for promoting sustainable behaviors is enormous.

The results of the dissertation will also benefit policymakers since they need to promote sustainable consumption food patterns and develop public policies that are aligned with Sustainable Development Goals (SDGs). Policies at various levels must be integrated in order to make agri-food systems more sustainable (Saviolidis et al., 2020).

Previous evidence has shown that taboo still represents a promising field of research which should be further explored (Larsen, Patterson, Sabri & Walther, 2018). Additionally, this thesis

contributes to existing studies on communication of sustainability with the ultimate goal of lead to a change in consumption habits.

1.5. Dissertation Outline

The research is organized on five different chapters. The present chapter provides an overview of the problem background which is food waste and acceptance of expired food and explains its relevance to the promotion of sustainable behaviors by consumers and retailers. The second chapter is dedicated to review the literature that explored previously disgust and how this emotion relates to food consumption and food storage. The third chapter focuses on the description of the research methods and research approach adopted in this study to answer the posed research questions. On chapter four, the main results are presented and discussed. Lastly, on chapter five, conclusions and limitations will be given as well as recommendations for future research in this area.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The present chapter is dedicated to a literature overview on climate change related with household consumption patterns, determinants of consumer acceptance of taboo products with insect-based food as an example, and emotions elicited by the communication strategies of climate change. Disgust will be the main emotion addressed here to answer to the research aim. Lastly, an overview of the literature will be drawn to present the research hypotheses.

2.1. Household consumption and climate change

Research suggests that by 2050, global population will grow to 9.15 billion people. The demand of consumers for animal products continues to increase and cattle raising is one of the main causes of climate change since it emits more greenhouse gases than automobiles, airplanes, and trains together (Alexandratos & Bruinsma, 2012). Moreover, food loss and waste happen through the entire food supply chain and accounts for one-third of all food or 1.3 billion tons annually. Hence, loss and waste of food compose a major source of greenhouse gas emissions, together they make about 8% of global anthropogenic greenhouse gas emissions (Reisch, Sunstein, Andor, Doebbe, Meier & Haddaway, 2021).

Carbon emissions are strongly related with the consumption of private households and related behaviors of these consumers. The factors that influence consumer behaviors towards sustainability are many including their demographics, values, attitudes, emotions, goals, and circumstances (Wells, Ponting & Peattie, 2011).

However, small changes in consumer behavior can be a relevant part of larger efforts to reduce greenhouse gas emissions or make a more conscious use of available resources (Campbell-Arvai, Arvai & Kalof, 2012). In this sense, Tilman & Clark (2014) note that shifting consumption habits with the aim of becoming less greenhouse gas intensive and less wasteful surely matters for combating climate change. For example, a vegetarian diet allows to reduce food production emissions by 55% per capita comparing to the projected diet patters in 2050 (Stoll-Kleemann & Schmidt, 2016).

2.2. Breaking taboos for consumer acceptance

The paramount problem is to find new ways of food production and reinvent how to produce sustainable and nutritionally rich in protein alternatives to regular meat. Nevertheless, the main hindrance for consumers to try novel food are food taboos and socio-cultural and psychological barriers. As it is the case of insects, although they are a potential alternative to animal protein,

western consumers still react with disgust and rejection against eating them (Roma, Ottomano Palmisano & de Boni, 2020). Some consumers may even react to these novel foods with acts of food neophobia, a general feeling characterized by the unwillingness to try new food (Sidali, Pizzo, Garrido-Pérez & Schamel, 2019). Western consumers often react with disgust because they are not familiar with insects as food but rather as pests and transmitters of diseases (Tan, Fischer, Tinchan, Stieger, Steenbekkers & van Trijp, 2015).

There are studies that argue how consumers' attitudes towards eating insect-based products would be positively influenced by information about the sustainability and environmental aspects of edible insects (Mancini, Sogari, Menozzi, Nuvoloni, Torracca, Moruzzo & Paci, 2019). Providing information on edible insects to consumers can potentially reduce their fear and increase the probability of buying it. Other study shows that if insect-based food is properly presented to consumers, they might react with high acceptance (Schouteten, Steur, de Pelsmaeker, Lagast, Juvinal, de Bourdeaudhuij, Verbeke & Gellynck, 2016).

In general, according to Roma et al. (2020), there is a low level of acceptance of insect-based food, low knowledge of components of this novel food and scarce expertise on issues related with health and environmental benefits of eating insects. Additionally, in what concerns demographic characteristics, it was noted that young people can play a role in changing trends when it comes to eating and shopping habits. They have more predisposition to entomophagy. These findings showed that an educational policy for children could help to decrease disgust and neophobic feelings toward insects because they are the next generation and they can influence their peers' choices (Orsi et al., 2019).

Disgust, distaste or rejection to try insects are usually justified by wrong assumptions that insects are dirty and dangerous to consumers' health (Orsi, Voege & Stranieri, 2019). Additionally, their acceptance in western cultures is also subject to the image portrayed by the media. There are many television shows where insects are showed in a negative way, like when participants have to eat insects as a challenge to win prizes (e.g., Fear Factor) or when they are forced to find their own food (e.g., Alone) (Batat & Peter, 2020). In these cases, consumption of insects is used to induce feelings of disgust, and this can have a negative impact on consumers' acts toward entomophagy (Jansson & Berggren, 2015).

However, there are various factors which increase consumers' probability of trying insects and adopting them into their diets being the most relevant wide exposure in day-to-day life (like availability in supermarkets and restaurants) and effective marketing campaigns (Orsi et al., 2019). Other evidence suggests that attending an insect-based food event conducted by a famous chef, for instance in the format of a cooking show results in an increase of trying this

food (Roma et al., 2020). However, Batat and Peter (2020) state that marketers interested in promoting entomophagy need more positive and beneficial displays of insects beyond endorsements by celebrities or influencers and famous chefs.

Foods likes and dislikes are mostly learned with experience. As for insects, there is no evidence of an innate aversion. People learn through exposure which foods are supposed to be eaten or not. Before tasting, consumers make assumptions about the characteristics of a product based on their prior knowledge. Therefore, food is subject to rejection based on wrong presumptions of bad quality or taste, which results in the rejection of products that evoke disgust before tasting them (Tan et al., 2015).

2.3. Behavior change approach

Even though consumers show positive attitudes favoring sustainable behaviors, like willingness to pay substantially more for ethically produced goods than for unethically produced goods (Trudel & Cotte, 2009), they usually do not demonstrate sustainable actions (Auger & Devinney, 2007). This attitude-behavior gap that is commonly seen in sustainability matters can be approached with what White, Habib and Hardisty (2019) called the SHIFT framework. This framework highlights the importance of considering five dimensions to inspire more sustainable consumer behaviors: Social influence, Habit formation, Individual self, Feelings and cognition, and Tangibility. Social influence is one of the most dominant factors in terms of drivers to sustainable consumer behavior change. Consumers are highly moved by the behaviors and beliefs of others. Habit formation explains the fact that many sustainable behaviors (like food consumption, duration of showers, choice of transportation, etc.) are habitual. That is why habit change is a crucial factor of sustainable behavior change. Aspects related with the individual self have also an impactful effect on consumption behaviors. For example, individuals like to maintain positive self-views and can sustain the positivity of the self-concept through consumption (Dunning, 2007). The dimension of feelings and cognition show that individuals either are influenced by affect or by cognition in the decision making processes (Shiv, Baba & Alexander Fedorikhin, 1999). Lastly, Tangibility focus on the matter that consumers do not tend to act on issues that are impalpable. As an example, when consumers purchase a manufactured product, they do not see the factory that is poisoning the water of the river nearby (Griskevicius, Cantú & Van Vugt, 2012). Eco-friendly behaviors can seem abstract and vague (Reczek, Trudel & White, 2018), and therefore the way these are communicated are extremely relevant to behavior change.

2.3.1. Cognition in the context of promoting behavior change

One effective way of convincing consumers to pursue sustainable behaviors is to show information about desired or undesired behaviors and their consequences (McKenzie-Mohr, 2000). Previous studies suggest that intelligence (Aspara, Luo, & Dhar, 2017), education (Gifford & Nilsson, 2014) and knowledge (Levine & Strube, 2012) are associated to higher acceptance of environmental appeals and commitment to eco-friendly actions. In fact, Gifford and Nilsson (2014) state that one is unlikely to be worried about the environment or act in deliberate pro-environmental actions if one is unconscious about the problem, and his/her possible positive actions or consequences.

Eco-labelling is one way of conveying information of the sustainable characteristics of a product (Parguel, Benoît-Moreau & Larceneux, 2011). According to the Global Ecolabelling Network an ecolabel is a label which identifies products or services certificated to be environmentally preferable within a specific category (Global Ecolabelling Network, 2021). For consumers to choose better eco-friendly options, labels need to be attention-grabbing, easily understandable, and trustworthy (Taufique, Vocino & Polonsky, 2017).

Message framing is also a strong strategy that marketers can adopt to encourage sustainable actions (Ungemach, Camilleri, Johnson, Larrick & Weber, 2018). Communicators should aggregate information to make a greater impact, for instance, using cost per 100,000 miles labels to promote an efficient car (Camilleri & Larrick, 2014) because consumers care more about future losses than future gains (Hardisty & Weber, 2009). Although cognitive processes seem to be crucial to promote behavior change, emotional reactions are also expected to promote behavior change (White, Habib & Hardisty, 2019).

2.3.2. Emotions in the context of climate change

The Darwinian Perspective of emotion is that emotions are evolved phenomena with vital survival functions that have been developed because they have fixed problems humans have faces as a species. Darwin claimed that we must understand the functions of emotional expressions and its survival value. Ekman et al. (1987) collected relevant evidence for the universality of six facial expressions: happiness, sadness, fear, disgust, anger, and surprise (Cornelius, 2000).

Effective communicators know that emotions are crucial in motivating action. In order to shorten the gap between scientific knowledge about climate change and consumers' motivation

to respond, communicators need to find out which specific emotions motivate action on climate change (Leal Filho, Manolas, Marisa Azul, Azeiteiro & McGhie, 2018).

Recent research proposed that feeling worried about climate change was the strongest predictor- among discrete emotions like worry, afraid, helpless, interested, angry, sad, hopeful, depressed, guilty and disgusted- of support for actions tackling climate change. In contrast, feelings of disgust were the strongest predictor of opposition to these actions (Smith & Leiserowitz, 2014). In addition, fear did not relate with support for these policies. Fear is a complex feeling to be used in favor of communication strategies because it can be seen as disempowering if people are not capable to reduce the threat (Leal Filho et al., 2018). Therefore, the best strategy is to use moderate induction of fear appeals and associate those with information about efficacy and behaviors to adopt (Li, 2014).

Grief, an emotion characterized by feelings of loss (Rosenblatt, 1988) is being recently studied when it is experienced in the context of ecological damage. Cunsolo and Ellis (2018) introduced the concept of "ecological grief" which is based on anticipated losses, including the loss of species and ecosystems, due to intense environmental change. Weintrobe (2012) also introduces the concept of ecological anxiety as 'loss of a dependable bedrock that supports everyday life, loss of predictable future and the trauma of feeling uncared for'. Additionally, apathy is a common reaction to information of ecological destruction (Lertzman, 2012).

Nevertheless, several studies show that engaging in sustainable behaviors can decrease negative emotions and increase positive emotions: For example, Peter and Honea (2012) identify optimism as the driver of maintenance of sustainable behaviors. Sense of pride is also an emotion that is proven to make people to engage in sustainable behaviors (Antonetti & Maklan, 2014). Contrariwise, not engaging in pro-environmental behaviors might result in negative self-conscious emotions, such as guilt, dissatisfaction or discontentment (Odou, & Schill, 2020).

2.4. Disgust

According to Davey (1994b), disgust is a form of rejection based on a desire of a person to distance from contamination stimuli, nausea, and a feeling of revulsion. The most basic tendency root on disgust is the avoidance of putting contaminating or offensive objects in the mouth. This action has evolved to an emotion that protects from impurities and diseases (Russell & Giner-Sorolla, 2013). This functional value of disgust reflects its behaviors, like facial expressions (Ekman et al., 1987). The facial expression of disgust is composed by a furrowing of the eyebrows, closure of the eyes and pupil constriction, nose wrinkle, upper lip raised and upward movement of the lower lip and chin (Olatunji & Sawchuk, 2005).

Food disgust sensitivity is related with people's sensitivity to react with disgust to certain food-related stimuli (Ammann, Osterwalder, Siegrist, Hartmann, & Egolf, 2021). Food disgust as a mechanism for disease-avoidance is motivated by characteristics that suggest potential contamination or inedibility. In this sense, consumers with high levels of food disgust sensitivity tend to react stronger to foods that may not look fresh but are still eatable. As a result, these consumers may contribute largely to household food waste when compared with consumers with low levels of food disgust sensitivity (Egolf, Siegrist & Hartmann, 2018).

Egolf, Siegrist and Hartmann (2018) found that food waste may be to some extent explained by the protective function of disgust. Meaning that when consumers are oversensitive to some food-related cues, they probably throw away food more frequently. The authors also predict that it is difficult to change consumers' food disgust sensitivity since food disgust sensitivity is a trait that remains stable during adulthood.

To address the food disgust sensitivity, Fallon and Rozin (1983) developed a psychological classification of food rejection. According to the authors there are three possible motivations for rejection: a) sensory- affective, which is the impression that the product has negative sensory properties (associated with bad taste or odor); b) anticipation of harm after ingestion, manifested by bodily harm such as stomach cramps, or social harm, such as reduction of social status; and c) a motivation for rejection built on ideational factors. This motivation implies knowledge of the origin of the food, like aversion of a grasshopper simply because it is a grasshopper. Ideational motivations are stimulated by culture and account for a great portion of human rejections.

2.5. Behaviors associated to products

Best before vs use by

An expiration date label provides helpful information for consumers by serving as a freshness indicator (Hall-Phillips & Shah, 2017). It is important to acknowledge that there are two ways of expressing expiry dates on pre-packaged foods. "Best before" which states the date after which a product is no longer of its "best" quality, it is usually used for baked goods, cereals, snacks and canned foods. "Use by" which indicates the date after which a product is no longer of sufficient quality and should not be consumed. It is normally seen in products such as eggs, yeasts and refrigerated dough (Tsiros & Heilman, 2005).

The two concepts are dissociated, and it is crucial to know this difference, because consumers who misinterpret the meaning of "use by" and "best before" tend to waste more food. Ideally

consumers would distinguish whether the date regards safety threshold (as it is the case of "use by") or quality threshold (as it is the case of "best before"). Another important factor regarding food storage and food waste avoidance is to have sensory skills to understand the quality and freshness of foods, which is determined through taste, smell and touch (Secondi, 2019). A study on this issue (Terpstra, Steenbekkers, de Maertelaere, & Nijhuis, 2005) concluded that elderly people handle food differently from younger people. In this case, elderly use their senses more often than younger people do. They pay more attention to date labels which make it difficult to assess the edibility of a food.

Tsiros and Helman (2005) conducted a survey about consumers' perceptions and behaviors with respect to meat and poultry, fresh produce, and dairy categories. The objective was to assess consumers' awareness of expiration dates, their willingness to pay (WTP) for a perishable as it ages, and the influence of perceived risk on such behaviors. They distributed three versions of the survey in which they inquired about participants' WTP for a perishable with seven, four, or one day(s) remaining before it reached its expiration date. The conclusion, among others, was that WTP decreases throughout the course of the product's shelf life which indicates that consumers consider quality deterioration over time and the likelihood of the product spoiling at various points.

2.6. Policies to support sustainable food consumption

In what concerns sustainable development of nations, in 2015 two critical agreements were adopted (Verplanken, 2017). The first was the 17 Sustainable Development Goals of the 2030 Agenda for Sustainable Development that aim to 'end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind' (United Nations, 2018). The second agreement was the Paris Agreement attempts to reduce greengouse gas emissions (United Nations, 2016b).

Nowadays, Sustainable Consumption and Production (SCP) are an intrinsic part of the Sustainable Development Goals (SDGs) (United Nations, 2021). Water, energy and food are considered critical elements for the achievement of goal 12 (responsible consumption and production). A recent study focused in the Mediterranean region (Spain in particular) stated that current waste policies do not present effective strategies for prevention and management alternatives to the case of food (Garcia-Herrero at al., 2018).

Policies that support sustainable food consumption are crucial for a transition to a more sustainable food system. Consumers agree that the solution should include regulations and

incentives that assure environmental sustainability amongst the top priorities of food systems' management (Saviolidis et al., 2020).

Schanes, Dobernig and Gözet (2018) stated that there are various initiatives already being conducted such as economic instruments. In some countries, households are charged for the waste they generate and this method proved to be effective at reducing food waste (Chalak, Abou-Daher, Chaaban, & Abiad, 2016). Other initiative is concerning regulations, as it is the case of The National Pact against Food Waste in France that intends to reduce food waste by 50% until 2025 (Mourad, 2015). The third initiative is information and education campaigns in order to enrich consumer's awareness about food waste prevention (e.g., food storage tricks. Neff, Spiker and Truant (2015) highlighted the need of education for date labelling and imperfect food (e.g., food that is near to its expiration date).

2.7. Dissertation Summary

Food waste and meat-heavy diets of developed countries contribute to a great extent to carbon footprint (Hertwich & Peters, 2009). There is an urgent need to shift food consumption habits in order to become less greenhouse gas intensive. The challenge is to support consumers in changing their behaviors to more sustainable options (Reisch et al., 2021). Egolf, Siegrist and Hartmann (2018) found that consumers with high levels of food disgust sensitivity tend to react stronger to foods that may not look fresh but are still safe to eat. That is why food waste may be to some extent explained by the protective function of disgust. Therefore, using an emotional framing that decreases disgust is predicted to increase the acceptability of expired food products.

Adding to this, there are some consumers that do not know the difference between "best before" and "use by" labels which leads them to waste more food (Secondi, 2019). Sometimes people throw away food out of its "best before" date that is perfectly edible. Although consumers do not demonstrate sustainable actions comparing to their intentions (Auger & Devinney, 2007), they support regulations and incentives that would guarantee environmental sustainability in the food sector (Saviolidis et al., 2020).

Six research hypotheses were formulated:

H_1: Affective and cognitive framings decrease the perception of disgust in relation to expired products compared to a control framing

H_2: Affective framing decreases the perception of disgust in relation to expired products compared to a cognitive framing

H_3: Affective and cognitive framings increase the intention to consume expired products compared to a control framing

H_4: Affective framing increases intention of consumption of expired products compared to a cognitive framing

H_5: Affective and cognitive framings increase the support of public policies to consume expired products compared to a control framing

H_6: Affective framing increases the support of public policies to consume expired products compared to a cognitive framing

3. RESEARCH METHODOLOGY

Chapter 3 presents the methodological approach used in this dissertation, in order to test the hypotheses presented in chapter 2 and to answer the research questions proposed in chapter 1. Therefore, a description of the research approach, research methods, design, description of variables, and the procedure are presented in this chapter.

3.1 Research Approach

In accordance with Saunders, Lewis and Thornhill (2019), there are two types of research approaches: deductive and inductive. The deductive approach puts forward a hypothesis to form a theory, then data is collected to evaluate those propositions. If the results of the analysis are consistent with the set of hypotheses, then the theory is corroborated, if not the theory is false and must be rejected or modified. Contrarily, in the inductive approach theory follows data. It moves from data collection to a theory generation (Lewis & Thornhill, 2019).

The research purpose can be from three types: exploratory, descriptive, and explanatory. The exploratory research aims to clarify a problem. Descriptive approach attempts to describe with detail the characteristics of persons, events and situations that are under study. Lastly, the explanatory approach studies the problem to further explain the causal relationship between variables (Saunders, Lewis & Thornhill, 2009).

This dissertation adopts a deductive research approach. After concluding a rich literature review of publications on food disgust, emotions in the context of climate change and behavior change approach two hypotheses were formulated and tested. Additionally, this thesis employed an explanatory analysis to determine whether feelings of disgust prevent people from adopting sustainable alternatives to taboo-breaking behaviors and if so, determine if it is possible to design more effective messages that address taboo-breaking behaviors. To answer these problems, quantitative primary data was collected via an online survey in November of 2021.

3.2. Primary data

The survey was designed and administrated through Qualtrics for nineteen days, from October 30th to November 17th, 2021. A total of 187 responses were obtained. Respondents who provided incomplete responses were deleted, yielding a final set of 125 observations.

The sample was composed of 35 men (28,0%), 89 women (71,2%) and 1 person that preferred not to answer (0,8%). In what concerns age, the sample was characterized by 53,6% of

participants ranging from 18-24 years old, 9,6% of participants ranging from 25-35 years old, 16% of participants ranging from 36-50 years old and 20,8% of participants above 50 years old.

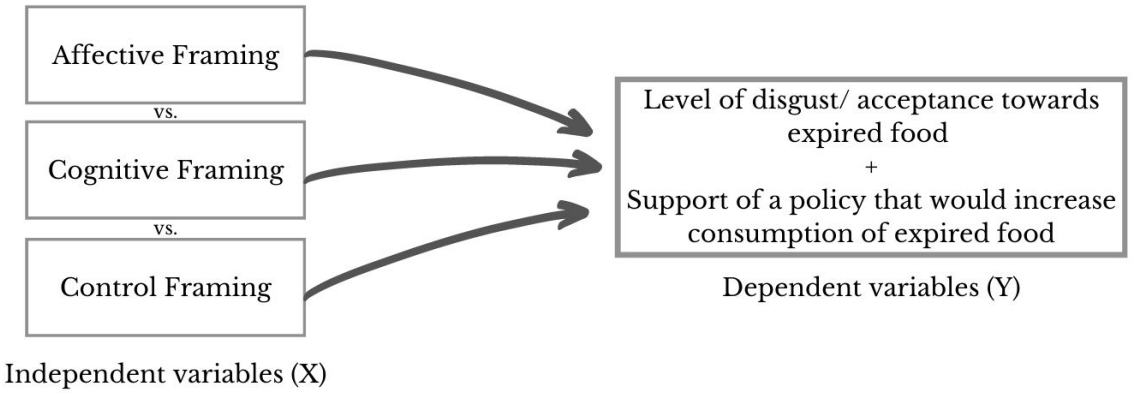

Figure 1. Conceptual Framework illustrating the effect of framing on support for, and adoption of more sustainable alternatives.

3.2.1. Design

A between-subjects manipulation was conducted with participants being randomly assigned to one of three conditions: (1) an affectively framed flyers about food waste, (2) a cognitively framed flyer about food waste or (3) a neutral, simple definition of food waste (Wester, Timpano, ÇEk & Broad, 2016). Versions of each treatment flyers are included in Appendix 1.

The affective framing (N=53) included a picture of the CEO of GoodAfter (e.g., a woman with a shopping cart in her warehouse) and a brief description of this online supermarket which sells products out of the best before date label. The objective of this framing was to enhance feelings of affection through emotional language and images. In this sense, a sentence from an interview to Chantal Gispert was also included in this flyer.

In the cognitive approach (N=36), the flyer used rational language and statistics (e.g., "if integrated into a country ranking of top emitters of CO2, food waste would appear third, after USA and China").

In the control condition (N=36) participants read the following: "Food waste refers to food appropriate for human consumption being discarded, whether or not after it is kept beyond its expiry date or left to spoil". "A major source of food waste is the discarding by end consumer of food that are perceived to be undesirable compared to other similar foods. Up to 10% of the total amount of the food waste generated annually in the EU is associated with

misunderstanding the expiration dates.". In every flyer, participants could read the previous information and the distinction between best before and use by labels.

3.2.2. Description of variables under study

In order to analyze the collected quantitative data of the experiment, we must define data type first. Here it will be presented a brief overview of the variables employed in the data analysis.

Dependent variables

Mood was measured using a ten-item scale from Mackinnon, Jorm, Christensen, Korten, Jacomb & Rodgers (1999). The mood items were as follows: inspired, alert, excited, enthusiastic, determined, afraid, upset, nervous, scared and distressed. Each of these measures used a seven-point Likert-type scale ranging from "Not at all" to "Extremely". The mood scale was computed into two subscales: positive affect ($\alpha = .87$) and negative affect ($\alpha = .86$) showed a good Reliability index indicating that the construct has good internal consistency.

Disgust was provided through the mean of "Pathogen Disgust Sensitivity", a scale with a seven-item subscale adapted from Tybur (2009). Each of these items listed potentially disgusting situations (e.g., "stepping on dog poop") and were rated on a seven-point Likert-type scale ranging from "Not at all disgusted" to "Extremely disgusted". This scale showed a good Reliability index (Cronbach's $\alpha = .73$), indicating that the construct has good internal consistency.

Ingestion disgust was measured through the question: "How disgusted would you be to consume this product considering it is expired?". The product presented in the image was an expired Nutella pot. The question had a seven-point Likert-type scale ranging from "Not disgusted at all" to "Extremely disgusted".

Acceptance of expired products was measured through the question: "Would you consider consuming a product after its best before date?". The question had a seven-point Likert-type scale ranging from "Definitely not" to "Definitely yes".

Political support of expired food products was measured through the question: "Would you support a policy that would increase the consumption expired food?". The question had a seven-point Likert-type scale ranging from "Extremely unlikely" to "Extremely likely".

Trustworthiness check was measured through the question: "How trustworthy do you find the information in the poster?". The question had a seven-point Likert-type scale ranging from "Not trustworthy at all" to "Extremely trustworthy".

Control variables

Attitudes towards food waste tried to predict whether participants feel negative emotions when discarding food (e.g., guilt). These attitudes were measured through a five-item subscale adapted from Flanagan and Priyadarshini (2021). Each of these measures used a seven-point Likert-type scale ranging from "Strongly disagree" to "Strongly agree". Since the reliability of these subscale were all very poor, indicated by Cronbach's alphas ($\alpha s < .60$) I decided not to use this variable in the data analysis.

Attitudes towards science were measured using a five-item scale adapted from Kind, Jones and Barmby (2007). Each of these measures used a seven-point Likert-type scale ranging from "Strongly disagree" to "Strongly agree". Attitudes towards science scale showed a good reliability index (Cronbach's $\alpha = .71$), indicating that the construct has good internal consistency.

Demographic variables were gender and age. The variable age was classified by 5 groups (less than 18; between 18 and 24; between 25 and 35; between 36 and 50; more than 50). Gender was measured categorically (1 = Male; 2 = Female; 3 = I prefer not to answer).

3.3. Procedure and Data Collection

Participants that opened the survey would read the informed consent and could choose to answer the survey in English or Portuguese. After accepting to participate in the study, they would be informed that the following task would be to read a flyer that is being developed and pre-tested to fight food waste. Then they would be randomly presented to one of the flyers (Appendix 1). After reading the flyer carefully, they would answer to the mood scale, controlling for the fact that the flyers should not have any effect on mood. Then they would answer to the extent to which they relate to some sentences regarding attitudes towards food waste. After that, the participants would classify some sentences about attitudes towards science. In the following section, they would answer whether they would consider consuming a product after its best before date and if the answer was on a positive range (Probably yes; Yes; Definitely yes), what are the factors that they would consider important for that decision. Then they would answer how trustworthy they find the information in the poster and how common do they feel eating expired food is. The next question was whether they have heard about the difference of "best before" and "use by" labels before. After those questions, they would be presented to some sentences about potentially disgusting situations and they would be asked to

rate how disgusted they would be in those situations. After that, they would be asked if they would support a policy that would increase consumption of expired food.

In the next section, an image of a Nutella pot with its expiry date label would be shown and participants would be then asked how disgusted they would be to consume that product considering it was expired. The final section asked participants' gender and age. After that the survey was finished.

4. RESULTS AND DISCUSSION

This chapter aims to analyze the data in order to answer to the research questions mentioned in chapter 1, as well as testing the hypotheses mentioned in chapter 2.

4.1. Hypothesis Testing

Trustworthiness check variable was analyzed in order to test the reliability of the manipulation. Affective (M = 5.40, SD = 0.99), cognitive (M = 5.44, SD = 0.97) and control (M = 5.47, SD = 0.85) posters were perceived identically. Results showed no statistical significant effect ($F < 1$, $p = .929$) which means that people believed in all the posters they were exposed to. The three posters are equally valid.

Hypotheses one and two (H_1 and H_2) test the effect of condition (affective vs. cognition vs. control) on the perception of disgust in relation to expired products. I conducted a one-way ANOVA, entering condition as the factor and disgust as the dependent variable. However, the results were not statistically significant, $F < 1$, $p = .584$. Therefore, first and second hypotheses are rejected. A second test for these hypotheses was to test the effect of condition on how disgusted participants reported to feel if they consumed an expired Nutella pot (Appendix 3). Again, results showed no statistical significant differences between conditions $F < 1$, $p = .543$. Given these results, I also tested the effect of condition on mood (positive and negative affect). Results also revealed that there was no difference between conditions for neither positive ($F(2, 125) = 1.10$, $p = .335$) nor negative affect ($F(2, 125) = 1.15$, $p = .319$).

To test hypotheses three and four (H_3 and H_4) I conducted a one-way ANOVA to test the effect of condition on the intention to consume a product after its best before date. Results revealed no significant differences between conditions ($F < 1$, $p = .803$). The mean score for the affective framing condition (M = 5.13, SD = 1.42) was not significantly different from the cognitive framing condition (M = 5.25, SD = 1.40) neither from the control condition (M = 5.33, SD = 1.49). Therefore, third and fourth hypotheses are rejected.

To test hypotheses five and six (H_5 and H_6) testing the effect of condition (affective vs. cognition vs. control) on support of public policies to consume expired food, I conducted a one-way ANOVA. The results were not statistically significant ($F < 1$, $p = .942$). Therefore, fifth and sixth hypotheses are rejected.

4.2 Exploratory analyses

Given the importance of how people believe in scientific facts, I tested whether attitudes towards science would moderate the relation between framing and support for policies to consume expired foods. Thus, I conducted a Univariate ANOVA, entering framing condition as the between-subjects factor, attitudes towards science as a covariate and support of public policies as the dependent variable. The model considered the main effect of framing condition, the direct relation between attitudes towards science and support of public policies, and the interaction term. The main results revealed a main effect of framing condition ($F(2, 120) = 3.16$, $p = .046$), a positive relation between attitudes towards science and support for public policies ($F(1, 120) = 6.39$, $p = .013$). Surprisingly, the interaction term was also statistically significant ($F(2, 120) = 3.08$, $p = .050$). When decomposing the interaction effect, attitudes towards science positively predicted support for public policies only for the cognitive framing condition ($F(1, 35) = 8.98$, ß =.46, $p = .005$). The same relation was not statistically significant neither for affective ($F(1, 52) = 2.78$, ß =.23, $p = .102$) nor for the control framing condition ($F < 1$, ß =-.06, $p = .708$)

Findings show that in the affective framing the relationship is positive: the more confidence in science, the greater the support of a public policy for consumption of expired products. Although not significant, it is a positive relationship.

In the cognitive framing, results showed that trust in science has a statistically significant influence over the support for a public policy.

4.3. Discussion

The final aim of this research was to determine whether feelings of disgust are preventing people from adopting and supporting sustainable alternatives to taboo-breaking behaviors and if it is possible to design more effective messages to address taboo-breaking behaviors. The analysis conducted intend to answer the research questions proposed and test the hypothesis.

RQ1: Are feelings of disgust preventing people from adopting and supporting sustainable alternatives to taboo-breaking behaviors?

After running a between-subjects manipulation with three conditions (affective, cognitive and control), the results showed that in general the developed posters (Appendix 1) had no effect on intention of consume of expired products and perception of disgust. The affective and cognitive posters had the ultimate objective to decrease disgust towards expired food and increase intention of consume expired products but failed to do it, because there may be other sophisticated processes that have not yet been identified. Although this experiment had been successfully in previous studies (Wester, Timpano, ÇEk & Broad, 2016), in this case it failed to decrease disgust towards expired food. It is extremely complex to be able to activate or deactivate disgust with such a subtle intervention.

It can be concluded that with this type of intervention behavioral science cannot change behaviors. Disgust and consumption of expired food are highly sensible matters.
Armstrong, Wilbanks, Leong and Hsu (2021) noted that when measuring disgust, self-report assessments must be improved through a "high granularity" approach (Royzman, Cusimano & Leeman, 2017), that avoids the term disgust and analyzes close but distinct states of discomfort and distaste. Researchers could study disgust more fruitfully if they defined novel technical concepts for the emotion and its neighboring states (Fiske, 2020).
Nabi (2002) gave light to the gap between vernacular and scientific use of "disgust". The author found that some people use the term disgust to describe situations that elicit anger (e.g., being mistreated by others) instead of focusing exclusively on disgust-themed events. For this reason, I believe that participants of my experiment might have perceived "disgust" differently and therefore the research fallen to the "lexical fallacy" which is based on misleading a vernacular emotion for a psychological entity (Armstrong et al., 2021).
The type of intervention that can decrease disgust more effectively, with a strong effect that holds across several domains has to yet be found.

RQ2: Is it possible to design more effective messages that address taboo-breaking behaviors?

A statistically significant interaction effect was found between attitudes towards science and framing of messages on support of public policies that increase consumption of expired food, meaning that consumers who believe that science and technology make our lives easier and more comfortable, for instance, tend to support policies that would increase the consumption of expired food. This was true only to those participants who were exposed to a cognitive

framing flyer. Therefore, we can conclude that when people are given information and facts about a phenomenon, and also believe in scientific research, they are more prone to support policies that fight food waste.

That is in line with what Wallner, Hunziker and Kienast (2003) highlight in their study, environmental knowledge and environmental awareness have an impact on the acceptance of environmental policy measures. According to Franzen (1997) and Kunz (1998), people who are generally well informed about environmental problems tend to support environmental policies.

On the other hand, there is a rising wave of science-related populism. According to Mede and Schäfer (2020), segments of society criticize scientific research on serious issues like climate change. The science-related populism values common sense reasoning as the most legitimate way of thinking because it is based on day-to-day experience (Saurette & Gunster, 2011). This type of populism holds beliefs about "academic elites", such as universities or research institutes and scientific experts (Hartmann, 2006), and how these experts are morally inferior. In the populist eyes, scientists, scholars, and experts are seen as detached from common life of ordinary people (Saurette & Gunster, 2011).
The rise of right-wing populists represents extremely negative impacts because with it comes political unrest that is defunding scientific research. This refusal of facts includes global policy matters, with populist leaders following their personal beliefs over the scientific consensus on climate change as it was the case of US announcement of withdrawal from the Paris climate agreement (Gostin, Constantin & Meier, 2020). Populism affects the basis of existing agreements about tackling climate change. Great part of populist policy goes against key values of the United Nations and Sustainable Development Goals (SDGs). Other example of politic populists is Alternative for Germany (AfD), an extremist political party which has been gaining considerable support, that outright denied the scientific evidence base of climate change (Marschall & Klingebiel, 2019). These populist movements represent substantial threats for sustainability. And to promote political policies that address sustainable alternatives for food waste, policy decision makers have now the difficult task to promote information along those who trust scientific facts, and to promote reliability of science close to those who do not believe science.

5. CONCLUSIONS AND LIMITATIONS

The last chapter presents the main conclusions of this dissertation, managerial implications, limitations faced by this research and recommendations for future research.

5.1. Main Conclusions and Managerial Implications

Food waste compromises the sustainability of the food sector at various levels. One of them being the consumption culture that society adopted towards 'throw away" culture (Evans, 2014). Consumers tend to discard foods close to its expiration date or even expired although being totally edible. The reasons underlying this habit might be many including emotions such as disgust or simply lack of information (e.g. not knowing the difference between "best before" and "use by" labels).

One of the main conclusions of this dissertation is that there is no significant difference of level of disgust towards expired food. Affective and cognitive framings do not diminish the disgust compared to the control framing. On the other hand, although people do not usually consume expired food, they reported to support policies that would increase consumption of expired food (for the ones that support science). Consumers seem to want a decision maker before they act. For this reason, policy makers can try to change habits by defending the consumption of expired products through taxation or food legislation and information (Aschemann-Witzel, Giménez & Ares, 2018).

As there are people who believe in science and tend to be more aware of environmental issues there are others who criticize scientific research. As Vermeir et al. (2020) stated in their research, the more consumers showed climate skepticism the less they were willing to change their food consumption habits (e.g. reduce meat consumption). Therefore it is important to emphasize that giving information to the right people is crucial. That is why it is important to segment the market when communicating sustainability.

One example of a good practice taken to fight food waste was the one The Laughing Cow in partnership with Too Good To Go did in Portugal. The processed cheese brand included in its packaging an informative note stating that its product has a "best before" label and therefore it can be consumed after the expiration date that is stated in the product (Appendix 4). This is an efficient way to educate consumers since the target of this brand is not only the environmental-conscious type of consumers but also the "uncaring" ones.

5.2. Limitations and Future research

The conclusions exhibited in this research have some limitations that came up during its execution. This section presents the main limitations that should be considered when interpreting the results.

The first limitation to consider is the sample size that is not representative and this may lead to biased analysis and results. Other limitation has respect to the demographics of the participants as most of them were on the younger sector (18-24 years old). Ideally, I would had a more equilibrated division of respondents across all the different age groups. In addition, as the quantitative research was exclusively shared through online channels, the study might not have included potential participants that had different insights and perceptions about expired food but were not accessible through online methods. Another limitation has to do with the difficulty in turning off the emotion of disgust, making this type of intervention very complex.

It was seen that providing information and knowledge to the consumers is a driver for change in consumer-related food waste. However, this topic can be studied further focusing on the importance of social norms. Consumers are extremely influenced by their surroundings (Aschemann-Witzel, de Hooge, Amani, Bech-Larsen & Oostindjer, 2015), behaviors and expectations of others (White, Habib, & Hardisty, 2019). According to Abrahamse and Steg (2013), social factors are extremely influential for impact sustainable consumer behavior change. To accept a phenomenon, consumers sometimes need the norm to be created. For example, saving food leftovers from dinner to consume the next day and avoid food waste was a norm that was created. Future research could shed more light on social norms promoting expired food consumption.

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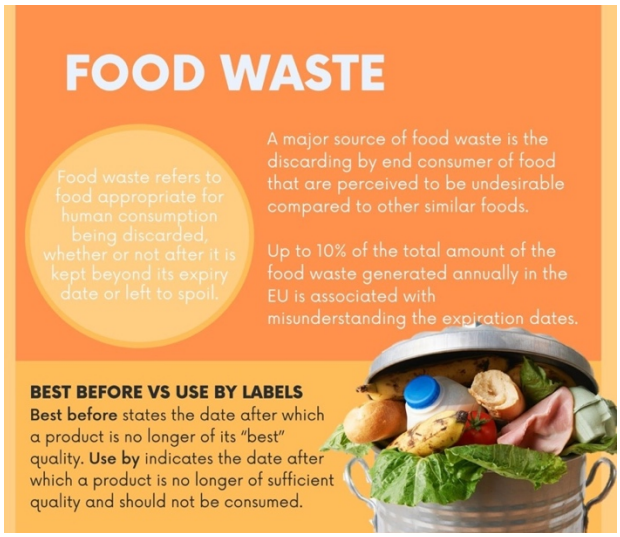
APPENDICES
Appendix 1

Affective Framing

Cognitive Framing



Control framing

Appendix 2
Experiment

Dear participant,

In the context of my master's thesis in Management with specialization in Strategic Marketing at Católica Lisbon, I am studying consumers' attitudes towards expired food. With your participation you support me in gaining new insights in this field.

In total, it takes around 5 minutes to complete this study.

The data collected in this study will only be used for research purposes and will therefore be treated anonymously and strictly confidential. It is not possible to make any conclusions about your person!

Please answer all questions completely and as honestly as possible. There are neither right nor wrong answers. Read each question carefully and then choose the answer that corresponds to your initial assessment. If you are not sure, choose the answer that works best for you.

If you have any questions regarding the study, please feel free to contact me: Madalena Barros Gomes (madalenabgomes@gmail.com).

Thank you very much for your participation!

Do you agree to participate in this study?

- ○ I agree to participate in this study
- ○ I do not agree to participate in this study

<Section: Framing>

In the next task you will see a poster that is being developed and pre-tested to fight food waste. Please read the poster carefully and then answer some questions related to food waste.

(Image)

<Section: Emotions>

Indicate the extent you feel this way right now. Being 1- Not at all inspired and 7 – Extremely inspired.

	1	2	3	4	5	6	7
Inspired	○	○	○	○	○	○	○
Alert	○	○	○	○	○	○	○
Excited	○	○	○	○	○	○	○
Enthusiastic	○	○	○	○	○	○	○
Determined	○	○	○	○	○	○	○
Afraid	○	○	○	○	○	○	○
Upset	○	○	○	○	○	○	○
Nervous	○	○	○	○	○	○	○
Scared	○	○	○	○	○	○	○
Distressed	○	○	○	○	○	○	○

Indicate to what extent do you relate with these sentences.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I have a bad conscious when I waste food	○	○	○	○	○	○	○
I feel guilty when I waste food because others don't have enough to eat	○	○	○	○	○	○	○
I try to avoid wasting food but I often catch myself doing so	○	○	○	○	○	○	○
There is often food I waste which could have been avoided	○	○	○	○	○	○	○
I do not think of the environmental impact when wasting food	○	○	○	○	○	○	○
Food waste is not an environmental problem because its biodegradable	○	○	○	○	○	○	○
Food packaging is a bigger environmental issue than food waste	○	○	○	○	○	○	○
I feel disturbed by the amount of food being wasted since it takes a lot of resources to grow, process, package and transport food	○	○	○	○	○	○	○

I only buy products which are on my shopping list	○	○	○	○	○	○	○
I plan meals for several days to purchase more efficiently	○	○	○	○	○	○	○
When I see a “Sale” in stores I often buy more than I intended	○	○	○	○	○	○	○
I never buy food I already have at home (in my fridge)	○	○	○	○	○	○	○
I am worried about the cost of food that I throw away	○	○	○	○	○	○	○
During food preparation I take care to use everything possible If something remains after cooking, I freeze it for a later use	○	○	○	○	○	○	○
I eat food leftovers the next day	○	○	○	○	○	○	○
I always prepare more food than I need	○	○	○	○	○	○	○
I evaluate food to be thrown by its appearance/smell	○	○	○	○	○	○	○

I take care not to consume food after the expiration date	○	○	○	○	○	○	○
I think it is better to throw away food than to risk eating unsafe food and getting sick	○	○	○	○	○	○	○
Often, I forget to eat products before they spoil	○	○	○	○	○	○	○
It feels good to clean out the fridge and get rid of old food	○	○	○	○	○	○	○

<Section: Consumer Attitudes

Indicate to what extent do you agree with these sentences.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Science and technology is important for society	○	○	○	○	○	○	○
Science and technology makes our lives easier and more comfortable	○	○	○	○	○	○	○
The benefits of science are greater than the harmful effects	○	○	○	○	○	○	○
Science and technology are helping the poor	○	○	○	○	○	○	○

There are many exciting things happening in science and technology	○	○	○	○	○	○	○

Would you consider consuming a product after its best before date?

- ○ Definitely not
- ○ Not
- ○ Probably not
- ○ Neither yes or no
- ○ Probably yes
- ○ Yes
- ○ Definitely yes

What are the factors that you would consider important for that decision? Choose up to 3.

- ☐ Feeling of guilt when throwing food away
- ☐ Environmental concern
- ☐ Good understanding of food edibility
- ☐ Saving money
- ☐ Freeze the food before storing it
- ☐ Other: _____

How trustworthy do you find the information in the poster?

- ○ Not trustworthy at all
- ○ Not trustworthy
- ○ Somewhat not trustworthy
- ○ Neither trustworthy or not
- ○ Somewhat trustworthy
- ○ Trustworthy
- ○ Extremely trustworthy

How common do you feel eating expired food is?

- ○ Extremely unusual
- ○ Unusual
- ○ Somewhat unusual
- ○ Neither common or unusual
- ○ Somewhat common
- ○ Common
- ○ Extremely Common

Have you heard about the difference of “best before” and “use by” labels before?

- ○ Extremely unlikely
- ○ Moderately unlikely
- ○ Slightly unlikely
- ○ Neither likely nor unlikely
- ○ Slightly likely
- ○ Moderately likely
- ○ Extremely likely

Please rate how disgusted would you be on these circumstances. Being 1 - Not at all disgusted and 7 - Extremely disgusted.

	1	2	3	4	5	6	7
Standing close to a person who has body odor	○	○	○	○	○	○	○
Shaking hands with a stranger who has sweaty palms	○	○	○	○	○	○	○
Stepping on dog poop	○	○	○	○	○	○	○

Accidentally touching a person's bloody cut	○	○	○	○	○	○	○
Seeing some mold on old leftovers in your refrigerator	○	○	○	○	○	○	○
Sitting next to someone who has red sores on their arm	○	○	○	○	○	○	○
Seeing a cockroach run across the floor	○	○	○	○	○	○	○

Would you support a policy that would increase the consumption of eating expired food?

- ○ Extremely unlikely
- ○ Moderately unlikely
- ○ Slightly unlikely
- ○ Neither likely nor unlikely
- ○ Slightly likely
- ○ Moderately likely
- ○ Extremely likely

Consider this product and its expiration date.

How disgusted would you be to consume this product considering it is expired?

- Not disgusted at all
- Not disgusted
- Somewhat not disgusted
- Neither disgusted or not
- Slightly disgusted
- Disgusted
- Extremely disgusted

<Section: Demographics>

Please indicate your gender.

- Male
- Female
- I prefer not to answer

Please indicate your age.

- <18
- 18-24
- 25-35
- 36-50
- >50

Source: Qualtrics

Appendix 3
Nutella pot and its best before date

Appendix 4
Packaging of The Laughing Cow