

**Intention versus behaviour: Integration of theories to curb food waste among
Spanish young consumers**

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Intention versus behaviour: Integration of theories to help curb food waste among young Spanish consumers

Abstract

Purpose – This study aims to find the most relevant variables for understanding the gap between intention and behaviour in relation to food waste reduction among young consumers, providing a theoretical framework that reveals what theories can explain this gap.

Design/methodology/approach – A qualitative analysis based on two focus groups with participants aged 18–35 was developed to examine young consumers' intention–behaviour gap.

Findings - Our results suggest that a combination of variables from different theories (Theory of Planned Behaviour, Social Practice Theory, Value-Belief-Norm Theory, and Stimuli-Organism-Response Theory) can better explain the gap. Our findings suggest that awareness of food waste consequences and ascription of responsibility can bridge the intention-behaviour gap. Some household routines, households' leftovers management and planning practices, some emotions, marketing activities, and the relevance of best-before and expiry dates can explain differences between intention and behaviour. Moreover, price consciousness and situational factors do not belong to these theories but can also influence the intention-behaviour gap.

Originality - The results offer a conceptual model that combines variables from diverse theoretical streams with the aim of understanding food waste among young consumers holistically, and identify new variables that had not been considered by previous research.

Practical implications – Our findings offer practical implications for consumers about their household routines and plannings; for retailers, regarding packaging sizes and promotions; and for governments, requesting further education on how to avoid food waste.

Keywords: Theory of Planned Behaviour, Social Practice Theory, Value-Belief-Norm Theory, food waste, intention–behaviour gap, focus group.

1. Introduction

Food waste constitutes one of the main social problems today. About 950 million tons of food are lost and wasted in the world every year at (United Nations, 2020). While food loss occurs at the production and distribution stages in the food supply chain, excluding retailing, food waste occurs in the last two stages, retailing and consumption (Food and Agricultural Organization, 2020; Rasool et al., 2021). This article focuses on food waste. According to a UNEP study, carried out in collaboration with the British NGO WRAP, the 17% of consumer food ends up in the garbage, being homes the main focus of waste (UNEP, 2021), more than in businesses (Attiq et al., 2021). Therefore, it is not surprising that food waste is also part of three of the Sustainable Development Goals (SDG) to be achieved before 2030 (United Nations, 2020; SDG 2 “Zero Hunger”, SDG 12 “Responsible consumption and production” and SDG 13 “Climate action”).

Between 2018 and 2019, food waste emerged as a motor theme in the literature (Schöggl et al., 2020), what demonstrates its recent interest. Two systematic literature reviews have uncovered some key research themes and gaps in the state-of-the-art of food waste (Chauhan et al., 2021; Dhir et al., 2020). On the one hand, Chauhan et al. (2021) identified themes related to factors responsible for food loss and waste generation, and also, revealed the digitalisation and food surplus redistribution as two emerging topics. On the other hand, Dhir et al. (2020) collected, as potential research topics, the consumer’s behaviour study explained through different behavioural theories and, the influence of demographic factors in the quantity and composition of food waste.

Regarding the consumer’s behaviour literature, most research on food waste has tried to identify the causes and consequences of food waste and the strategies that consumers may apply to prevent and reduce it (Derqui *et al.*, 2016; Russell *et al.*, 2017; Visschers *et al.*, 2016). Research has acknowledged a gap between consumers’ intention

toward food waste and their final behaviour; they seem to be aware of the problem but do not always behave accordingly (Díaz-Ruiz *et al.*, 2018; Schanes *et al.*, 2018). However, relevant studies remain at the theoretical level and do not address any explanatory factors. Therefore, we need further empirical research that allows us to identify the relevant factors in the context of food waste.

The main theoretical framework applied in food waste research is the Theory of Planned Behaviour (TPB; Heidari *et al.*, 2020; Mondéjar-Jiménez *et al.*, 2016; Russell *et al.*, 2017; Stancu *et al.*, 2016), which seeks to explain individual behaviour from a rational perspective. However, due to the low explanatory level of this theory in relation to food waste behaviour, recent research has suggested complementing it with other theories, such as Value-Belief-Norm (VBN) theory and Social Practice Theory (SPT). VBN theory adds moral or personal norms as variables that can explain sustainable behaviour (Çakir Yildirim and Karaarslan Semiz, 2019; Farr-Wharton *et al.*, 2014). SPT takes account of the social context and the material resources available to the individual, as these determine many daily routines related to food, thereby allowing us to understand how and why food is wasted (Schanes *et al.*, 2018).

These issues are especially interesting in connection with demographic variables. As aforementioned, the influence of demographic factors in food waste- related consumer behaviour is a thematic focus to consider in future research (Dhir *et al.*, 2020). For instance, age has showed to be a significant controlling factor on the intention to reduce food waste (Attiq *et al.*, 2021). Thus, Heidari *et al.* (2020) showed that younger consumers were more willing to reduce food waste. Young people are regarded as having a high degree of environmental concern but who nevertheless tend to waste more food than older generations (Ilakovac *et al.*, 2020; Principato *et al.*, 2015). In this line, a recent Spanish study affirms that people under 34 (83%) is the segment that produces the most waste

compared to other age groups because they regularly throw fruit and vegetables in the garbage (Too Good To Go, 2022). Therefore, it is worth exploring the food waste-related consumer behaviour in this segment.

The current study addresses both of these gaps in prior literature. For it, we propose a model based on the results of qualitative research, that combines three consumer behaviour theories (TPB, VBN theory and SPT), to define the main variables that influence the intention–behaviour gap. To achieve this purpose, we conducted two focus groups with young consumers aged between 18 and 35. With this objective, this study aims to answer the following research questions:

RQ1: What are the most relevant variables for understanding the gap between intention and behaviour regarding to food waste reduction among young consumers?

RQ2: What theories should be combined to understand consumers' food waste reduction in a holistic way?

This study contributes to the food waste literature by offering a theoretical model in which theories are combined to better explain food waste behaviour and reduce the intention–behaviour gap. The model includes the variables of each theory alongside new variables that should be considered when analysing food waste behaviour.

For it, the rest of the paper is organized as follows. Next section presents the integration of three of the most used theoretical bases that try to explain food waste behaviour. The third section explains the methodology employed and data collection by means of two focus groups. The fourth section described the main results. And finally, the discussion, main conclusions and contributions are displayed.

2. Integration of theories for a better understanding of food waste behaviour

To understand why there is a gap between intention and behaviour in relation to reducing food waste, it is necessary to identify the factors that determine consumer behaviour.

Accordingly, here we integrate three of the most used theoretical bases, which complement each other very well: TPB, VBN theory and SPT.

TPB (Ajzen, 1991) proposes that behaviour is determined by previous intentions, which in turn depend on attitude, subjective norms and perceived behavioural control. This theory offers one of the best motivational models for predicting intention (Conner and Norman, 2005). However, previous research has pointed to several limitations of this theory to address the gap between intention and behaviour. First, TPB emphasizes subjective norms without taking account of the components, such as moral norms, that can influence them (Conner and Norman, 2005). Second, TPB assumes that all behaviours are rational, to the exclusion of other variables, such as emotions or affects, which are important for predicting the intention to carry out a certain behaviour (Conner and Armitage, 1998; Conner and Norman, 2005). Third, in TPB, the repetition of a past behaviour denotes the importance that the individual accords to that behaviour, but it does not entail that it will become a habit in the future (Conner and Armitage, 1998).

Despite these limitations, a prolific stream of research has added further aspects to the core of TPB in different fields of knowledge. For example, in the food waste domain, studies have proposed factors that can affect the intention–behaviour path, such as emotions, moral norms, planning strategies, habits, government stimuli, price consciousness, household size and food taste (Coskun and Özbük, 2020; Graham-Rowe *et al.*, 2015; Russell *et al.*, 2017; Zhang *et al.*, 2019). Despite these advances and the addition of new variables to make TPB more comprehensive, explanations of consumer behaviour toward food waste remain incomplete.

VBN theory overcomes one of the main limitations of TPB, increasing its explanatory power with the inclusion of the variable “moral norms”, also called “personal norms”. Whereas TPB emphasizes the intention of the individual to act, VBN theory

focuses on the moral obligation to act (Aguilar-Luzón *et al.*, 2012). Personal norms constitute the characteristic dimension of VBN theory and explain the individual's beliefs about what is right or wrong for a positive self-evaluation. VBN states that environmental behaviour is guided by ecological values (Dunlap and Van Liere, 1978), which activate moral norms that are explained by two other variables: awareness of the consequences of an action (AC), and ascription of responsibility (AR), defined as the degree of responsibility that a person assumes over his/her acts toward the environment.

This model has been empirically validated for general pro-environmental behaviours (Çakir Yildirim *and* Güliz Karaarslan, 2019). However, few studies have sought to explain food consumption and food waste through the VBN theory (Farr-Wharton *et al.*, 2014; Lai *et al.*, 2020). We found an exploratory study that compared and contrasted TPB and VBN theory as predictors of household food waste and concluded that TPB was better as an intervention for reducing food waste (Sigurðardóttir, 2017). Further research is therefore needed.

SPT prioritizes practice as the basis of a social world (Ariztía, 2017) and focuses on the internal trajectory of a practice, its relationship with other practices, its evolution and its progressive transformation. SPT is often referred to in the context of food waste, as eating is usually a social activity, with food practices taking place in the company of others and helping to structure food routines, such as planning and shopping (Dyen *et al.*, 2018). Devaney and Davies (2017) studied enduring and transformative change in eating practices in terms of acquisition, storage, preparation and waste recovery. Schanes *et al.* (2018) analysed food waste because of social household practices, such as the planning of food shopping, shopping routines, cooking practices, eating habits and disposal/recycling. This approach, too, has limitations, including an inability to explain why some practices are more relevant than others, and to clarify the relationships between

the components of these practices or the people who carry them out. Moreover, SPT is better suited to explaining everyday practices developed by individuals than the larger-scale practices developed by administrations or governments and provides an original conceptual framework in which to explain processes of transformation and social change (Ariztía, 2017).

Finally, according to the arguments of Whitmarsh (2011), food waste is an important social problem today, and it is appropriate to approach it from different perspectives that will allow us to gain a more complete understanding.

3. Methodology

We conducted two focus groups to examine young consumers' intention-behaviour gap in relation to food waste and to develop a theoretical framework for addressing that gap. Young consumers are regarded as a segment that wastes more food and presents different patterns from older individuals, such as a preference for eating out and for pre-cooked food (Mondéjar-Jiménez *et al.*, 2016; Principato *et al.*, 2015). As young consumers are the future of the planet, it is particularly important to understand their habits and patterns and how to modulate them in order to promote environmental protection and sustainability (Ghinea and Ghiuta, 2019).

The focus group method was appropriate given the exploratory nature of the research (Bray *et al.*, 2011), and has been recommended for its high validity and ability to provide in-depth analysis of complex consumer behaviour, being particularly common in studies that explore sustainable consumption (Fernqvist *et al.*, 2015; Michelini *et al.*, 2020; Soma *et al.*, 2021).

The focus groups were audio- and video-recorded. First, participants were informed of the study procedure, its confidentiality and their right to withdraw at any time. If they agreed to take part, they were asked to sign a consent form. We formed two

groups. One consisted of eight participants aged between 20 and 25, and the other group consisted of ten participants aged between 27 and 35, according to the size of groups recommended by previous research (Michellini *et al.*, 2020; Soma *et al.*, 2021) (Table 1).

Each focus group lasted between 120 and 130 minutes.

Focus group	Participant	Age	Gender	Higher education	Student today	Has children
1	1A	23	Female	Yes	Yes	No
1	1B	21	Male	No	Yes	No
1	1C	23	Female	Yes	Yes	No
1	1D	22	Male	No	Yes	No
1	1E	25	Female	Yes	No	No
1	1F	22	Female	Yes	Yes	No
1	1G	25	Female	No	No	No
1	1H	23	Male	Yes	No	No
2	2A	32	Male	No	No	No
2	2B	34	Male	Yes	Yes	No
2	2C	35	Male	Yes	No	No
2	2D	27	Female	Yes	No	No
2	2E	32	Male	Yes	No	No
2	2F	34	Female	Yes	Yes	No
2	2G	29	Male	Yes	Yes	Yes
2	2H	34	Male	No	No	No
2	2I	33	Male	No	No	Yes
2	2J	34	Female	Yes	No	No

Table 1. Focus group participants

We used a semi-structured interview model to facilitate the exploration of interviewees' thoughts and intentions freely (Olavarria-Key *et al.*, 2021). It consisted of two sections. In the first section, a task about responsible consumption was set, followed by a debate on the same issue. In the task, the participants were asked to produce words and idioms related to responsible consumption and to organize these according to the relationships they perceived among them. In the second section, images of food waste were shown to the participants to raise questions about this behaviour, its consequences and causes, and their own conduct. A long discussion ensued around these questions.

The recording of each focus group was listened to and transcribed. Then, three researchers working independently were employed to code the data separately. Following the procedure used by Kang et al. (2019), the researchers aggregated codes and identified themes that emerged from the data. After coding transcription, researchers compared their coding lists and themes and discussed them until the researchers reached a consensus (Strauss and Corbin, 1998). The same methodology has been extensively used in previous research (Dreyer; Lichtenstein and Heil, 2022; Olavarria-Key et al, 2021; Stangherlin, Ribeiro and Barcellos, 2019).

4. Results

Here, we present the main results from the two focus groups, regrouping the themes highlighted within and outside the theories adopted in this study, and proposing a conceptual model.

4.1 TPB variables: determinants of the intention to reduce food waste

4.1.1 Attitude toward reducing food waste

The focus groups began with the researchers asking the participants to write down what they understood as responsible consumption and to provide examples of behaviours that they consider responsible, with the aim of seeing whether the issue of food waste would emerge at some point. Only one of the 18 participants referred explicitly to the reduction of food waste, when indicating “use of the TooGoodToGo app” (1A) (see Table 1 for coding) as a responsible behaviour. However, six participants considered the topic indirectly when they mentioned “avoiding unnecessary consumption” (1C), “be conscientious when buying” (1F and 1H), “unnecessary purchases” (1G), “plan what you will need, so as not to throw away” (2G) and “without excesses there is no waste. Buy what you need” (2B). Two of them (1A and 1E) stated that they had not considered food waste in this connection because they did not usually waste food.

In relation to the images of food waste, all the participants showed an unfavourable attitude, expressed in words or by shaking their heads in disapproval: “A complete disaster” (2F); “If we start throwing away food at home ... we start badly. I don’t like to see food in the garbage” (2A); “at first, I didn’t include food waste as a priority, but now that you have asked me about it, I think it is a big problem, because there are people dying due to not having food to eat and we throw away a lot of food. I feel embarrassed” (1F).

4.1.2 Perceived behavioural control

In our focus groups, five participants appeared to control their food waste behaviour, stating that “I buy what I think I will eat” (1H) when doing the shopping, and “I ask for the quantity I will eat” (1F) when going to a restaurant. Three participants made the effort to avoid waste by calculating amounts: “I try to eat what I need and not to put excessive dishes, I try to calculate a little ... I always ask how much [meat, fish] do I need for one or two people” (2J); and “do not put on the plate what you are not going to eat” (1E). Two participants described buying products in bulk to avoid waste, although one “had to walk and carry her own container” (2J); the other noted that “I buy the fruit in bulk instead of in a bag, although it is more expensive, because I know I’m going to eat it, the ones from the bag maybe not” (1H). It seems that these young consumers’ perceptions of control over their food waste practices can help to explain their intentions, since they explicitly mentioned taking steps to buy the appropriate amount for what they were going to eat.

4.2 SPT variables

4.2.1 Household routines and habits

Over the two focus groups, five of the participants said that they repeated their parents’ food behaviour, including behaviours relating to food purchases, cooking, the use of leftovers and food storage, such that they behaved today as they used to in the parental home: “I already do my best not to throw away food, as my parents showed me in all the

years I lived with them” (1F); “My shopping, cooking and storing food routines are very similar to my mum’s” (1G); “If we cook too much food, then the leftovers are reused as a meal for another day. That’s what I saw at home, and I do it without thinking about it” (1B); “I do not throw away food at home, and my parents don’t either” (1D); and “At [my parents’] home, food was not wasted. That is what I have always seen, so now I act in the same way” (2B).

4.2.2 Planning and management of leftovers

Regarding the causes of food waste, five interviewees suggested that the main reasons were a lack of meal planning, the need to pre-plan purchases, the need to learn how to manage leftovers, and bad fridge management: “In my house, if we throw away food, it is due to very bad fridge management” (1B); and “Due to bad fridge management, some groceries become damaged. I throw away groceries when the part that is not good is so big that the taste of the whole piece is not good” (1C).

The lack of prior planning was mentioned as hindering the fight against food waste and reflecting the domination of convenience over the effort to make things a little better. Other participants agreed that bad meal planning and bad shopping planning were the main reasons for wasting food in their homes: “Waste at home means that you have not planned well what you have bought, then the problem is ours” (1A); “... to plan the purchase, the meals you are going to make. Do not buy more than necessary so as not to throw away” (2F); and “Plan what you will need so you don’t have to throw away later” (2G).

4.3 VBN theory variables

4.3.1 Awareness of the consequences of food waste

Five participants from the more mature focus group suggested that most young people consider mainly the social and economic aspects of food waste and focus less on the environmental impact: “It is a social problem because, in the first world, we are used to

throwing food away” (2J); “It is an economic problem, since it is cheap it does not matter to throw it away” (2D); and “The origin of the problem is social, but the consequences are on the environment” (2G).

Two participants added that because of the lack of food value or price consciousness, consumers do not feel that they are losing money and do not notice any substantial negative effect on their pockets: “Raise the price! They should charge more per plate” (2J); and “the price goes up and they won’t waste so much food” (2G).

These perceptions lead us to think that the consequences (individual and global) of food waste are not visible enough to consumers. Despite the available information, there is a lack of visibility of the consequences, especially among young people: “Consequences? Probably none. That’s why we do not care about it” (2C); “If they do not explain them, they are unknown ... then, of course you are not aware” (2J).

4.3.2 Ascription of responsibility

Throughout the supply chain, responsibility for both loss and waste can be attributed to different agents for different reasons. In the case of food waste at the consumption stage, the fault is usually attributed to consumers (although also to retailers and restaurants). In this study, when the discussion focused on food waste and the barriers to preventing or reducing it, three of the younger participants referred to the responsibility of retailers and the packaging they use to present and sell food products: “The distribution channel makes promotions for 30, 40 and 70% reduction for products that are close to expiry. The consumer will buy the product and then, as it was cheap, has no ethical challenges to throw it away” (1H); “In the groceries when the product is a bit ugly or it has a small defect, it has to be thrown away because the consumer will not buy it” (1E); “It is true that your activity is limited to what governments allow you, but in what they allow you to do, do what you can to be responsible...” (2G). One participant also referred to food loss, occurred at previous stages in the supply chain: “The distribution channels and their

price strategies are abusive for producers of groceries. For producers it is better to throw away their groceries than sell them to the distribution channel” (1F).

When the topic focused on food waste behaviour, three of the participants tried to convince their peers that we should not blame others and not ourselves in cases where we have control over our decisions: “Again, we blame the supermarkets” (2C); “But in the end, we are the ones who decide where we are going” (2G); and “I have a feeling that it is very easy sometimes to throw the ball out of play and say that the company is bad, but in the end, we are responsible... ” (1C).

4.4 Other factors that influence actual food waste behaviour

From the focus groups, several factors emerged that can help us to understand the extent of the gap between intention and behaviour in relation to food waste.

4.4.1 Convenience: time and effort

Throughout the focus groups, three participants (from both groups) suggested that one of the main barriers to reducing food waste is purchase or consumption convenience, as the costs of responsible food purchases exceed the benefits; most of the other participants agreed with this point. For example, sometimes a concern with convenience leads people to buy larger amounts of food, which increases the probability of waste and prevents more responsible behaviour in this regard: “I would like not to waste food, but sometimes, I have not got the time to cook the leftovers and even to eat the cooked food” (1H); “Young people buy online because they prefer speed, they want to have the product as soon as possible” (2B); and “Sometimes your pocket allows you to choose the organic one and you don’t choose it, or you can buy in bulk, so you don’t. You prefer the cheap and the fast” (2G).

4.4.2 Situational factors

Two participants observed it was difficult to manage leftovers in certain situations, such as trips, celebrations and family gatherings, where food management is difficult. Almost

all of the participants agreed with this point: “At Christmas, we rent a rural house to spend the holidays with all the family. Planning and storing food for 20 persons is really difficult. Furthermore, leftovers are difficult to manage” (1A); and “At family celebrations, it is the time when most is wasted” (2G).

Some additional factors seemed to encourage more responsible behaviours, such as employment status, income level, family size and having children at home. It is worth noting that these variables were mentioned by the older participants only. For example, they reported that if they were unemployed, they considered their buying decisions more thoroughly; similarly, a larger family size and less available income could also influence their decisions in line with avoiding food waste. Participants who had children also felt the responsibility of being good models for them, indicating that the desire to show their children how to reduce food waste was a motivation for themselves to avoid behaviours associated with waste. Some examples are: “Now, I’ve been unemployed for almost one year and look more at what I buy, trying not to waste food, as it costs me money” (2A); “I usually buy what is 50% cheaper, for reasons of economy. Many times, I buy things that I don’t normally buy because they are expensive, but I say, ‘tonight I’ll eat it’” (2A); and “Do you have children? Anyone have children? I have three, so my vision is different ... and I influence them, and nothing is wasted in my house” (2I).

4.4.3 Emotions

Certain emotions were mentioned in connection with food waste, namely guilt and shame. Five participants commented that people, especially older people, feel that asking for a doggy bag is embarrassing: “When I’ve been to a restaurant with older people, they ask me if I am not ashamed of asking for a doggy bag” (1C); “When I am with friends and have to throw away food because we cannot manage to reuse the leftovers, I feel guilty, bad” (1F and 1H); “I do not ask for a doggy bag – I am very shy” (2J); “My father thinks badly of asking for leftovers in a restaurant” (1D); and “If the waiters themselves offered

you a doggy bag ... it would be the best. The image you give is that you are greedy. We don't do it because we are ashamed" (2B).

4.4.4 Relevance of best-before and expiry dates

According to the results from our focus groups, young people are well-informed about what best-before and expiry dates mean, and they use their senses of smell and taste to determine whether a product is still fresh. Therefore, a best-before date is not a reason for food waste. Four of the participants spoke about the expiry dates of yogurts and dairy products in general, indicating that they pay less attention to the best-before date for certain kinds of products and will eat them even if the expiry date has passed: "I first smell the product and if I think that the product is good, I eat it. With dairy products, I do it very often" (1D); "There is a psychosis about health and illnesses. I eat expired yogurts, and nothing happens to me" (2J); "I throw away products that have passed their best-before dates" (1D); and "If something has expired, I throw it away because I could become ill" (1A).

One of the participants emphasized that he paid more attention to expiry dates for products that were more expensive than for cheaper products. He confessed that he did not choose products that were about to expire, even if he was going to consume them immediately, preferring products with a longer shelf life: "I look at the expiry date when the product is expensive; if it is cheap, people almost do not look at it. But for meat and fish, like I said before, people take the one at the bottom, which is the one that expires later ... even if you are going to eat it now" (2G).

4.4.5 Marketing activities: packaging and promotions

Three of the participants suggested that although they tried not to waste food, sometimes this was difficult because of promotions in the distribution channels or big product packages. Three of them mentioned that it was often cheaper to buy a 5 kg pack of potatoes than a 1 kg pack. Hard-discount promotions lead consumers to undervalue both

the product and the money spent on it, indicating that promotions do not help to reduce food waste: “The distribution channel offers promotions with 30, 40 and 70% reductions for products that are close to their best-before dates. The consumer will buy the product and then, as it was cheap, have no ethical problem about throwing it away” (1H); “In the past, we bought the big size of the tomato sauce, and after two weeks we had to throw it away” (1G); and “I usually have to throw away sauces. The size is too big, and you use just a small portion” (1C).

Two of the more mature participants considered the lack of opportunity to make bulk purchases in many stores as a barrier to reducing food waste, which indicates that food packaging can be an obstacle: “The issue of packaging often conditions you. In the supermarket, you can only buy things in certain packages” (2G); and “I walk to the Almozara [a market that is a few minutes from the participant’s house] to buy in bulk. I go with my container: a carafe” (2J).

4.4.6 Price consciousness

Over the focus groups, the comments of four of the participants frequently suggested that young people do not value food and instead shop for fun. The low price of food is another factor to consider, as some qualitative studies have pointed out (Geffen *et al.*, 2016; Mallinson *et al.*, 2016). Three participants agreed that because food is cheap, wasting it is not a big problem. Thus, it seems that for young people, higher price consciousness may lead to a lower probability of wasting food: “The individual economic impact is not seen at that moment. The value of the product is not important [big] enough” (1D); “In my company, employees can eat for €1.60 a day and have several starters, seconds ... people leave a lot of food on the plate. And they throw away and throw away” (2J); and “Maybe it’s the company’s problem. Raise the price! If they charge more per plate ... then, they won’t throw away so much food” (2G).

4.5 Actual food waste behaviour

According to nine of the interviewees, young consumers avoid generating food waste through preventive measures, such as not buying more than they need, cooking only the amount they intend to eat, buying smaller package sizes and buying in bulk, among other responsible actions. They also seemed to know how to deal with leftovers to avoid throwing food away, for example by including them in other meals or eating them another day, as well as taking home leftovers from restaurant meals (i.e., asking for a doggy bag). In terms of cooking at home, the following points were made: “If we cook too much food, then the leftovers are reused as a meal for another day” (1B); “In my home, there is no food waste” (2I); and “Try to prevent the generation of leftovers” (2G). In terms of restaurant leftovers, the following points were made: “Sometimes they asked me: aren’t you embarrassed about asking for a doggy bag? But at the end of the day, this behaviour is very common for me, and I always ask for one” (1C); “I always ask for a doggy bag, and I haven’t had any problems in restaurants” (2B); and “We must ensure that there is no food left, but if it remains, I ask to take it away” (2G).

The results of the focus groups allow us to propose the following model to explain the intention–behaviour gap (Figure 1) and to compare the variables from TPB, VBN theory and SPT with the variables emerging from our research.

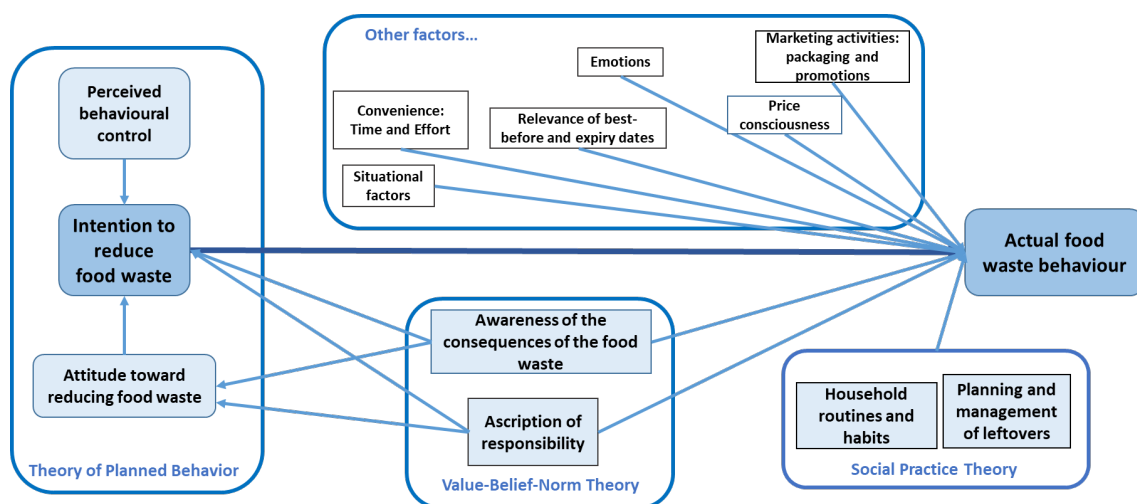


Figure 1. Proposed theoretical model

5. Discussion

The objective of this study was to examine the gap between intention and actual food waste behaviour for young consumers and to propose a model that combines several theories to identify the main variables of relevance.

The most striking result of this research is that the gap between the intention to reduce food waste and actual food waste behaviour can be explained more clearly by integrating different theoretical streams along with other factors that emerged with varying degrees of intensity in our focus groups.

TPB is one of the theories most commonly used in this context (e.g., Graham-Rowe *et al.*, 2015; Stancu *et al.*, 2016; Visschers *et al.*, 2016). In line with TPB, our findings show that, although subjective norms were not mentioned as relevant to explaining the intention–behaviour gap among young consumers regarding food waste, perceived behavioural control was mentioned. This variable seems to influence intention to avoid food waste, since four of the participants indicated that they took steps to control their food consumption. This is in line with previous research that has found a positive association between this factor and the intention to avoid food waste (e.g., Mondéjar-Jiménez *et al.*, 2016; Stancu *et al.*, 2016; Visschers *et al.*, 2016). Similarly, our results indicate that food waste, although not a priority, is nevertheless a concern for young people. Our participants' attitude to reducing food waste was positive; they tried to avoid it by planning their purchases and purchasing only what they needed. Although our results require confirmation in quantitative studies, these kinds of attitudes seem to lead to a greater intention to reduce food waste and ultimately to more responsible behaviour.

Our results are also consistent with the predictions of SPT, indicating that social practices could be useful in reducing the intention–behaviour gap in the context of food waste (Díaz-Ruiz *et al.*, 2018; Schanes *et al.*, 2018). Specifically, household routines, including the planning of food shopping, food management and use of leftovers, and habits (family routines), such as checking the real condition of a product before throwing it away, can explain young consumers’ motivations to avoid food waste. These results are in line with those obtained by Schanes *et al.* (2018). Five of our participants tended to repeat actions they had seen at the parental home in relation to routines for shopping, cooking and storing food. In this connection, Sorokowska *et al.* (2020) suggested that children aged between 6 and 9 are especially receptive to education about preventing food waste and to consolidating a negative attitude toward this behaviour. Therefore, parents should do their best to set a good example at home. Moreover, five of our participants noted a lack of meal planning, bad shopping planning and the need to learn how to manage leftovers as the main reasons for food waste.

VBN theory is also represented in this study, since awareness of the consequences of food waste and the ascription of food waste responsibility emerged as two important topics for the participants. These variables can help us better understand the intention–behaviour gap, thus complementing the TPB variables. In our focus groups, our older informants believed that greater awareness of the consequences and greater visibility of the problem would increase food waste concern and foster strategies to reduce it, which is consistent with previous research (Graham-Rowe *et al.*, 2015; Principato *et al.*, 2015). They recognized that although awareness of the consequences of food waste should lead to its avoidance, this association does not always hold. They indicated that convenience and certain circumstances, such as trips and celebrations, could explain why awareness does not always lead to corresponding behaviour. With regard to the second variable, in

both focus groups there was a tendency to blame others for the problem of food waste (retailers) and loss (administration and governments); only three participants highlighted the importance of assuming our share of responsibility and acting accordingly.

Beyond these theories, the following factors also emerged: convenience (time and effort), situational factors (family size, employment situation, celebrations, trips and income), relevance of best-before and expiry dates, emotions, marketing activities and price consciousness. Some of these factors could be included in the widely consumer behaviour theory of Stimuli-Organism-Response (Mehrabian and Russell, 1974). This theory has been used in retailing and online consumer behaviour (Lian, 2021; Chopard et al., 2021; Kumar et al., 2021a; 2021b; Konuk, 2019), but it has scarcely used in household food waste research (Talwar et al., 2022). On the other hand, this theory has been widely used in social marketing research to test the effectiveness of social marketing initiatives (Wanget al., 2021; Phang et al., 2021; Suet al., 2020), where emotions are the central role of the organism factor and consumers are exposed to external stimuli. Although few previous research has examined food waste under this theory (Talwar et al., 20022), the results suggest that it can be applied together with TPB, Value-Belief-Norm theory or Social Practice Theory. Celebrations, trips, best-before dates, price consciousness and marketing activities and promotions of retailers would be part of the Stimuli, while emotions are the key of the Organism. Response is related to consumer behaviour, in our case, food waste reduction.

Convenience and lack of time are two reasons why younger consumers opted for food purchase options that are less responsible (such as large purchases for the whole week or the whole month, pre-cooked products and ready meals). These results are in line with previous studies (e.g., Papaoikonomou *et al.*, 2011; Zhang *et al.*, 2019). Similarly, some situational circumstances were identified as influencing food waste behaviours in

different ways; these included family size and the individual's employment situation. Although previous research has assumed that sociodemographic factors influence food waste (Qian *et al.*, 2021; Stancu *et al.*, 2016), there are few studies that analyse their influence in real settings where the interaction with previous beliefs or other situational circumstances creates complexity.

Emotions and knowledge of best-before dates can also make consumers more responsible regarding food waste (Russell *et al.*, 2017; White *et al.*, 2019). Emotional factors have been included in previous research (Russell *et al.*, 2017). Young consumers feel shame and sadness about food waste when there are so many people suffering from hunger. Furthermore, they believe that consumers are embarrassed to ask for a doggy bag in restaurants and that it would be easier if restaurants took the initiative to offer leftovers to take away. Other solutions could be to give consumers influence over the size of the serving they really want (Matzembacher *et al.*, 2020).

Our findings suggest that young consumers' behaviour is also affected by different marketing activities in the distribution channel (Papaioikonomou *et al.*, 2011; Setti *et al.*, 2016). Thus, packaging size, promotional strategies and lack of ethical alternatives (such as the possibility of buying in bulk) are factors that made our participants act less responsibly by buying more than they needed. This suggests, in line with previous research, that marketing activities such as promotions make it more difficult to avoid food waste (e.g., Mondéjar- Jiménez *et al.*, 2016; Setti *et al.*, 2016).

Finally, price consciousness has been included in more recent food waste research (Coskun and Özbük, 2020), and our results confirm its importance. Lack of awareness of the value of food and how cheap food is may be an important element in explaining food waste among younger consumers. It seems necessary to analyse in greater depth the

measures that should be taken to enable consumers to understand the value of any food, no matter how cheap it is.

Through this quick review we are answering to our two research questions. The first related to the most important variables to understand the intention-behaviour gap regarding to food waste reduction among Spanish young consumers. And the second, showing that a combination of four theoretical streams (TPB, VBN theory, SPT and S-O-R theory) is recommended to better understand this type of behaviour.

6. Conclusions

This study sets out to propose a theoretical model that includes all the main variables that influence the intention-behaviour relationship. To achieve this, we combined variables from the TPB, VBN theory and SPT. Moreover, some new variables have emerged what also suggests the consideration of the Stimuli-Organism-Response theory. Thus, within the food waste context, our research shows that selecting just one theory does not provide a real picture of how young consumer behaviour can be explained.

6.1. Theoretical contributions

The findings allow us to provide some theoretical contributions to food waste research. First, this research contributes to the food waste literature by providing a theoretical model that includes the most relevant factors for influencing consumer behaviour and reducing the intention-behaviour gap. We combined variables from TPB, VBN theory and SPT, as our research shows that reliance on one theory does not allow a realistic picture of how consumer behaviour can be explained or how the intention-behaviour gap can be reduced in the context of food waste. Our findings also contribute to the literature by adding new variables that are not included in these theories but that are relevant in this context. Emotional factors and marketing activities have previously been included in an extended TPB model. Routines and habits, shopping planning and management of

leftovers are often included in SPT models. Awareness of the consequences of food waste and ascription of responsibility have been considered in VBN theory. However, other factors, such as convenience, situational factors and price consciousness, have rarely been considered in previous research. These factors could be included in food waste research under the Stimuli-Organism-Response theory (S-O-R), a theory scarcely used in this context, but widely used in the retailing and online research lines. Our results offer evidence of the suitability of this theory to explain food waste.

6.2. Implications for practice

Food waste represents a critical problem for national economies; therefore, knowing how food waste is originated in households is relevant for governments and other institutions in order to create initiatives or nudging strategies for reducing it. This research offers young consumers' perspective about this problem and provides some insights about what strategies to use to change their behaviour and become more socially responsible. First, the results show that family and habits are important for reducing food waste as young consumers do what their parents have done and what they have learned at school. Food waste is very often originated due to the lack of food value and the lack of awareness about food waste consequences. Education is the way to show young consumers the value of food and the social and environmental consequences of food waste. Second, planning meals is important to buy only what is necessary. However, results show that sometimes supermarkets put offers that make them buy more quantity. In this sense, managers of supermarkets should know the negative effect that they create with those sales and promotions. Supermarkets should make offers on products that can be purchased by bulk to reduce the negative effect of buying too much product. Furthermore, young consumers accept offers on products with a close best-before date. Related to that aspect, young consumers are flexible with the best-before date and they smell and taste the product

before throwing it away. Then, more initiatives should be addressed to this aspect to inform about its real meaning due to the positive effect that previous initiatives about this topic have created in young consumers' mind. This is important as consumers behave by routines and habits.

6.3 Limitations and future research

This paper is not free of limitations. First, the number of focus groups was small, and so the representativeness of our sample is limited. Therefore, the findings and the proposed model, as well as the recommendations, cannot be generalized. Second, the participants were Spanish; consumers from other countries and cultures may provide different information because of different habits and food culture. A replication of the study using a larger sample and from different countries could be interesting to test the possible generational and cultural effect. Third, the model proposed in this study needs to be tested through quantitative analysis, which is a task for future research. Furthermore, the results show a new theory (S-O-R theory) that could be applied in food waste research. Therefore, future research should use this theory as theoretical background to increase the explanation of food waste behaviour.

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