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Don't Blame Me! Using Neutralisation Theory to Understand Household Food Waste

Breda McCarthy[1] | Ariadne Beatrice Kapetanaki[2] | Pengji Wang[3]

[1]Department of Economics and Marketing, James Cook University (JCU), Townsville, Australia | [2]School for Business and Society, University of York, Heslington, UK | [3]College of Law, Business and Governance, James Cook University Australia, Townsville, Australia

Correspondence: Breda McCarthy (breda.mccarthy@jcu.edu.au)

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ABSTRACT

Wasted food has detrimental effects on the natural environment and on society. Although reducing food waste is seen as an ethical consumption behaviour, the influence of moral norms on food waste is still under debate and research has shown mixed results. To address this research gap, a temporal, extended norm activation model (NAM) is presented in this study, and it incorporates neutralization theory to explain how people negotiate moral issues. That is, individuals use several neutralization techniques to suppress their moral norms, which subsequently influence their intentions related to food waste. Partial least squares structural equation modeling (PLS-SEM) was used to analyse data from an online panel of UK consumers ($n = 358$). We found pathways between neutralisation techniques, moral norms and intentions towards avoiding food waste. The research shows that people use two neutralization techniques, "denial of responsibility" and "condemning the condemners" to dampen their moral norms, which further weaken their intentions to avoid food waste. Recommendations for policymakers and practitioners are made and de-neutralisation tools are identified, such as making people aware of their internal dialogues, ensuring greater accountability in food waste reduction pledges and providing workplace training.

1 | Introduction

Global food production places substantial pressure on the planet, and adverse impacts include climate change, consumption of freshwater and fuel, land-clearing, destruction of habitats, and pollution (Halpern et al. 2022); thus there are calls to reduce food waste and move towards a circular economy (Lehtokunnas et al. 2022; Principato et al. 2021). A United Nations report, the Food Waste Index, states that global food waste is much larger than previously estimated. An estimated 931 million tonnes of food are wasted each year, which costs the global economy $936 billion and accounts for 10% of global carbon emissions. Households account for 61% of total food waste, far surpassing waste produced at other levels of the agri-food supply chain (Marchant 2021). Therefore, insights into the antecedents of household food waste will benefit policy makers, the food industry, and the academic community. For the purposes of this study, food waste is defined as "avoidable" food waste, food that was edible at some point prior to disposal (Gjerris and Gaiani 2013).

Research on household food waste indicates that food within households progresses through several stages—planning, shopping, raw material storage, preparation of food, cooking, eating, and leftover storage—before it is eventually discarded (Porpino et al. 2015; Stefan et al. 2013). Behaviourally, routine activities such as shopping, eating, managing leftovers, over-purchasing, impulse-buying, and deal-seeking are all factors that contribute to food waste (Dobernig and Schanes 2019; Giordano et al. 2019; He et al. 2016; Heidari et al. 2020; Schanes et al. 2018). Beliefs about risks to one's health (Närvänen et al. 2023) and a sense of

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community and care for others (Schanes and Stagl 2019; Wang et al. 2021) also influence food waste. Demographically, older age (Katajajuuri et al. 2014), higher-income households (McCarthy and Liu 2017; Szabó-Bódi et al. 2018), larger household sizes (Gaiani et al. 2018), and families with children (Secondi et al. 2015) are all variables that are related to food waste, though mixed results are evident regarding the impact of these demographic variables on waste (Bhattacharya et al. 2021; Koivupuro et al. 2012).

Being a consumer inherently involves moral considerations, whether consciously recognized or not, as consumption decisions are shaped by personal values and have significant ethical implications for the world (Ramos et al. 2024). Food waste involves moral judgment, which entails evaluations of right and wrong or perceptions of fairness (Hunt and Vitell 1986). Given that food is essential to health and longevity, and addressing global hunger is a key ethical concern (Early 2002), wasting food is socially undesirable and is seen as deviant behavior (Coşkun and Filimonau 2021). It can evoke guilt and visceral emotions (Falasconi et al. 2019; Flanagan and Priyadarshini 2021; Graham-Rowe et al. 2015; Qi and Roe 2016), which generally arise from a violation of moral standards (Tangney et al. 2007). Consequently, one theory that could be used to understand food waste is the Norm Activation Model (NAM) (Schwartz 1977).

NAM posits that pro-social behaviour is a function of personal norms—an individual's values or expectations, sense of right and wrong—which are derived from socially shared norms. Norms are not fixed, and they strengthen as awareness of the environmental problems caused by one's behaviour increases (i.e., awareness of consequences). A feeling of responsibility for environmental problems and a desire to change by acting pro-environmentally (i.e., ascription of responsibility) can also strengthen norms (Schwartz 1977). Food waste scholars show that conflicting reasonings (Roodhuyzen et al. 2017), such as the value placed on being a "good provider" (Aschemann-Witzel et al. 2020) and being conscious of social status (Marx-Pienaar and Erasmus 2014), may sometimes take precedence over ethical considerations and are used by individuals as an excuse to deactivate moral norms and justify food waste. Correspondingly, conflicting evidence has been reported on the potency of moral norms, with some studies reporting that moral judgments influence food waste (Misiak et al. 2020; Obuobi et al. 2024; Talwar et al. 2022) and others reporting they have no impact on food waste levels (Stancu et al. 2016). Thus, we engage with this debate and use neutralisation theory to explain the malleability of moral norms and their relationship with intentions to reduce food waste.

Those opposing and unintentional reasonings, or deactivators of moral norms, could be captured by the theory of neutralization (Sykes and Matza 1957), which refers to the techniques that enable people to defend deviant behaviours and avoid social or self-blame. Sykes and Matza (1957) identified five techniques: denial of responsibility; denial of injury; denial of victim; condemning the condemners; and appealing to higher loyalties. For example, denial of responsibility occurs when people claim they are not responsible for their actions because of forces that are beyond their control. Following the publication of Sykes and Matza's landmark study, neutralisation has moved beyond criminal behaviour and has been applied to diverse marketplace settings that require ethical judgement. Studies span music piracy (Ingram and Hinduja 2008), fair trade purchasing (Brunner 2014; Chatzidakis et al. 2007), alcohol consumption (Piacentini et al. 2012), recycling (Chatzidakis et al. 2004), and unsustainable consumption (Fukukawa et al. 2019; McCormack and Chowdhury 2024). But the investigation of neutralization theory is still limited in the field of food waste research, and this study supplements the literature. Coşkun and Filimonau (2021) have given evidence that two neutralization techniques, i.e., appeal to higher loyalties and denial of responsibility, lead to more out-of-home food waste behaviour, yet the study did not show how the neutralization techniques influence individuals' moral norms and food waste intentions, and at which stage.

In this study, we extend the NAM by integrating neutralization theory, incorporating a broader range of neutralization techniques as deactivators of moral norms. Noting the debate as to whether neutralization of behaviour occurs prior to the act (ex-ante) or following the offense (ex-post) (Hamlin 1988; Harris and Dumas 2009; Kaptein and Van Helvoort 2019; Schwartz 1973), we propose and test a temporal model in which neutralization occurs prior to the formation of moral norms, which subsequently influence food waste intentions. By doing so, this study offers three novel contributions.

First, it develops and tests an extended, temporally structured NAM, enriched by neutralization theory, to examine household food waste. In doing so, it addresses a call from scholars to explore the role of unconscious, psychological influences on food waste (Boulet et al. 2021a) and adds to research on the moral underpinnings of deviant consumer behaviour and the mechanisms of moral disengagement (Victor et al. 2024). Our work uses PLS-SEM modeling, which is important given the paucity of quantitative studies dedicated to neutralization theory (Fukukawa et al. 2019). Second, this study includes different types of neutralisation techniques in the model and investigates which ones are most salient, thereby offering deeper insights into the role of neutralisation in influencing food waste. Third, the study presents a new conceptualisation of household food waste intentions, contributing to consumer research on sustainable and ethical behaviours (e.g., Dobernig and Schanes 2019; Elhoushy and Jang 2023; Giordano et al. 2019; Porpino et al. 2015; Van Lin et al. 2023). Finally, the study concludes with recommendations for the types of food waste interventions best suited to households in the United Kingdom and in other similar markets, while examining the influence of demographics on neutralisations to better inform targeted marketing communication strategies.

2 | Literature Review

This section offers a review of the two primary theories underlying this study and outlines our approach to integrating them into a temporal model that explains intentions related to food waste avoidance.

2.1 | Norm Activation Model (NAM)

NAM, advanced by Schwartz (1973), was originally used to explain prosocial and altruistic behaviour, but its usefulness in interpreting pro-environmental behaviours, such as reducing

food waste, was quickly acknowledged. Scholars have advanced our understanding of food waste (e.g., Wang et al. 2022; Obuobi et al. 2024) and environmental protection behaviours (e.g., van Valkengoed et al. 2022) by drawing upon the NAM. Over time, the NAM model has been extended with other theories, and its explanatory power has increased. For example, Shin et al. (2018) integrated the theory of planned behaviour with NAM to explore purchase intentions in the organic restaurant sector. Other scholars extended or modified NAM by identifying more activators of personal norms, such as self-efficacy (Wang et al. 2022) and the awareness of benefits (Obuobi et al. 2024).

In the food waste context, research shows that conflicting motives or reasonings (Roodhuyzen et al. 2017), such as the value placed on being a "good provider" (Aschemann-Witzel et al. 2020), are strong enough to take precedence over established norms (i.e., respect for food), convincing people that throwing away food does not violate their moral standards. Food waste is therefore a context in which neutralisation theory can be legitimately tested (Sykes and Matza 1957), since it refers to the techniques that deactivate moral norms, enable people to defend unethical behaviours, and avoid social or self-blame.

2.2 | Neutralisation Theory

Neutralisation theory has its origins in criminology where it is posited that juvenile delinquents apply several techniques to suppress their "inner voices" and reduce social controls (Sykes and Matza 1957). According to Strutton et al. (1994, 254), these techniques are "learned and socially reinforced responses to make one's inappropriate behaviour appear acceptable or excusable" and they reduce self-blame. This does not mean that people disassociate themselves from what is socially acceptable; rather they use these mechanisms to justify their behaviour.

Following Maruna and Copes (2005), we are situating neutralization techniques as part of the narrative process through which individuals make meaning out of their lives, in our context, justifications for food waste. The five techniques are: (1) denial of responsibility, when people justify their actions as being beyond their control or being forced to do something. This is similar to one of the constructs in the original NAM model, ascribing or denying responsibility to the self, which is an (de)activator of moral norms (Schwartz 1973); (2) denial of injury, when people realize that their behavior is inappropriate but assert that no real harm to anyone is done. This aligns with the other (de)activator of moral norms, awareness of consequences, in the NAM model (Schwartz 1973); (3) condemning the condemners, when the attention is directed against those who disapprove of the specific behavior; (4) appeal to higher loyalties, when people justify their behavior based on other moral obligations such as group belonging or caring for others; (5) denial of victim, which means the victim is transformed into someone who deserves the injury, and may arise if the victim is unknown or abstract. Table 1 summarizes key studies on food waste that could potentially be related to neutralization theory, although the authors do not use the neutralization frame in their theoretical frameworks.

As we demonstrate below, we focus on all neutralisation techniques apart from the denial of the victim since there is no identifiable victim in the scenario of household food waste. The "identifiable victim" concept shows that an empathetic response is evoked when a victim is identifiable (Jenni and Loewenstein 1997). In the context of food waste, injury occurs to nature and to humanity (Zepeda and Balaine 2017), but it is difficult to apply the denial of victim construct, which means arguing that the victim has done something wrong and does not deserve to be labelled a victim, and thus is deserving of punishment, revenge or retaliation (Gruber and Schlegelmilch 2014).

2.3 | Integrating Neutralization Theory Into NAM for a Temporal Model

There is a debate as to whether neutralization of behaviour occurs prior to the act (ex-ante) or following the offense (ex-post) (Hamlin 1988; Harris and Dumas 2009; Kaptein and Van Helvoort 2019). In this study, we argue for a temporal, extended model, where neutralization is employed before the moral formulation.

Rest (1986) proposed a four-component model to explain ethical or moral decision-making and he outlined four stages that individuals go through, which are (1) awareness of the moral issue, (2) making a moral judgment, (3) motivation, and (4) action. Based on this model, cognitions and emotions interact when making a moral judgement; an individual examines a social situation, determines possible courses of action, identifies the most moral course of action, and then needs perseverance and resolve to act morally (You and Bebeau 2013). In a similar vein, Bandura (1996, 335) argued that moral disengagement precedes unethical behaviour, stating that "people do not ordinarily engage in reprehensible conduct until they have justified to themselves the rightness of their actions". Fukukawa et al. (2019, 140) noted that individuals "rehearse a set of rationalizations, helping them to deal with guilty feelings". Detert et al. (2008) speculates that a level of conscious thought is involved in moral disengagement, and it can mute moral reasoning. These studies suggest that an individual typically engage in some internal conversation, finding some reasons to justify the (in)appropriateness of an action, before making a moral judgement. Therefore, we situate neutralisation before moral norms, which further shape food waste intentions. The conceptual model is presented in Figure 1.

3 | Research Model and Hypotheses

3.1 | Denial of Responsibility

A common neutralisation technique is "denial of responsibility", which describes how individuals dissipate guilt by shifting responsibility for their behaviour away from themselves (Chatzidakis et al. 2007). It occurs when an individual denies their responsibility to conform with moral or social obligations due to extenuating circumstances (Schwartz and Howard 1984). It captures a lack of self-control, or a lack of capabilities or knowledge so individuals can tamper with responsibility through referring to factors outside their control, such as a lack of time and the social context of life (Kaptein and Van Helvoort 2019). One of such extenuating circumstances is that individuals may believe that they have no control over food waste due to the behaviour of others in the home (Boulet

TABLE 1 | Potential links to neutralisation theory in the context of food waste: summary of literature.

Neutralization techniques	Description of the technique	How neutralisation could potentially be used in a food waste context	Food waste studies
Denial of responsibility	People justify their actions as being beyond their control, having limited options or being forced to do something.	I have no choice but to waste food since it is not edible/safe to eat/fresh/healthy. I am lacking in capabilities.	The taste and healthiness of food (van Geffen et al. 2020b). Food safety and freshness (Qi and Roe 2016; Neff et al. 2015a). Poor cooking skills, poor use of leftovers (Haque et al. 2022; Roodhuyzen et al. 2017). Lack of capabilities across the customer's food waste journey (Block et al. 2016; Principato et al. 2021; Quested et al. 2013; Romani et al. 2018; Secondi et al. 2015). Poor shopping and storage routines (Dobernig and Schanes 2019) Consumers' poor abilities in meal planning, efficient cooking, food inventory management, interpreting expiry dates, and food storage (Aloysius et al. 2025). Eating healthy, safe, and tasty food (Aloysius et al. 2025; Seo and Yoon 2022). Disgust from eating food past the best-before date (Koch et al. 2023).
Appeal to higher loyalties	People justify their behaviours based on higher goals, such as group obligations and caring for others.	It is more important to take care of my family and my guests than to avoid wasting food.	Good provider norms (Aschemann-Witzel et al. 2015; Barone et al. 2019; Evans 2012; Graham-Rowe et al. 2014; Visschers et al. 2016).
Denial of injury	People realise that their behaviour is inappropriate but assert that no real harm is done to anyone.	Generating food waste does not harm others. There are more serious problems to solve.	Restricted knowledge, lack of awareness or a low level of concern regarding adverse environmental impacts (Roodhuyzen et al. 2017; Neff et al. 2015a).
Condemning the condemners	The immorality of the accuser is highlighted, and attention is directed against those who disapprove of the behaviour.	It is the people who condemn us that are the real problem, and their wrongdoing excuses our bad behaviour.	Retail practices that exacerbate food waste, i.e., large packages, food offered close to its expiry date, discounted food (Koivupuro et al. 2012; Roodhuyzen et al. 2017). Deal-prone shopping (Giordano et al. 2019).
Denial of victim	Dehumanising the victim, victim blaming when victims are perceived to act improperly. Denial of victim if the victim is unknown or abstract.	The victim is non-human and consequently human through the damage to the environment.	Waste of resources such as fertile land, water, fuel, fertiliser and other inputs needed to produce food, that increases greenhouse gas emissions and indirectly leads to food insecurity (Zepeda and Balaine 2017; Halpern et al. 2022).

et al. 2021a). Studies show that while families with children are eager to reduce waste, they struggle with this goal (Borg et al. 2022; Boulet et al. 2021b; Nguyen et al. 2023); one reason is that children are finicky eaters, and their eating patterns are unpredictable (Tonini et al. 2023). Another reason is that consumers believe that some food waste is unavoidable to maintain the freshness of food (Qi and Roe 2016), taste and healthiness (Aloysius et al. 2025; Van Geffen et al. 2020a) or pleasure (Seo and Yoon 2022). Consumers

also use food safety laws as another reason to discard food and assert that it is something over which they have no control. Studies show that fear of illness and poor knowledge of expiry dates result in food waste (Neff et al. 2015a). Food waste often occurs since the prospect of eating food past its best-before date arouses disgust (Koch et al. 2023). Current explanations of wasteful behaviour draw heavily on the customer's food waste journey and highlight irresponsible food management practices (Ananda et al. 2021; Block et al. 2016; Haque et al. 2022; Principato et al. 2021; Romani et al. 2018). It is possible that people could use imperfect knowledge (e.g., poor knowledge of storing food) and lack of capabilities (e.g., poor cooking skills) as excuses to weaken moral norms and intentions to avert wasting food. These extenuating circumstances, due to personal needs and lack of knowledge and capability, could be embedded in a consumer's denial of responsibility, which then attenuates moral norms and intentions towards reducing food waste. The following hypothesis is proposed:

H1. *Denial of responsibility has a significant (negative) effect on moral norms.*

3.1.1 | Appeal to Higher Loyalties

Recent research has developed several classes of neutralizations, including distorting the facts, negating the norm and blaming the circumstances (Kaptein and Van Helvoort 2019). For instance, people can negate the norm by evoking another norm. This occurs when people accept that the norm is contravened but justify the unethical act by eliciting another, more prominent norm. This norm is aligned with the "appeal to higher loyalties" observed by Sykes and Matza (1957), where loyalty to a particular social group supersedes adherence to a broader societal norm. For instance, it is well documented that a good provider identity and strong hospitality norms, which refer to the need to care for, and look after the needs of one's loved ones and guests, is an explanation for food waste (Aschemann-Witzel et al. 2020; Barone et al. 2019; Evans 2012; Graham-Rowe et al. 2015; Porpino et al. 2016; Visschers et al. 2016; Wang et al. 2021). In Italy, individuals take pleasure in having a full fridge so they can care for family and guests, and such norms are positively correlated with an increase in servings (La Barbera et al. 2022). Food waste thus occurs because too much food is cooked to ensure that all family members' wishes and tastes are satisfied, and leftovers are thrown away (Aschemann-Witzel et al. 2015). Similar research shows that the appeal to higher loyalties predicts plate waste among Turkish consumers. For instance, people prioritise the well-being of their guests and reason that the celebratory aspects of the restaurant meal justify waste (Coşkun and Filimonau 2021). Thus, meeting the needs of a pertinent social group may supersede a personal norm linked to avoiding food waste. Mindful of these studies, we formulate the following hypothesis:

H2. *The appeal to higher loyalties has a significant (negative) effect on moral norms.*

3.1.2 | Denial of Injury

The third neutralisation technique that can liberate people from behaving morally is "denial of injury". This occurs when people realise that their actions are inappropriate but defend their actions on the basis that no one is really harmed (Sykes and Matza 1957). A similar defense mechanism posed by Schwartz and Howard (1981) is "denial of need" which reduces the perceived severity of the problem, weakens personal norms and justifies inaction.

Literature has reported that awareness of the severity of food waste activates moral norms to avoid food waste (Gjerris and Gaiani 2013). However, consumers may deny the severity of the food waste problem. This is because global problems such as food insecurity and world hunger might appear abstract and removed from daily life in a high-income country. The concept of psychological distance, that is, an individual's feeling that something is close or far away at that moment (Liberman et al. 2007), might explain people's tendency to lack empathy, disregard, or feel disengaged from global issues. The burden of food waste is well documented in the literature, yet some studies report that consumers fail to appreciate the gravity of the food waste issue (Ajina et al. 2024; Hebrok and Heidenstrøm 2019). A study in the US reports a lack of awareness among consumers of the environmental costs and scale of food waste (Neubig et al. 2020). Consumers fail to connect rotting food in landfill with methane emissions and there is a misguided belief that food waste is not a problem since it is natural and biodegradable (Graham-Rowe et al. 2014; McCarthy and Liu 2017; Watson and Meah 2012). In this context, consumers unintentionally activate the denial of injury technique. That is, consumers choose to deny that food waste is a severe matter that harms others or the environment; then moral norms may not be activated. Based on the aforementioned argument, the following hypothesis is presented:

H3. *The denial of injury has a significant (negative) effect on moral norms.*

3.1.3 | Condemnation of Condemners

"Condemning the condemners" is the fourth neutralisation technique (Sykes and Matza 1957). It is a counterattack and occurs when the attention is directed towards those who disapprove of the specific behaviour (i.e., "what are they doing?"). It is designed to deflect attention so that unethical behaviour is easily suppressed or "lost to view" (Sykes et al. 2013). Applied to the food waste context, consumers may disavow their responsibility to act ethically by assigning blame to other agents in the supply chain (Graham-Rowe et al. 2014; Nam 2020; Roe et al. 2020). Retailers have a singular position in the food industry and have the power to reduce food waste both upstream and downstream (Närvänen et al. 2023). For instance, price promotions at the retail level (Koivupuro et al. 2012; Roodhuyzen et al. 2017), leading to impulse buying (Redine et al. 2023) and deal-prone shopping (Giordano et al. 2019), contribute to food being thrown away in the home. Large packages can easily contribute to food waste (Quested et al. 2013), particularly in small or single-person households since the packages contain too much food (Halloran et al. 2014). Therefore, consumers might blame food manufacturers or retailers for not offering better packaging options. Coşkun and Filimonau (2021) found that this neutralisation technique explains plate waste as people feel

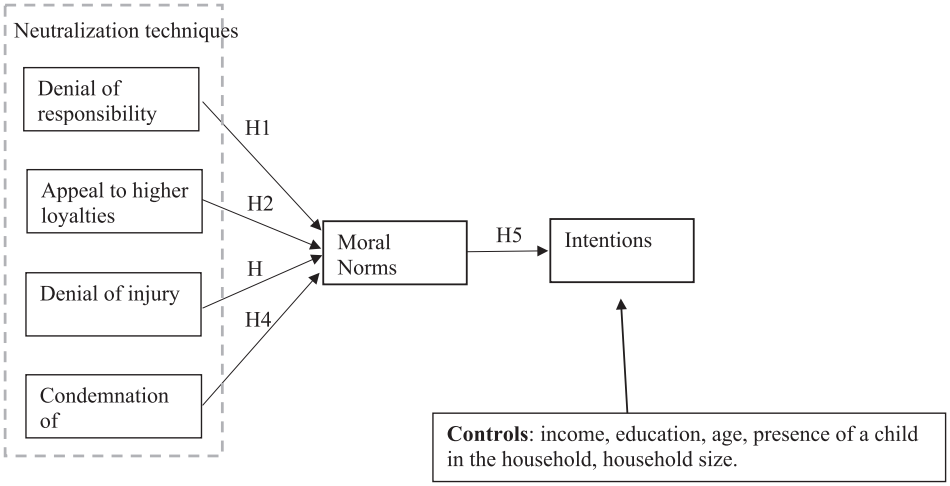

FIGURE 1 | A temporal, extended NAM with neutralization techniques.

it is the task of restaurants and the government to mitigate food waste in the food service sector. Accordingly, the following hypothesis is proposed:

H4. *The condemnation of condemners has a significant (negative) effect on moral norms.*

3.1.4 | Moral Norms and Intentions

Moral norms are conceived by Schwartz (1973) as rules of "good" and "bad" interpersonal relationships that are culturally grounded. People act in a moral way because they have strong principles and they wish to avoid causing harm to others or to the environment (Stern et al. 1999). Negative feelings occur when one's behaviour (or intentions) contradicts one's moral standards (Baumeister et al. 1994). So, moral norms are expected to motivate action, but findings are not conclusive. Early studies show that moral norms are significantly related to intentions to curb food waste (Stefan et al. 2013), although another study reported that moral norms do not significantly influence intentions (Stancu et al. 2016). Recent research shows a significant relationship between reduced food waste and the belief that wasting food is morally wrong (Bretter et al. 2023; Obuobi et al. 2024). Likewise, studies on USA and UK consumers reveal a relationship between moral norms and intentions to avoid food waste (Habib et al. 2023; Talwar et al. 2022;). Based on the literature, the following hypothesis is put forward:

H5. *Moral norms have a significant (positive) effect on intentions towards avoiding food waste.*

Combining H1–H5, we propose a mediation relationship where individuals engage in neutralization before forming their moral norms, rather than afterwards. This means that people think of excuses to justify food waste which then mitigates their moral norms and concerns about wasting food (H1–H4). Deactivation of moral norms will then reduce the intention to reduce food waste (H5). The mediation relationship is shown in Figure 1.

4 | Materials and Methods

4.1 | Survey Design and Data Collection

UK consumers were chosen because the country generates a high level of household food waste. An estimated 60% of waste comes from households and it is valued at over £17 billion a year (WRAP 2024). Before starting the study, ethical approval was sought and granted by the authors' Ethics Committees. Data was collected through a web-based panel, managed by Qualtrics, a market research company. This is a widely used method of data collection in management and consumption studies (Porter et al. 2019) and we followed the data screening conventions (i.e., monitoring completion time, engagement-test questions and straight lining) to ensure data quality (Arndt et al. 2022; Rahman et al. 2022). Survey participants were paid a small incentive administered by the panel platform. To get valid results, scholars emphasise the importance of addressing the normative scripts that a person might apply when considering unethical behaviour (Strutton et al. 1994), therefore the wording of the questions was designed in a way that participants reflect on their approach to food waste (e.g., please indicate the extent to which you agree with the following justifications of wasting food: it's not my fault, I have no other choice). We conducted offline piloting ($n = 3$) and online piloting ($n = 40$) using MTurkers (Hulland and Miller 2018) to identify questionnaire flaws and ensure content validity. For example, corrections were made to the wording of some instructions and to the presentation aspects of the survey (e.g., less content per page) The pilot participants had similar characteristics to the final sample. To avoid temporal bias, the survey was administered at an opportune time and care was taken to avoid holidays, such as Christmas, and other national events in the UK.

4.2 | Sampling and Measurement Scales

Inclusion criteria consisted of people who were responsible for food-related chores (e.g., shopping, paying for food, handling food waste) and who would be familiar with the amount of

food wasted within the household. Non-probability quota sampling was used in this study, which means that the population is divided into several subgroups, and the division is generally theoretically driven. Quota sampling enables a better coverage of the population of interest and increases the generalisability of the results (Futri et al. 2022; Sarstedt et al. 2018). Drawing from the literature, we identified subgroups based on the following factors: gender (Koivupuro et al. 2012; Secondi et al. 2015), income (Barrera and Hertel 2021; Stefan et al. 2013), educational level (Secondi et al. 2015) and households with or without children (Parizeau et al. 2015). Table 2 reports the definition of sub-groups. Exclusion criteria consisted of people under the age of 18 and people who were not responsible for food-related chores.

An explanation of food waste was given in the survey as "edible food and drink, raw or cooked (i.e., milk, rice, vegetables, fresh fruit, salads, meat, fish, eggs, etc.), that is thrown in the bin and it does not cover inedible food (i.e., vegetable peelings, eggshells, used tea bags, etc.)". The main part of the questionnaire covered neutralisation techniques and moral norms. The measurement scales were informed by the literature. For instance, the moral norms scale was informed by Steg and de Groot (2010) and Stefan et al. (2013), and denial of injury was drawn from Delley and Brunner (2017). The scales consisted of multiple-items on 7-point Likert scales, as recommended by Hair et al. (2022) for partial least squares structural equation modeling (PLS-SEM) based studies. A few items were dropped from the final model due to low reliability scores (see Table 3).

4.3 | Socio-Demographic Variables and Control Variables

Other than the main variables, the study included demographic variables such as income, education, age, presence of a child in the home, and household size in the model as control variables. Income was included since affluence is typically associated with food waste (Barrera and Hertel 2021; Mattar et al. 2018; Stancu et al. 2016; Stefan et al. 2013), although the relationship between income and food waste is complex, and studies reveal that low-income households can waste food when they overbuy poor-quality and low-priced foods (Li et al. 2021). Education was included since educational level is negatively associated with food waste (Boulet et al. 2021a). Age was included in the model since studies associate older age with food waste avoidance (Flanagan and Priyadarshini 2021) and emphasize generational differences surrounding food handling skills and attitudes towards waste (Karunasena et al. 2021; Tonini et al. 2023). Food waste is positively associated with household size (Boulet et al. 2021a) and households with children (Ananda et al. 2021; Borg et al. 2022; Neff et al. 2015b; Nguyen et al. 2023; Secondi et al. 2015; Tonini et al. 2023). Single-item constructs are suitable for measuring objective constructs such as demographic variables that are often used as controls in a study (Cheah et al. 2018). Thus, one control variable, presence of children, was measured by a dummy variable, 0 = no children and 1 = children. In addition, the literature suggests that the propensity to use neutralization techniques will vary depending on individual differences (e.g., locus of control) (Detert et al. 2008). As there is a history of relating demographics to ethical decision-making (Craft 2013), the inclusion of demographic factors is warranted. Tables A2 and A3 (Supporting Information section) describe the survey questions and show how the controls were operationalized in the model.

TABLE 2 | Definition of subgroups for quota sampling.

Variable	Subgroups
Age	Under 30, 31–59 and over 60; with a minimum 20% for each group
Household types	With children and without children; with a minimum 30% for each group
Economic background	Low social-economic status (SES), medium SES, high SES based on taxation cut-off points; with a minimum 20% for each group

4.4 | Data Cleaning, Sample Size, Data Analysis

Before undertaking data analysis, the dataset was cleaned to ensure accurate and complete responses for model estimation. Questionnaires were deemed invalid if people did not give their consent or if they failed to meet the screening standards. Outliers were checked. Cases were deleted if people completed the surveys too quickly and demonstrated "straight-line responses" (i.e., providing identical answers on several Likert-scale items). In cases where the percentage of missing values was quite large (i.e., more than 5% of the indicators), the responses were removed. After data cleaning, a total of 358 usable surveys (from an initial 370) were used for data analysis.

The minimum sample size requirement for PLS-SEM is the subject of much debate (Sarstedt et al. 2023). Following recent guidelines, the inverse square root method was applied, rather than the oft-cited but misunderstood "10 times rule" (Hair et al. 2022). This method uses the inverse square root of a sample's size for standard error estimation. It is simple to use although it leads to small overestimations (Kock and Hadaya 2018). The minimum sample size based on the smallest (significant) path coefficient was 197, thus the sample size is acceptable.

Data analysis consisted of PLS-SEM, using SmartPLS software, version 4. The main reasons for using PLS-SEM are as follows: the ability to test a complex model and perform moderation and mediation analyses; to undertake exploratory data analysis (i.e., to test neutralisation techniques) and to undertake out-of-sample prediction (Sarstedt et al. 2023). In addition, the PLS-SEM approach attains higher statistical power than covariance-based structural equation modelling (CB-SEM) when working with small sample sizes. PLS-SEM works well with non-normal data (which was not a problem in this study), whereas CB-SEM demands that the data have a normal distribution (Hair et al. 2022).

TABLE 3 | Measurement scales, construct reliability and validity tests.

Construct	Items	Outer loadings	Cronbach's alpha	rho_a	Composite reliability	Average variance extracted
Appeal to higher loyalties (Visschers et al. 2016)	It would be embarrassing to me if my guests ate all the food I had prepared for them. They would probably have liked to eat more.	0.872	0.659	0.661	0.854	0.746
	I regularly buy many fresh products although I know that not all of them will be eaten.	0.855				
	I like to provide a large variety of foods at shared mealtimes so that everyone can have something he or she likes	0.387				
	When I am expecting guests, I like to buy more food that is necessary because I am a generous host	0.403				
	I always have fresh products available to be prepared for unexpected guests or events.	0.391				
Condemnation of condemners (Sykes et al. 2013; Thøgersen 1999)	The individual citizen cannot do a lot about the growing problem of food waste volumes.	0.691	0.760	0.828	0.838	0.570
	My effort to reduce the food waste problem is useless because nobody else does anything.	0.850				
	It's their fault, if the food industry and/or government had made it easier to avoid food waste (i.e., selling smaller packages/portions), consumers would waste less food.	0.852				
	It's a joke to ask us to reduce food waste when the food industry wastes so much food and the government doesn't do anything to reverse this.	0.594				
Denial of injury (Delley and Brunner 2017)	Food waste is a big environmental issue (R).	0.910	0.833	0.854	0.922	0.856
	Food waste is an important social issue (e.g., world hunger) (R)	0.940				

(Continues)

TABLE 3 | (Continued)

Construct	Items	Outer loadings	Cronbach's alpha	rho_a	Composite reliability	Average variance extracted
Denial of responsibility (Chatzidakis et al. 2006)	It's not my fault, I have no other choice.	0.753	0.881	0.885	0.914	0.680
	Reducing my food waste does not make much of a difference.	0.796				
	For me, wasting food at a household level is justifiable.	0.860				
	I have many arguments to support why I waste food.	0.849				
	I have got reasons for wasting food.	0.859				
Intentions (van der Werf et al. 2019; Visschers et al. 2016)	I try to waste no food at all.	0.878	0.900	0.906	0.930	0.769
	I always try to eat purchased food.	0.894				
	I try to produce only very little food waste.	0.903				
	I aim to use all leftovers	0.831				
	I try to waste no food at all	0.410				
Moral norms (Stefan et al. 2013; Steg and de Groot 2010)	Throwing away food does not bother me (R).	0.926	0.880	0.895	0.926	0.806
	When I throw away food I don't feel guilty (R).	0.859				
	I don't feel bad when I waste food (R).	0.908				

Note: Items that were removed from the model are in italics. "R" indicates reverse coding.

4.5 | Common Method Bias

Common method bias is likely to occur when the independent and dependent variables are measured using the same survey and with similar response categories, such as Likert scales (MacKenzie and Podsakoff 2012). It may lead to the inflation or deflation of the path coefficients, potentially leading to type I (false positives) or type II errors (false negatives) (Kock 2015). Common method bias was addressed in this study using procedural and statistical remedies. In the survey design stage, several strategies were used, such as using reverse coded items, ensuring that scale items were clear, clarifying the purpose of the research, and giving clear instructions to participants. Using Harman's single-factor test, the total variance extracted by one factor was 43%, which was a satisfactory result. The variance inflation factors (VIF) were also checked, and since all values were lower than 3.3 (Kock 2015), common method bias was not a major concern. We also applied the marker variable technique (Williams et al. 2010) to test for bias. Specifically, we introduced a marker variable, face consciousness, which showed no significant correlation with the other main variables in the model, as specified in the literature (Podsakoff et al. 2003). After running the model with the marker variable, the path coefficients did not alter too much, and the *p*-values for the substantive constructs were still significant, reducing concerns about common method bias. The results are provided as supplementary data (Table A1).

5 | Results

5.1 | Summary of Sample and Descriptive Analyses

The sample demographics are included as supplementary data (Table A2). There was an equal representation of males and females in the sample. The sample was diverse in terms of age, income, education, and work situation. A third of the sample was aged 60 years and over, and a quarter were in the 21–29 age categories. The majority (69%) of respondents earned under £50,000 per annum. Less than half of the sample (44%) were employed full-time. In relation to educational level, 24% of the sample had a bachelor's degree, and 30% had a secondary school certificate. The most common type of household was a two-person household (32%) and 16% of the sample had a young child in the household. The summary data for the variables (i.e., mean, median, kurtosis, etc.) are reported in the supplementary data section (Table A3).

5.2 | Evaluation of the Measurement Model: Reliability and Validity Analysis

The PLS-SEM process generally follows a two-step process, where firstly, the outer measurement model is assessed and secondly, the inner structural model is assessed (Hair et al. 2022). A reflective measurement model was chosen, which means that reflective indicators are exchangeable and the deletion of one or more scale items does not change the essential character of the construct (Hair et al. 2022).

Table 3 displays the findings relating to validity and reliability, as well as the measurement scales. Cronbach's Alpha values were above or close to the recommended value of 0.7 (Hair et al. 2022) and all were above the cut-off level of 0.6 (Loewenthal and Lewis 2020). The rho_A value was also within the recommended range, i.e., higher than 0.7 and less than 1. Convergent validity refers to how closely the scale is related to other variables and to other measures of the same construct. Convergent validity was explored using two parameters: average variance extracted (AVE) and composite reliability (CR). The composite reliability values exceeded the threshold value of 0.7, and the average variance extracted (AVE) values surpassed the threshold value of 0.5 (Bagozzi and Yi 2012).

The outer (factor) loadings, which are defined as the correlations between a construct and the indicators that measure it, were checked. A well-known guideline is that loadings should be 0.7 or higher, and only one item (0.59) did not meet this threshold. This item was not deleted since researchers are advised to consider whether the removal of an item is justified and what its implications are for the reliability and validity of the scale. Hair et al. (2022) state that indicators with very low outer loadings (<0.40) should always be deleted, and this guideline was followed.

Discriminant validity means that the construct should not correlate with dissimilar, unrelated constructs. The Fornell-Larcker criterion is traditionally used to assess discriminant validity in PLS-SEM, although scholars cast doubt on its efficacy (Sarstedt et al. 2023). Therefore, the heterotrait-monotrait (HTMT) criterion was used as the main check for discriminant validity. Table 4 presents the results. In this study, the values are not close to 1, and all are below the recommended threshold of 0.85 or 0.90 for constructs that are conceptually similar (Benitez et al. 2020).

5.3 | Usage of Neutralization Techniques Across Demographic Groups

As shown in Table 5, the most commonly adopted neutralization technique is condemnation of condemners, while denial of injury is used the least. When analyzing differences according to demographics, the employed participants use the appeal to higher loyalties and the denial of responsibility techniques more than the unemployed. The low income group uses the condemnation of condemners technique more than the high income group. Younger people (below the median age) are more inclined to use the appeal to higher loyalties, condemnation of condemners, and denial of responsibility techniques than their older counterparts.

5.4 | Evaluation of the Structural Model and Hypotheses Testing

The bootstrapping procedure, with 5000 subsamples, was used to determine if any of the relationships in the model were significant. Table 6 shows the results of the path analysis, the hypotheses

TABLE 4 | Discriminant validity (the HTMT test).

	Appeal to higher loyalties	Condemnation of condemners	Denial of injury	Denial of responsibility	Intentions	Moral norms
Appeal to higher loyalties						
Condemnation of condemners	0.655					
Denial of injury	0.140	0.226				
Denial of responsibility	0.896	0.836	0.340			
Intentions	0.550	0.242	0.438	0.498		
Moral norms	0.733	0.721	0.296	0.865	0.443	

testing for direct effects, along with multi-collinearity statistics (VIF) and f^2 values. As shown in Table 6, denial of responsibility negatively influences moral norms, and the effect size is medium to strong. Condemnation of condemners has a negative effect on moral norms. Denial of injury is negatively related to moral norms but is not significant at the 5% level. Appeal to higher loyalties does not show a significant relationship with moral norms. Moral norms have a positive effect on intentions, and the effect size is medium. Analysis of the path coefficients and the *t*-values shows that the strongest relationship is found between denial of responsibility and moral norms ($t = 8.502$). In relation to the demographic variables, age is significant and is positively related to intentions to avoid food waste.

5.5 | Additional Tests: Model Fit, in-Sample and out-Of-Sample Prediction

Additional tests were conducted to evaluate the results. Model fit in structural models is typically assessed using the standardized root mean square residual (SRMR) criteria. When applying covariance-based structural equation models (CB-SEM), a cut-off value close to 0.08 for SRMR indicates a good fit and results in lower Type II error rates (Hu and Bentler 1999). In this study, the SRMR value was 0.06 (saturated model) and 0.08 (estimated model) which indicates a good fit. Yet, it must be noted that there is an on-going debate as to whether model fit is meaningful in the PLS-SEM model (Shela et al. 2023).

The guidelines for satisfactory R^2 values vary depending on the research discipline and the complexity of the model, but R^2 values of 0.20 are seen as high for disciplines such as consumer behaviour (Hair et al. 2022). The results show that the moral norms construct has a strong R^2 value, notably 0.61, and the R^2 value for intentions is 0.20. In other words, the model explains 61% of the variance in moral norms and 20% of the variance in intentions. The out-of-sample predictive power of the path model was evaluated. The Q^2 values for the endogenous constructs were above zero, so predictive relevance was established. Next, the root mean square error (RMSE) values were compared with the linear regression (LM) values, and medium predictive power was established.

5.6 | Alternative Models

Comparing alternative models makes sense when researchers are building bridges across related streams of inquiry (Hair et al. 2022). Various studies report that demographic variables influence food waste and intentions to avoid waste (Ananda et al. 2021; Tonini et al. 2023). Research also shows that the propensity to use neutralisations depends on age and gender (Detert et al. 2008). As a result, in this study, we performed alternative PLS-SEM models to determine if any of the demographic variables (income, household size, age and education) moderate the relationship between the various neutralisation techniques and intention to avoid food waste. The results showed that age is a moderator of one neutralisation technique (see Table A4 in the supplementary data section), but the other variables are not significant. Age significantly weakens the negative relationship between denial of responsibility and moral norms; in other words, denial plays a smaller role in the deactivation of moral norms for older adults than it does for younger adults. This result is interesting. Multi-group analysis was used to test the moderation effect of a child in the household, due to the binary nature of the variable. The analysis did not reveal significant differences in the path coefficients of the main model based on the presence of a child in the household. The parsimonious model, reported in this paper, was favoured over a more complex model, and its selection was based on theory validation, i.e., neutralisation has an indirect effect on intentions and mediation through moral norms is evident.

6 | Discussion, Theoretical Contributions and Practical Implications

6.1 | Discussion

This study develops and tests a neutralisation model to explain household food waste. This approach is important since interventions designed to curb food waste may be less effective in the presence of defense mechanisms. This study contributes to the scarce literature on neutralisation by testing a temporal model and revealing mediation through moral norms.

TABLE 5 | Usage of neutralization techniques across demographic groups.

	All	Employed	Unemployed	*p*
Appeal to higher loyalties	3.57	**3.75**	3.32	**0.001**
Condemnation of condemners	3.75	3.75	3.75	0.486
Denial of responsibility	3.16	**3.26**	3.02	**0.039**
Denial of injury	2.86	2.85	2.89	0.390
	All	**Degree and above**	**No degree**	
Appeal to higher loyalties	3.57	3.48	3.63	0.148
Condemnation of condemners	3.75	3.73	3.76	0.426
Denial of responsibility	3.16	3.10	3.20	0.240
Denial of injury	2.86	2.82	2.89	0.310
	All	**High income**	**Low income**	
Appeal to higher loyalties	3.57	3.50	3.62	0.196
Condemnation of condemners	3.75	3.61	**3.85**	**0.035**
Denial of responsibility	3.16	3.12	3.19	0.308
Denial of injury	2.86	2.87	2.86	0.457
	All	**Male**	**Female**	
Appeal to higher loyalties	3.57	3.58	3.57	0.492
Condemnation of condemners	3.75	3.77	3.73	0.403
Denial of responsibility	3.16	3.16	3.16	0.493
Denial of injury	2.86	2.82	2.90	0.277
	All	**Below median age**	**Above median age**	
Appeal to higher loyalties	3.57	**4.00**	3.17	**0.000**
Condemnation of condemners	3.75	**4.06**	3.46	**0.000**
Denial of responsibility	3.16	**3.60**	2.75	**0.000**
Denial of injury	2.86	2.90	2.83	0.282

Note: Employed refers to participants with a full-time or part-time job. High income captures economic social status > median and low income captures economic social status < median. *P* values, in bold, are based on the *t*-test of the group means.

The results show pathways between neutralisation and moral norms, and this is aligned with the "defensive denial" mechanism that could suppress ascription of responsibility and deactivate moral norms in the norm-activation model (Schwartz and Howard 1984). As noted by Sykes and Matza (1957), people do not reject prevailing moral standards; instead, they accept them while simultaneously creating justifications for their incongruent behaviour. Out of the four neutralisation techniques tested, two tactics are evoked and the most powerful tactic is denial of responsibility, where people blame circumstances outside their control to disavow their responsibility (Cohen-Rimer and Dagan 2023; Coşkun and Filimonau 2021; Uba and Chatzidakis 2016).

The second prominent tactic is condemnation of condemners. People use this technique to blame the government and the food industry for not doing enough and for not providing viable packaging options. Our findings align with previous research showing how neutralisation techniques deactivate moral norms. For example, Hansmann and Binder (2021) show that justifications weaken intentions to reduce flights, thus enabling people to depart from their personal norms and avoid incurring self- or social blame for persisting with harmful mobility habits. Gruber and Schlegelmilch (2014) provide evidence that neutralisation theory explains why consumers do not consider sustainability in purchase decisions and it helps consumers cope with the guilt of ethically questionable behaviour (Fukukawa et al. 2019). The findings are also aligned with studies in other disciplines, such as a study correlating neutralisation techniques with justification of cybercrime (Chua and Holt 2016).

The hypothesis that the appeal to higher loyalties would negatively influence moral norms was not confirmed. This finding contradicts prior research highlighting good provider norms and the need to be perceived positively in social settings (Aschemann-Witzel et al. 2020; Barone et al. 2019; Graham-Rowe et al. 2015). In this study, meeting the needs of family members and guests does not take precedence over moral norms to avoid waste. The

TABLE 6 | Model: structural estimates and hypotheses testing for food waste.

Path: IV to DV	Path coefficients β	SD	p	CI lower (2.5%)	CI upper (97.5%)	VIF (inner)	f-square
Appeal to higher loyalties→ Moral norms	−0.079	0.052	0.129	−0.181	0.023	1.917	0.008
Condemnation of condemners→ Moral norms	−0.177	0.061	**0.004**	−0.301	−0.061	2.214	0.036
Denial of injury → Moral norms	−0.060	0.034	0.078	−0.008	0.124	1.134	0.008
Denial of responsibility → Moral norms	−0.567	0.067	**0.000**	−0.694	−0.436	3.395	0.243
Moral norms →Intentions	0.400	0.057	**0.000**	0.286	0.506	1.000	0.154
Age → Intentions	0.117	0.056	**0.036**	0.007	0.229	1.310	0.013
Child →Intentions	−0.194	0.109	0.075	−0.404	0.020	1.178	0.009
Education →Intentions	0.030	0.050	0.539	−0.066	0.128	1.143	0.001
Household size → Intentions	−0.057	0.056	0.301	−0.171	0.046	1.230	0.003
Income →Intentions	0.011	0.054	0.836	−0.096	0.119	1.230	0.000

Note: The critical T values around 1.65, 1.96, and 2.57 are considered with the significance level of 10%, 5%, and 1% respectively. Values in bold refer to significance, $p < 0.05$. The VIF values are < 3 or are not > 5, indicating no collinearity issues. The effect size (f^2) of 0.02 (small), 0.15 (medium) and 0.35 (large) are considered.

non-significant finding may be the result of a high sensitivity to food waste, or it might be explained by counter-neutralisations that weaken neutralisation and help affirm commitment to positive behaviour (Uba and Chatzidakis 2016). For instance, being a good parent may mean acting as a role model and pressing upon children the need to avoid food waste rather than seeking excuses to discard food. Being a good host may mean sharing excess food and encouraging guests to take leftovers home rather than blaming guests for food waste. An alternative explanation could be attributed to the UK sample used in this study. The UK is classified as an individualistic culture (Morkunas et al. 2024) and scholars suggest that cultural norms in individualistic countries may counter tendencies to over-provide for guests and children (Wang et al. 2021).

The hypothesis that denial of injury would influence moral norms was not supported. This finding is not unexpected given the inconsistent findings in the literature. It is reported that awareness of the social problems linked to food waste, such as famine and food insecurity (Obuobi et al. 2024), as well as awareness of the environmental consequences of food waste (Melbye et al. 2017), shapes attitudes and arouses moral concern. Yet other scholars report that awareness does not have a significant effect on personal norms to reduce food waste in the out-of-home context (Iriyadi et al. 2023). Our descriptive findings show that people agree that food waste has an injurious effect on society, and the mean of denial of injury is lower than 3 (out of 7). One reason for this finding is the tendency of people to project a favourable image of being environmentally responsible due to social pressure. Yet, this "acknowledgement" of the food waste problem does not affect moral norms, probably because the problem is too far away from a person's direct experience in terms of time, space and social distance (Trope and Liberman 2010). For example, preparing meals and caring for the family are given greater priority in day-to-day decision-making than global problems which seem more distant (Graham-Rowe et al. 2014).

The hypothesis that moral norms would positively influence intentions towards food waste avoidance was confirmed. In the literature, moral attitudes and the desire to avoid feeling guilty are commonly reported motives for not wasting food (Neubig et al. 2020; Qi and Roe 2016; Schanes et al. 2018; Talwar et al. 2022; Visschers et al. 2016). It must be noted that a relatively low R^2 value was obtained for intentions to avoid food waste. This could be explained by the non-inclusion of other variables in the model that explain food waste, notably planning, shopping, cooking, and storage routines (Principato et al. 2021; Quested et al. 2011).

In relation to demographics, the analysis shows that age is significantly and positively related to intentions, confirming research that associates older age with food waste avoidance (Flanagan and Priyadarshini 2021), which is attributed to sound food management skills and poor attitudes towards waste (Karunasena et al. 2021; Tonini et al. 2023). The alternative model further shows that age weakens the negative relationship of denial of responsibility and moral norms. Such a result suggests that denial of responsibility suppresses moral norms more for younger people than for older ones. Perhaps older adults are aware of their internal dialogues and are not inclined to shirk responsibility, while younger ones tend to use various excuses to justify their inability to fulfill their food-related responsibilities. This is an interesting finding, as it highlights the need to equip younger consumers with the skills and the knowledge to handle food waste and take responsibility for extenuating circumstances, thereby reducing their tendency to deny responsibility. Finally, the t-tests showed significant differences between groups and their use of particular neutralisation techniques based on age, income, and employment. Early research suggests that greater

ethical intentions are associated with increased age, employment, and work experience (Craft 2013), although a recent study reports a non-significant effect for age on moral disengagement (McCormack and Chowdhury 2024).

6.2 | Theoretical Contributions

It is well documented that food-related skills and competencies must be strengthened to reduce food waste (Aloysius et al. 2025; Van Geffen et al. 2020a), yet food waste scholars rarely apply neutralization theory to shed light on the subconscious processes that prevent change from occurring. People rarely plan to buy large amounts of food, only to then throw it away, so ability-enhancing tools may not be highly effective if consumers neutralize their moral norms to reduce their unease stemming from throwing away food. This study, thus, makes three main contributions.

This study first develops and tests a new model to explain household food waste from a moral perspective (Evans 2012; Graham-Rowe et al. 2015; Obuobi et al. 2024; Ramos et al. 2024), using neutralisation theory and the NAM as the theoretical lens. Through this process, it contributes to the current understanding of the ethical and sustainable behaviour of food waste and at the same time contributes to NAM theory. Second, the role of moral norms in influencing food waste is still under debate: some scholars show that food waste does not arouse strong moral, guilt-related feelings among consumers (Stancu et al. 2016) and other scholars report that people who believe that food waste is unethical waste food less frequently (Misiak et al. 2020), and moral norms have a significant effect on intentions to avoid food waste (Obuobi et al. 2024; Talwar et al. 2022). To help resolve this debate, a new temporal, extended NAM model is developed to explain how people negotiate moral issues. According to this new model, food waste decisions are influenced by inherent moral norms; however, these are often suppressed due to internal cognitive processes that are called neutralisation techniques, and as a result, people do not behave in a socially acceptable manner. Finally, this study identifies the primary neutralisation techniques that are evoked in the household food waste context: condemnation of condemners and denial of responsibility, thereby advancing household food waste literature using neutralisation theory.

6.3 | Implications for Policy and Practice

By identifying salient neutralisations, this research has profound implications for policymakers and practitioners who wish to reduce household food waste, contribute to climate change mitigation efforts, and address the Sustainable Development Goals (United Nations 2015). An advantage of applying neutralisation theory to food waste is its ability to pinpoint areas in which positive behavioural change can be promoted (Maruna and Copes 2005). Campaign planners should be aware that the activation of neutralisation techniques helps normalise food waste, and this could offset the gains from promoting food management skills. At the same time, our findings suggest that not all neutralisation techniques have the same relationship with moral norms, so the identification of dominant techniques can pinpoint areas for interventions.

Since condemnation of condemners and denial of responsibility are significant deactivators of moral norms, social marketing should address these two excuses. For example, to address condemnation, communication campaigns could employ the language of the condemner (i.e., "they waste food all the time") and use examples so that cynicism is challenged, and people can recognise their own patterns of behaviour. The assumption that the government and the food industry are not doing enough could be addressed through more explicit work from these actors, and by ensuring that consumers can buy food in small amounts or small packages. The government could work with food manufacturers and retailers and ensure that there is accountability and oversight of food waste reduction pledges. Publicity around successful outcomes could reduce a consumer's propensity to use neutralisation techniques. Industry stakeholders could ensure that their plans are credible and trustworthy by securing third party validation of outcomes, or endorsement by trusted actors, such as food rescue charities. From the retailer's perspective, scholars argue that promotional practices could trigger concern for food waste and encourage waste prevention in the home, such as by freezing food (Van Lin et al. 2023). Correspondingly, to show their responsibility, the retailers could deliver such educational message as "each package is suitable for a two person meal", "buy one, freeze one" when using a sales promotion strategy; or adopt an innovative promotional strategy such as "buy one and get another one later". This could de-neutralise the condemnation of condemners technique where consumers condemn other actors as being hypocritical or blame them for food waste.

To address denial of responsibility (i.e., the assumption that food waste is outside one's control) policy makers and practitioners could stress that food waste is preventable, share information on effective ways to reduce household food waste, and demonstrate how even small steps can have a disproportionate effect on food conservation, which is so vital for people and the planet. It is critical to make people aware of their "internal dialogues", excuses and self-deceptions (Chatzidakis et al. 2006), particularly for younger consumers.

Denial of injury was not significant in deactivating moral norms, contrary to our expectations, and this non-significant result has implications for practitioners. People are unlikely to use this defense mechanism and deny that food waste is a problem. Thus, policymakers and practitioners can draw attention to the injurious effects of food waste without risking a backlash from consumers.

The significant relationship between moral norms and intentions supports communications that evoke moral judgements and that remind people of the intrinsic value of food. Thus, marketing communications could position food as a gift that comes from nature and use normative appeals with statements such as "it's wrong to waste food, show respect for Mother Nature". However, the source of the marketing communications must be carefully selected, for example, food banks and charities, instead of food manufacturers who could activate consumers' use of the condemnation of condemners technique.

The descriptive findings related to demographics are relevant to marketing communications. One de-neutralisation tool is to construct realistic advertising scenarios of households dealing with food waste to reveal moral blind-spots. For example, a relatively young, employed member of the household could be depicted putting the leftovers in the bin and making excuses for this behaviour, which are then countered by another household member. Moreover, food waste campaign posters in office areas and public transportation hubs—locations frequently visited by employed individuals—could include messages that reinterpret the appeal to higher loyalties, such as "Be a role model for our children by reducing food waste". Workplace training programs could offer guidelines on storing and cooking food to minimize waste in the home, addressing the denial of responsibility technique. Food service providers, such as supermarket and food stores, could consider offering more appropriately sized packages to better suit the needs of different households. This approach could help mitigate the use of the condemnation of condemners technique.

7 | Limitations and Future Research Directions

This study has limitations which could be addressed in future research (Paul 2024). First, quota sampling based on different demographic groups did not account for variables like regional variation or urban versus rural households, which could influence shopping patterns and thus food waste. Further research is needed to explain how such variables interact with neutralisation techniques. Second, the data were collected in the summer, when more fresh food is wasted than in winter due to its perishable nature (Roodhuyzen et al. 2017), so seasonality might have affected responses. Therefore, future studies should consider seasonal variations during the data collection process. Third, the "denial of victim" construct was excluded from the model due to the challenge of identifying a clear victim within the food waste context. Previously, other studies have adapted Sykes and Matza's (1957) framework by omitting certain techniques to better fit their research context (e.g., Liu et al. 2021; Siponen et al. 2020; Tan and Chang 2024; Yang et al. 2022; Zhang et al. 2018). Nevertheless, this can be considered a limitation and therefore, future qualitative, exploratory studies could be useful in identifying a victim when it comes to food waste and developing a meaningful construct for further testing. Fourth, the predictive power of the model is medium. While recognizing the inherent trade-offs between predictive power and model fit in SEM (Preacher 2006), future studies could explore model refinements to help strengthen predictive power. Lastly, this study captures people's intentions to avoid food waste and not actual behaviour. It has been postulated that intentions often lead to behaviour (Ajzen 1991; Hunt and Vitell 1986; Rozenkowska 2023). Particularly in the food waste context, scholars have found a strong correlation between intentions and behaviours (van der Werf et al. 2019; Visschers et al. 2016). However, literature also suggests that there is an attitude-behaviour gap (Falcão and Roseira 2022; Szmigin et al. 2009), which means that certain value orientations and beliefs or intentions about protecting the environment do not always result in sustainable behaviours. In addition, the measurement of intention to avoid food waste is based on survey data, which could be subject to social desirability bias (Elhoushy and Jang 2023). As a result, future studies could further look at the impact of moral norms depressed by neutralization techniques on actual food waste behaviour. Actual food waste behaviour could be measured using observational methods (i.e., physical waste-sorting audits, apps on smart phones, weight-monitoring devices attached to compost bins, diaries) (Giordano et al. 2018) to avoid the social desirability bias (Elhoushy and Jang 2023).

In addition, the findings provide a basis for developing more research in the future. Our results have shown a sequential model where consumers apply neutralization techniques before formulating their moral norms. Based on this model, it could be interesting to adopt an experimental approach and examine if some interventions or campaigns, for example, interventions that encourage goal setting and goal striving (Van Geffen et al. 2020a), or various advertising messages (MacInnis and Jaworski 1989), could help mitigate the use of certain neutralization techniques, which help enhance consumers' moral norms and reduce their food waste. The intervention could also be examined at the supply chain stage, for example, whether the adjustment of a retailer's sales tactics, such as packaging size or promotional approach (Van Lin et al. 2023), could suppress or trigger the use of certain neutralization techniques.

This model can also be extended to find out the antecedents of neutralization techniques. One possible antecedent of choosing one neutralization technique over another could be personal traits. For example, scholars have observed that impulse buying, spurred by the business models of marketers and retailers, has grown (Redine et al. 2023) and contributes to food waste (van Doorn et al. 2023). Future studies could explore whether impulsive shoppers are more inclined to blame other stakeholders for food waste in contrast to the more prudent shoppers. Another way of exploring antecedents is to examine how motivational factors predict individuals' use of neutralization techniques. For instance, Raimondo et al. (2024) pointed out that intrinsic and extrinsic motivation are associated with engagement in ethical or prosocial behaviors. It would be interesting to investigate if individuals driven by extrinsic motivations use more or fewer neutralization techniques than those driven by intrinsic motivations.

Moreover, more research is needed to find out the conditions under which the impact of neutralisation techniques is strengthened or weakened. One conditional variable could be the demographic profile of an individual. This study reveals that in contrast to older people, younger people are more likely to evoke the condemnation of condemners technique, which dampens moral norms. Yet the reason for this relationship is not clear. As very little research has been published on the interactions between neutralization theory and demographic variables (Detert et al. 2008), there is scope to explore these relationships further.

A second possible conditional variable is emotion. The role of emotions in triggering pro-environmental behaviour is well documented (Escadas et al. 2020; Sharma et al. 2023) and psychologists state that moral emotions amplify moral judgments (Horberg et al. 2011). This suggests an important route for future research in terms of understanding how emotions moderate the relationship between various neutralization techniques and moral norms. For instance, unethical practices in the

supply chain could evoke anger, activate the condemnation of condemners technique, and allow people to ignore personal values, moral norms, and concerns about acting irresponsibly. A positive emotion, such as pride of taking care of loved ones, may strengthen the negative relationship between appeal to higher loyalty and moral norms.

Another conditional variable could be culture. This study was conducted in the United Kingdom, an individualistic culture, and since scholars conclude that moral norms and behaviors vary across cultures and subcultures (Ramos et al. 2024), there is scope to conduct research in different settings and move beyond "weird" (western, educated, industrialized, rich, and democratic) countries (Henrich et al. 2010). Prior studies on neutralization in the criminal field show that the techniques are "culturally shaped" (Doğan 2014, 380) and it is possible that cultures that are collectivistic and value interdependency may be less likely to use some neutralization techniques that harm the group or undermine group harmony. So, further work, including qualitative research and ethnographic studies, is required to tease out the situational factors (i.e., food category, presence of others) and personal variables that trigger or suppress neutralization techniques (i.e., personality traits, values, demographics).

8 | Conclusions

The prevailing literature on food waste tends to marginalise the role of neutralisation in consumer decision making. The originality of this study lies in the development of a temporal model which integrates the NAM with neutralisation techniques and in its application to household food waste. Consumers use rationalisations to justify food waste, and the two main neutralisation techniques are denial of responsibility and condemnation of condemners. Neutralisation acts as a defence mechanism that enables people to deviate from their own internal standards or moral norms, stipulating that it is wrong to waste food. Despite the study's limitations, the study offers valuable insights into the neutralisation techniques that underpin food waste, which are warranted and helpful to scholars, policymakers, and practitioners.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.