

# Sustainability and socially responsible food consumption: an empirical investigation based on self-awareness and self-congruity theories

Socially  
responsible  
food  
consumption

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## Abstract

**Purpose** – This study aims to highlight the impact of altruistic-self and hunger awareness on socially responsible food consumption through the lens of self-awareness and self-congruity theories due to the great challenge of Sustainable Development Goal 2: Zero Hunger.

**Design/methodology/approach** – A survey was conducted with a sample of 812 respondents. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) confirm each variable's structure through the measurement model and test the hypothesis to support a structural model.

**Findings** – The results highlight that the combination of altruistic-self and hunger awareness (AS-HA congruence) drives consumers to execute socially responsible food consumption. Meanwhile, consumers' food-saving attitude mediation translates to the attitude towards responsible and ethical use increasing socially responsible food consumption, a contextual development in the theory of congruence. Conversely, hunger awareness is not confirmed as significantly influencing socially responsible food consumption.

**Practical implications** – This research provides valuable insights for academicians and practitioners in developing food waste management strategies that can be implemented to reduce food wastage.

**Originality/value** – Food waste is a global concern and is challenging for many manufacturing, distribution and individual wastage levels. However, food wastage by consumers is one of the most critical problems which

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can be minimised with awareness and attitudinal changes in behaviour as a form of socially responsible consumption.

**Keywords** Food consumption, Food management, Food wastage, Self-awareness theory, Self-congruity theory, Social responsible consumption, Survey, Sustainability management, Sustainable development goals (SDGs), Waste management, Zero hunger

**Paper type** Research paper

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## 1. Introduction

Sustainable Development Goals (SDGs) represent the significant challenges of the twenty-first century (Do *et al.*, 2021; Munir, 2022), and among them, food waste and hunger are considered pivotal sustainability issues (Farr-Wharton *et al.*, 2014; Lazell, 2016; Bhatt *et al.*, 2018; Hamerman *et al.*, 2018; Makhal *et al.*, 2021; Zhang *et al.*, 2021; Elhoushy, 2022). The idea of socially responsible food consumption is an emerging concern as one-third of the food available for human use is being wasted each year around the globe, while in other parts of the planet, people suffer hunger (Graham-Rowe *et al.*, 2014; Fan *et al.*, 2022). There is a common consensus that not only supply chains are responsible for sustainability issues (Ramanathan *et al.*, 2011; Zhang *et al.*, 2015; Dubey *et al.*, 2017a, b; Mishra *et al.*, 2018; Kamble *et al.*, 2019) but also consumers should be responsible enough for their actions to reduce food waste, predominantly their plate-food consumption (Graham-Rowe *et al.*, 2014; Thi *et al.*, 2015; Coşkun and Filimonau, 2021). Plate-food waste refers to the food left on an individual's plate, which could be eaten by someone else (Dubois, 1990). This waste is caused by food over-filling due to ignoring the right plate portion size and unawareness about unprivileged people's hunger issues (Betz *et al.*, 2015; Pirani and Arafat, 2016). Food waste is usually believed to come from developed countries (Graham-Rowe *et al.*, 2014); however, developing countries face relatively more significant food waste management challenges (Kapepula *et al.*, 2007; Thi *et al.*, 2015; Thapa Karki *et al.*, 2021). According to United Nations (UN) report (United Nations Environment Programme, 2021), the global food waste created by households is approximately 600bn kilos per year, whereas there is a higher contribution from middle-income countries (respectively 211.60bn kilos per year and 290.29bn kilos per year for low middle-income countries) than high-income countries (contribute only with 98.35 kilos per year). However, considering the kilos per capita per year, there is no discernible difference between the advanced countries and emerging counties, that is a common trend of the last decades (Graham-Rowe *et al.*, 2014; Thi *et al.*, 2015; United Nations Environment Programme, 2021). The empirical evidence highlights that consumers can be one of the main contributors to food wastage (Graham-Rowe *et al.*, 2014). According to Mani and Gunasekaran (2018), despite the increasing awareness of social sustainability issues, there is still little knowledge about the impact of social sustainability from the final consumers. Individual consumer choices are the main critical players in food waste, followed by the production process and food distribution process (Aschemann-Witzel *et al.*, 2015; Caldeira *et al.*, 2019). Therefore, irresponsible consumer behaviour is the root of food waste (Holm, 2003), which accounts for various negative economic, social and environmental consequences (Betz *et al.*, 2015; Thi *et al.*, 2015; de Souza *et al.*, 2021). It is prevailing because the food consumption paradigm has changed from nutrition needs to food consumption (Rozin *et al.*, 1999). The change of this paradigm is not limited to people's hedonistic nature, but there are structural forces behind them as political and economic policies and lack of attention on food education in the education system (Evans, 2012; Mani *et al.*, 2016; Dankevych *et al.*, 2020). Therefore, incorrect food consumption patterns and irresponsible social behaviours significantly impact food waste in a society where there are people who systematically suffer from hunger (Betz *et al.*, 2015; Thi *et al.*, 2015).

In this study, only the plate-food waste individual contributions have been considered since it is a significant portion of overall food waste, and the developed country limit was

removed since no more only these countries are food wasters but also developing ones (Comstock *et al.*, 1979). Unfortunately, there are few strategies available in the literature to discourage plate-food waste (e.g. rescheduling the lunch hour time, improving the food quality, providing nutrition education, customisation of food serving sizes and self-service) and a lack of quantitative measurement of food waste in no industrial field (Wilson, 1996; Kantor *et al.*, 1997; Graham-Rowe *et al.*, 2014). Therefore, administrations cannot have the right knowledge to execute severe food-waste programs (i.e. educational policies); consequently, these strategies alone cannot stop the rise of the food waste rate (Betz *et al.*, 2015; Thi *et al.*, 2015; Li *et al.*, 2021).

Earlier research on the link between food waste, hunger and socio-demographic conditions highlights the need to implement food policies that directly and indirectly impact food waste. Surveys on attitudes and behaviours have shown correlations between food waste behaviours and socio-demographic characteristics (Pearson *et al.*, 2013). It has been proved that government rules and corporate policies on product marketing and design can impact consumer behaviour and attitudes, even though it is unclear what specific variables determine this influence (Reisch *et al.*, 2021). The COVID-19 pandemic has reduced the levels of food waste within families, which have managed to improve food waste by reducing the number of meals at restaurants and cooking more at home, and 50% of the families have maintained these good practices even after the restrictions were lifted (Laila *et al.*, 2021). In line with this, Eissa (2020) suggested a high level of awareness and global commitment to the SDGs even though the pandemic crisis helped reduce this awareness. However, it has been shown that government policies have a considerable impact in the fight against food waste by working on aspects such as self-awareness of hunger and altruistic-self, food waste and hunger awareness, and the best attitude to economic and socially sustainable behaviour. These policies can be social and educational, but they differ according to the context in which they are applied (Buzby *et al.*, 2011; Qusted *et al.*, 2013; WasteMinz, 2014; Thyberg and Tonjes, 2016).

Psychological models, such as the self-congruity theory and self-awareness theory, can contribute considerably to the problem that supports constructing a behavioural and attitude framework (Mathews, 2012). Moreover, the utilisation of these theories has been well-documented in customer behaviour studies in the marketing field (Li and Uysal, 2016) and can be used similarly in this field that has been poorly investigated.

Thus, we posit that socially responsible food consumption can be determined by self-congruence aspects like the altruistic-self (Barasch *et al.*, 2014; Rasool *et al.*, 2019) and hunger awareness, the matter of food waste concern (Graham-Rowe *et al.*, 2014). Besides, the lack of awareness of social responsibility towards food waste represents a social barrier to the failure of food waste reduction (Graham-Rowe *et al.*, 2014). With these premises, four research questions were developed:

- RQ1. What is the role of consumers' altruistic-self in ethical food consumption to walk their talk?
- RQ2. What factors affect socially responsible consumer behaviour through self-congruity theory?
- RQ3. What will be the collective and distant impact of altruistic-self-concept and hunger awareness on socially responsible consumption of plate-food?
- RQ4. Does the consumer's food-saving attitude impact socially responsible behaviour for plate-food?

Given the substantial research gaps, the current study analyses the role of the consumer altruistic-self (an individual's faith to do something good for the enormous benefit of others) and hunger awareness in plate-food consumption. Scarce research exists on plate-food waste,

and the literature does not realise the importance of the food audit (Eriksson *et al.*, 2017). To bridge the gap, it is necessary to trace out the constructs that enhance the consumer's socially responsible food consumption for plate food. The proposed model aims to predict socially responsible plate-food consumption with these premises.

The remainder of the paper is structured as follows. After the introduction, section 2 analyses the theories used for the framework development, the different aspects used and the related hypothesis. Section 3 presents the methodology, whereas Section 4 deals with the result obtained. Discussion and implications of this research are discussed in Section 5. Finally, Section 6 reports the conclusions.

## 2. Theoretical background

Many academicians and practitioners have studied food waste and how consumers can impact this problem (Mathews, 2012). Graham-Rowe *et al.* (2014) have proposed that people's concern about food waste and their empowerment regarding the cause can keep household waste to a minimum; in fact, the wish to provide healthy and abundant food for family or guests united with the desire to minimise inconvenience are substantial barriers to minimising food waste for some household food purchasers. Furthermore, some consumers consider food waste a compromise with the hunger issue, while others consider the reuse of cooked food residues with negative meaning (Aschemann-Witzel *et al.*, 2015; Parizeau *et al.*, 2015; Roe *et al.*, 2020).

Li *et al.* (2021) have also identified that consumer behaviours (e.g. illogical purchase plans, lack of cooking skills) and consumer hunger perception and attitudes (e.g. attitudes towards food waste, food safety concerns, the perceived value of food and knowledge of food production) are relevant issues in managing food waste. From a different point of view, Florkowski *et al.* (2018) and Song *et al.* (2018) have tested that social and cultural aspects (i.e. education, household size and age, employment status and urbanisation level) are relevant factors influencing household food waste. For instance, many consumers believe that their low food portions will also decrease their energy intake from meals, which consequently hurdles their decision to take low food portions; with this cultural cognition, they cook more than they need and often throw away uneaten food (Rolls *et al.*, 2007). Moreover, age has affected food waste generation, with young people wasting more than older people and polarising food distribution towards specific areas (Quested and Johnson, 2009; WasteMinz, 2014). In Australia, 38% of respondents wasted more than \$ 30 (Australian) household items on food compared to 7% of people aged 70 and over (Hamilton *et al.*, 2005). In the UK, people over 65 waste much less food than the rest (Quested *et al.*, 2013). Furthermore, family composition and family size significantly influence the production of household food waste, like children's presence or the household's income (WasteMinz, 2014; Parizeau *et al.*, 2015). Due to these reasons, plate-food waste is both a consequence of individuals' negligence and a result of the conditions in which food is provided. As the first step, government interventions and educational policies should be implemented for awareness, and individual behaviour could be targeted autonomously to increase willingness to perform social responsibilities (Evans, 2012; Graham-Rowe *et al.*, 2014; Eriksson *et al.*, 2017; Li *et al.*, 2021).

These governmental interventions can be significant for the behavioural insight that can reach the right confidence to develop the connection between awareness of food-plate waste and socially responsible behaviours in the domestic edges (Eriksson *et al.*, 2017). In addition, even a policy that aims to spread awareness of the hunger problem has shown that it can raise awareness of food consumption attitudes (Khalid *et al.*, 2019; Bridge *et al.*, 2021).

Consumer psychology research has also evaluated that congruence between the common perception of the brand and their perception influences individual behaviour (Choi and Reid, 2016; Huber *et al.*, 2018). Unfortunately, scarce research exists on plate-food waste, and the literature does not realise the importance of the food plate audit (Eriksson *et al.*, 2017).

Nonetheless, previous research suggests that consumer self-concept and awareness influence food consumption attitude and behaviour (Bagozzi *et al.*, 2014) and awareness (Cordell, 1997; Rortveit and Olsen, 2007). The following sections explain some theories and aspects helpful in constructing the framework.

### 2.1 Self-awareness theory

The self-awareness theory (SAT) is the alleged social mechanism explaining people's behaviour towards plate-food waste (Padgett, 2011; Brandenberger and Bowman, 2015). This mechanism suggests that when people enter a public situation or one that may impact their own life in society, social norms are activated, resulting in people's attention more to themselves than others (Munger and Harris, 1989; Berry *et al.*, 2012). Furthermore, this attention to self is associated with greater adherence to the triggered social norm, thus ensuring that the person is not deviant (Berry *et al.*, 2012; Brandenberger and Bowman, 2015; Min and Wakslak, 2022). Furthermore, this behaviour is also common on social networks that, with different influences, can polarise the attention towards plate-food waste (Gong *et al.*, 2023).

From the SAT body of literature on awareness, four explanations have resulted in a predictor of food consumption in consumer behaviour: benevolence, ecology, equality and universalism (Aertsens *et al.*, 2009). In particular, benevolence and universalism are two factors stabilising awareness, guaranteeing regular and correct food consumption (Krystallis *et al.*, 2008; Graham-Rowe *et al.*, 2014). In the same way, consumers who have a high awareness of the ecology motive (defined as "harmony with the universe and sustainable future") and equality (defined as "harmony with the all-other people") tend to waste less food in their daily lives (Zanoli and Naspetti, 2002; Graham-Rowe *et al.*, 2014; Mattar *et al.*, 2018). All these aspects can be summarised at a higher human emotional level which is that of altruism that goes beyond the person who consumes food and can therefore be better defined as an altruistic-self (Brandenberger and Bowman, 2015; Rasool *et al.*, 2019).

### 2.2 Self-congruence theory

The self-congruence theory (SCT) is a model for bringing a change in attitude, which explains the relationship between attitudinal change towards a particular message (Osgood and Tannenbaum, 1955). The concept of self-congruence is rooted in psychology literature, which reflects the process of cognitive matching with the consumer's self-concept in the product-user image (Sirgy, 2018). Furthermore, the SCT is widely used in research investigating the influence of symbolic and functional congruence on client behaviour (Jamal *et al.*, 2022). For example, the SCT states the psychological process and outcome in which consumers compare their perception of a brand's personality or brand user's image with their actual, ideal, social and ideal social self-concepts (Sirgy, 2018).

SCT emphasises the importance of congruity between the consumer's self-concept and the brand image controlled by their perceived similarities or dissimilarity to self-image characteristics (Astakhova *et al.*, 2017). Based on this theory's assumptions, how individuals perceive themselves significantly influences their behaviour (Sirgy, 2018). If objective number 2 of the SDGs is taken as a reference brand, that is, the fight against hunger, it will obviously be possible to verify a direct change in the personal lifestyle rather than in the attitude of a given consumer towards this social brand. Consumers make evaluations or purchase decisions based on consumer self-awareness and express themselves through actions linked to the brand they refer (Pieters, 2013; Bartels and Urminsky, 2015). Therefore, it is possible to assume a connection between the consumer's self-concept and the determination of consumer attitudes and behaviours. These aspects have been frequently considered linked in consumer behaviour research where these links can be, for instance, the brand idea, the hedonic value or the perceived efficacy (Claiborne and Sirgy, 2015; Zhang and

Benyoucef, 2016). The culture represents one other relevant connection between the consumer's self-concept and the determination of consumer attitudes and behaviours. This aspect can influence the consumer to think about purchasing food more than having a sustainable approach to the use of food (Zhang and Benyoucef, 2016). The SCT was selected to support our research framework, and further information about the research construct is discussed in the following paragraphs.

### 2.3 *Modelling of framework and hypotheses development*

Even though food waste has attracted global attention in recent years due to its significant resource, environmental, economic and social impacts, the research about food waste has been focused on the industrial aspect neglecting the domestic influence variable (Min *et al.*, 2020; Qi *et al.*, 2020). For this reason, the main variables are reported in developing our framework according to SCT and SAT.

**2.3.1 Altruistic-self.** Altruistic-self (AS) refers to an individual's consciousness to do something good for the more incredible benefit of someone to charitable engagement (Padgett, 2011; Brandenberger and Bowman, 2015). The early research suggests that an altruistically motivated self would perform altruistic behaviours for social good, expressing an individual's internal values and pro-social behaviours (Schwartz, 1977; Sigurðardóttir, 2017). However, few elements have been extended from the literature on food consumption; mainly, two specific factors have been considered: personal health and being environmentally friendly (Kareklas *et al.*, 2014). According to SAT, if people are socially motivated to be concerned about emotional health and a clean environment, they would be encouraged to activate their AS to perform good social actions (Graham-Rowe *et al.*, 2014; Schwartz, 1977).

**2.3.2 Hunger awareness.** According to Nahman *et al.* (2012), awareness regarding food value needs to be raised. The current study has attended this call by having Hunger Awareness (HA) as a research variable. Based on the assumptions of SCT, we propose that hunger awareness relates to food waste minimisation on human consciousness accounts to save food for survival. Moreover, an AS drive and awareness about a particular phenomenon would direct individuals' attitudes and behaviours (Osgood and Tannenbaum, 1955; Bartels and Urminsky, 2015). Hence, the consumer's motivation to reduce food waste with HA would encourage own to get involved in minimum food waste activities to highlight the possibility of recovering potentially valuable food sources or resources for use in other processes or raising awareness regarding the associated losses to society (Nahman *et al.*, 2012). Furthermore, the more awareness constrains people's autonomy, the more people will act consciously according to the level of awareness owned (Min and Waksalak, 2022).

**2.3.3 Congruence.** The congruence considers different awareness types (e.g. actual-self, ideal-self, social-self, social ideal-self) (He and Mukherjee, 2007; Jamal and Al-Marri, 2007). Furthermore, congruence is a high-level factor in social behaviour since the consumer's self-concept is linked to determining consumer attitudes and behaviours and, consequently, to the food used (Claiborne and Sirgy, 2015; Zhang and Benyoucef, 2016). So, within this study, it looks necessary to focus on the congruity between individuals' self and awareness of hunger from external sources to analyse their discrete and collective impact on a particular behaviour (socially responsible consumption of plate food).

**2.3.4 Food saving attitude towards food waste.** In behavioural literature, attitude is a long-term assessment process that could not be experienced directly (Arnould *et al.*, 2002; Shiu *et al.*, 2011). Vogel and Wanke (2016) define attitude as an individual's feedback to respond to an object. For a comprehensive explanation of attitude, this construct comprises three main factors: cognition (i.e. the belief of the consumer regarding an object), affection (i.e. the feeling of a consumer regarding an object) and conative (i.e. commitment) (Triandis *et al.*, 1971; Heesup *et al.*, 2011). According to this definition of attitude, it is plausible to think that



attitude is essential for elaborating why consumers are concerned about unethical behaviour such as plate-food waste. The SAT, as also other theories like the theory of planned behaviour, confirms that attitude towards a behaviour would influence the intention of a person to connect in that behaviour, while attitude refers to the perception of individuals, even if a behaviour is supportive or otherwise (Ajzen, 1985; Bailey, 2006). However, according to SCT, self-congruence significantly predicts various consumer behaviours, attitudes, choices and preferences; thus, it is possible to measure the customer target's actual and ideal self-congruence (Ahn *et al.*, 2013).

*2.3.5 Socially responsible plate food consumption.* Several definitions of socially responsible consumption outlined by previous researchers exist in the literature. For example, Mohr *et al.* (2001) stated that socially responsible consumption is based on the corporate social responsibility (CSR) concept, where a person customises their own acquisitions per the ethical consumption standards to ensure long-term social benefits.

According to Karsaklian and Fee (2012), there are four main socially responsible consumer types: (1) reuse and save resources, (2) prefer environmental benefits over economical, (3) purchase ethical products because others do and (4) ethical but without being responsible for environmental protection.

In this regard, consumers' concern about environmental protection and ethical consumption behaviour, as a result, makes a difference in society's favour and drastically changes the environment through consumers' responsible consumption (Lue *et al.*, 2010). Thus, a consumer's socially responsible behaviour can ensure environmental sustainability. Moisander (2007) reveals that the actual reasons for socially responsible food consumption are engaged in the selection, purchasing, usage and serving activities. Results indicated that socially responsible food consumption rapidly decreases because consumers are unaware of its impact on the environment (Moisander, 2007). Therefore, the consumer's socially responsible food consumption can support the awareness dissemination of its positive effect on society (Boccia and Sarnacchiaro, 2017).

Previous literature states that an individual's self-concept and attitude have a significant relationship (Hattie, 2014). The SAT predicts that an emotional concept of self, such as the altruistic-self, can impact self-attitudes like one's eating attitude (Padgett, 2011; Brandenberger and Bowman, 2015). Breiner and Reeve (2009) established a connection between human self-concept and attitude variables. The utilisation of self-concept has been well-documented in consumer behaviour, even though earlier studies essentially consider only four categories: actual-self, ideal-self, social-self and ideal social-self (Li and Uysal, 2016). The fundamental logic of the four categories of self-concepts that were used in consumer behaviour was just to experience their association with the commercial marketing concept (Ekinci and Riley, 2003; Jamal and Al-Marri, 2007; Ibrahim and Najjar, 2008; Min and Wakslak, 2022; Gong *et al.*, 2023). Based on the number of self-concepts, human personality changed over time: previous studies verified the relationship between academic self-concept and reading attitude and found that self-concept positively influenced education's reading attitude (Alvord, 1971; Tapia-Fonllem *et al.*, 2013). Thus, in light of previous research, the relationship between AS and attitude can be developed to examine socially responsible consumer behaviour. Therefore, we have predicted that the consumer's AS will positively drive their food waste attitude. We propose that:

*H1.* Altruistic-self positively influences the consumer food saving attitude.

Consumer attitude has always been a concern for marketers and academics, so they seek solutions to enhance awareness and alter consumer approaches towards a particular issue (Spehr and Curnow, 2011; Min and Wakslak, 2022) and the SAT gives the proper theoretical basis to formalise this connection (Graham-Rowe *et al.*, 2014). Likewise, hunger is a social issue between consumer hunger awareness and food saving attitude (Daniluk, 2014).

Therefore, improving consumer attitude through HA is necessary to minimise the impact of the hunger social problem. [Marra \(2014\)](#) highlighted the relationship between consumer HA and food waste attitude. Nevertheless, consumer HA improves food saving and accelerates the formation of a more positive attitude ([Evans and Durant, 1995](#)). Hence, we propose that HA influences the consumer's attitude towards plate-food waste in our following hypothesis (H2).

*H2. Hunger awareness positively influences the food-saving attitude.*

Attitude is beliefs/self-concepts and feelings connected to a resulting individual's behaviour ([Tapia-Fonllem et al., 2013](#); [Wang et al., 2023](#)). In SAT and SCT the attitude can be moved by different reasons, but in both theories, it can be seen as a strong determinant for how the consumer behaves socially, and therefore also of how a person behaves in food plate consumption ([Ekinici and Riley, 2003](#); [Tsai et al., 2020](#)). [Rensbury \(2003\)](#) study discussed that marketers need to perform vital roles to influence consumers' healthy food choices, ultimately contributing to healthier consumers and societies. In the same study, [Rensbury \(2003\)](#) identified the relationship between healthy consumer self-concept and food choice behaviour. In this way, [Rozin et al. \(2003\)](#) contended that more than 50% of college students consider eating as one most enjoyable parts of their daily lives. Thus, self-concept influenced these students' food choice behaviour. Hence, it can be postulated that consumer AS could influence the plate-food socially responsible consumption behaviour. [Wang et al. \(2023\)](#) also verify that even the attitude to consuming less food can be affected by moral norms and the environmental social consciousness in which people are immersed.

*H3. Altruistic-self positively influences the socially responsible plate-food consumption.*

An individual consumer's awareness performs a vital role in own attitudinal change for responsible food consumption ([Graham-Rowe et al., 2014](#)). Numerous researchers have verified the relationship between consumer awareness and effective consumer behaviour ([Hartlieb and Jones, 2009](#)) and SAT also explains this connection ([Graham-Rowe et al., 2014](#)). Similarly, it has been shown that awareness of environmental concerns will reinforce the consumer to perform ethical behaviours in favour of society ([Sudbury-Riley and Kohlbacher, 2016](#)). Particularly, consumer awareness related to food products significantly impacts the food consumption decision-making process ([Ishak and Zabil, 2012](#)). Thus, in light of the understanding developed, we believe that consumers aware of the hunger issues will perform socially responsible food plate consumption to minimise food waste. Hence, we propose that:

*H4. Hunger awareness positively influences the socially responsible plate-food consumption.*

According to the SAT, the various levels of self-awareness can influence each other ([Ekinici and Riley, 2003](#); [Brandenberger and Bowman, 2015](#); [Min and Wakslak, 2022](#)). [Rabiei et al. \(2013\)](#) argued that consumer nutritional awareness and self-concept significantly impact school students. Also, consumer self-concept influences cognitive processes, emotions, motivations, decisions and choices ([Bringle and Bagby, 1992](#)). In a way where self-concept can increase consumer awareness, consumer awareness increases the self-concept ([Schafer et al., 1999](#); [Tapia-Fonllem et al., 2013](#)). A recent environmental awareness study reveals that self-concept and environmental concerns have significant positive relationships ([Cousineau et al., 2018](#)). This study shows that consumers having attached their altruistic concept linked to environmental concerns and nutritional awareness will have some significant relationship with hunger awareness. Thus, we propose the following hypothesis:

*H5. There is a significant relationship between altruistic-self and hunger awareness.*



In previous studies about SAT and SCT, it has been found that actual self-concept and store image congruity are significantly correlated (Ibrahim and Najjar, 2008). The same study traced the relationship between consumer ideal self-concept and image congruity. The congruities of actual self-concept and ideal self-concept with the image have significantly influenced consumer attitude. Sirgy (2018) developed self-congruity by matching store images and testing consumer attitudes. Moreover, self-concept congruity has been proved as an antecedent of consumer attitude and behaviour (Lee and Hyman, 2008). Furthermore, Jung *et al.* (2020) have found that, starting from a self-congruity framework, an emotional and altruistic component towards world hunger is avoiding food waste during consumption. Thus, these relationships might be postulated that the congruity of altruistic-self and hunger awareness influence the consumer food saving attitude:

*H6.* Congruity between altruistic-self and hunger awareness positively influences the consumer food saving attitude.

Behavioural literature confirms that consumer attitude significantly affects consumption behaviour (Chisnall, 1995; Jiang *et al.*, 2018; Miao *et al.*, 2019). Therefore, Fotopoulos and Krystallis (2002) recommended that the consumer's responsible food consumption attitude was the most vital factor in predicting their motivation to act as responsible consumer. Similarly, other studies suggest that consumers' attitudes towards organic food consumption, developed by the social environment in which they live, influence their (positive) consumption behaviour (Multlu, 2007; Kareklas *et al.*, 2014). Furthermore, the attitude of social dynamics towards food is measured through a high or low saving attitude that influences food-saving behaviour (Multlu, 2007). On those bases, *H7* is proposed as follows:

*H7.* Consumer food saving attitude positively influences the socially responsible plate-food consumption.

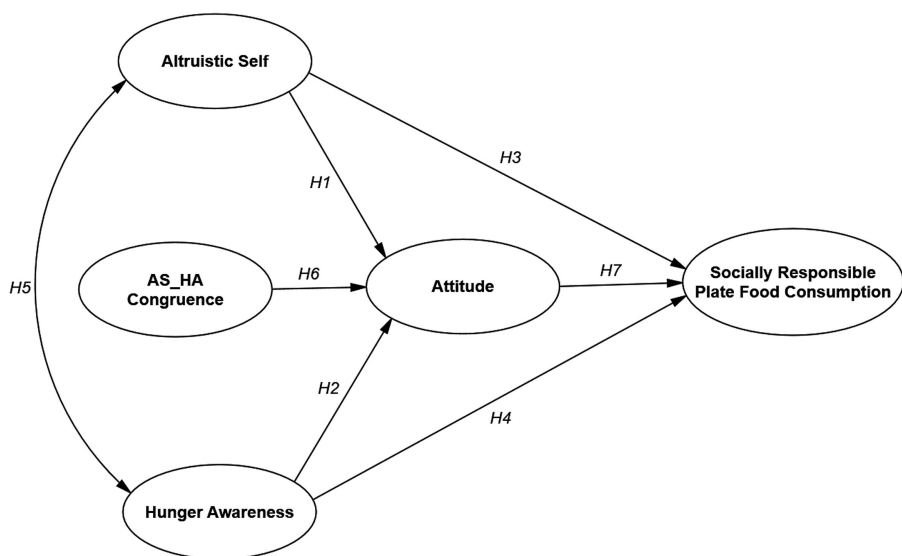
Figure 1 depicts the relationships between the constructs and hypotheses presented earlier.

### 3. Research methodology

The household consumers in the university area of Kuching city were selected as respondents in this study as food consumers. To achieve the research objectives, a quantitative approach was adopted. The quantitative research approach allowed the development of a survey questionnaire. Exploratory Factor Analysis (EFA) was used to explore the simple structure of each construct (Papadopoulos *et al.*, 2017). We used only items with a smaller loading factor than 0.50 (Byrne, 2010). Confirmatory Factor Analysis (CFA) was utilised to confirm each variable's structure through the measurement model and tested the hypothesis to support a structural model (Mehra *et al.*, 2022). Common method bias occurs when the instrument introduces a bias in data collection due to overlapping constructs. We used the full collinearity variance inflation factors method to investigate the common method bias (Kock, 2015). According to Kock (2015), data will have common method bias issues if the variance inflation factor values are more significant than 3.3, and our result indicated no issue of common method bias issues.

#### 3.1 Data collection

A survey approach was used to collect the respondents' responses, and primary data was collected through a structured questionnaire. The questionnaire was first written in English and translated into Bahasa Malaysia, which was translated back into English. The decision was made to ensure that the respondents from various backgrounds can answer and could answer the questions so that, in return, they would provide a more accurate response.



**Figure 1.**  
Conceptual framework  
of the study

**Source(s):** Created by authors

[Table 1](#) contains the questions used during the interviews divided according to the model categories.

A total of 1,100 questionnaires were distributed face-to-face. A random probability sampling technique was adopted. Among them, 950 responses were used in the data screening process. During data screening, 138 responses were deemed unusable. Thus, the final data were analysed with the responses of 812 observations. The gender proportions are almost equivalent; about 55% of the respondents are male, and nearly 45% are female. Most of the respondents are between 36 and 40 years old (51.75%) and a large number of the respondents (81%) belonged to married respondents.

### 3.2 Measures

Measures were adapted from previous literature while the modifications were made as per Malaysian context. The altruistic-self-concept measure was adapted from [Tapia-Fonllem et al. \(2013\)](#) and [Corral-Verdugo et al. \(2008\)](#). The scale was based on ten items and on a five-point Likert scale anchored from strongly disagree = 1 to strongly agreed = 5. The measure of socially responsible plate-food consumption behaviour was adapted from the studies of [Antil \(1984\)](#), [Francois-Lecompte and Roberts \(2006\)](#) and [González-Cutre et al. \(2009\)](#). All the measures were based on five-point Likert-scale.

### 3.3 Analysis

Reliable and discriminant of consumer altruistic-self and hunger awareness were analysed through Cronbach alpha, average variance extracted (AVE) and confirmatory factor analysis (CFA) as shown in [Appendices 1, 2 and 3](#). Self-congruencies were primarily measured using mathematical formulae and discrepancy scores ([Sirgy et al., 1997](#)). Moreover, the skewness value (0.14) and kurtosis value (0.49) for the normalcy test were less than 2, which was adequate for a normal distribution ([George and Mallery, 2010](#)). The histogram's bell-shaped curve provided further proof that our data were normally distributed and that the spots in the

|                  | Sr. no. | Original scale   | Reference                             | Adapted scale  |
|------------------|---------|--|---------------------------------------|--|
| Altruistic-self  | ALS_1   | Gives clothes to the poor  | Tapia-Fonllem (2013)                  | I usually give food to the poor                                      |
|                  | ALS_2   | Assists people who fall or get hurt  | Tapia-Fonllem (2013)                  | I assist people who fall in hunger                                   |
|                  | ALS_3   | Contributes financially with the Red Cross   | Tapia-Fonllem (2013)                  | I help strangers asking for food                                     |
|                  | ALS_4   | Visit the Sick at hospitals/homes  | Tapia-Fonllem (2013)                  | I visit the sick at hospitals or their homes to take them food       |
|                  | ALS_5   | Helps older or handicapped crossing street   | Tapia-Fonllem (2013)                  | I help old or handicapped whenever I see them to receive their meals |
|                  | ALS_6   | Guides persons asking for direction  | Tapia-Fonllem (2013)                  | I provide some money to the homeless to allow them to get meals      |
|                  | ALS_7   | Provides some money to homeless  | Tapia-Fonllem (2013)                  | I donate money to organisations for charity for the hunger issue     |
|                  | ALS_8   | Participates in fund-collection rallies  | Tapia-Fonllem (2013)                  | I donate money in response to flood-affected campaigns               |
|                  | ALS_9   | Donates blood in response to campaigns   | Tapia-Fonllem (2013)                  | I participate in fund-collection activities for hungry people        |
| Hunger awareness | ALS_10  | Cooperates with colleagues   | Tapia-Fonllem (2013)                  | I look after my neighbours for food necessities                      |
|                  | HC_1    | Hungry people are increasing rapidly in the world                                      | <a href="#">Savary et al. (2020)</a>  | Hungry people are increasing rapidly in the world                    |
|                  | HC_2    | Children suffers more in nutrition security situation                                  | <a href="#">Mitra et al. (2019)</a>   | Children are more affected by the scarcity of food                   |
|                  | HC_3    | Food insecurity is a daily reality for hundreds of millions of people around the world | <a href="#">Webb et al. (2006)</a>    | There are many people around me who are food insecure                |
|                  | HC_4    | Knowledge about hungry people is increasing all around the world                       | <a href="#">Goodman et al. (2012)</a> | Most of the people have knowledge about hungry people                |
|                  | HC_5    | Several organisations are working to achieve agri-food sustainability                  | <a href="#">Goodman et al. (2012)</a> | Several organisations are working to relieve world hunger            |

(continued)

Socially  
responsible  
food  
consumption

**Table 1.**  
Framework variables

Table 1.

|   | Sr. no. | Original scale   | Reference                                       | Adapted scale   |
|---|---------|--|---|---|
| Attitude                                  | ATT_1   | I prefer to buy products made from recycled paper or plastic   | <a href="#">Kareklas et al. (2014)</a>          | I prefer eco-sustainable food on the plate  |
|   | ATT_2   | Generally speaking, buying counterfeit market goods is a better choice                                   | <a href="#">Miao et al. (2019)</a>              | I believe that using food with clear origin and composition on the plate is a better choice for taste |
|   | ATT_3   | I believe minimum food on the plate can help the environment   | <a href="#">Conrad et al. (2020)</a>            | I believe a minimum quantity of food on the plate helps the environment                               |
|   | ATT_4   | I believe in being careful about how I spend my money  | <a href="#">Kareklas et al. (2014)</a>          | I prefer a small quantity of food on the plate because it helps to save money                         |
|   | ATT_5   | I believe that a balanced diet in plate-quantities guarantees a better distribution of food              | <a href="#">Conrad et al. (2020)</a>            | I believe right food on the plate saves the food for hungry people in the world                       |
|   | ATT_6   | There is nothing wrong with purchasing counterfeit luxury products                                       | <a href="#">Jiang et al. (2018)</a>             | There is nothing wrong with plate food waste  |
|   | ATT_7   | Buying counterfeit luxury products generally benefit consumers   | <a href="#">Jiang et al. (2018)</a>             | Eating in an non-ethical way generally benefits the society   |
|   | ATT_8   | I believe that a balanced diet guarantees a saving of water resources                                    | <a href="#">Conrad et al. (2020)</a>            | I believe right food on the plate helps to save the planet resources                                  |
| Socially responsible consumption behavior | SRCB_1  | People should be concerned about reducing or limiting the noise in our society                           | <a href="#">Antil (1984)</a>                    | People should be concerned about reducing or limiting the plate food waste in our society             |
|   | SRCB_2  | Every person should stop increasing their consumption of products so that our resources will last longer | <a href="#">Antil (1984)</a>                    | Everyone should stop the extra consumption of food so that our food resources will last longer        |
|   | SRCB_3  | I limit my consumption to what I really need   | <a href="#">Gonzalez et al. (2009)</a>          | I limit my plate food consumption to what I really need   |
|   | SRCB_4  | In general, I try not to consume too much  | <a href="#">Gonzalez et al. (2009)</a>          | I generally try to consume all the food that is available on my plate                                 |
|   | SRCB_5  | I try not to buy objects that I can do by myself   | <a href="#">Francois-Lecompte et al. (2006)</a> | I hardly waste the plate food, which is attached to limited resources                                 |
|   | SRCB_6  | I try to reduce my consumption to what I really need   | <a href="#">Francois-Lecompte et al. (2006)</a> | I take only the portion of food I need to consume   |
| Source(s): Created by authors             |         |  |   |   |

Q-Q (quantile–quantile) plot made a straight diagonal line with slight variation (Hair *et al.*, 2010).

Congruity between consumer altruistic-self and hunger awareness was developed with the support of a mathematical formulation named as difference model (Ericksen, 1997) as the average of the congruences between each of the assessments of the m altruistic-self and n hunger awareness variables as given in equation (1) below:

$$ASHAC_K \text{ (Congruence)} = \frac{1}{n * m} \sum_{i=1}^n \sum_{j=1}^m |HA_{ik} - AS_{jk}| \quad (1)$$

whereas:

**ASHAC<sub>K</sub> Congruence<sub>k</sub>** = Altruistic-self Hunger Awareness Congruity score for respondent (k)

**HA<sub>ik</sub>** = Hunger Awareness score of respondents (k) along with attribute (i)

**AS<sub>jk</sub>** = Altruistic-self score of respondents (k) along with attribute (j)

For attaining the criteria of the factor loading, Kaiser–Meyer–Olkin (KMO), Bartlett’s Test of Sphericity and Explained Variance, five questions are chosen from altruistic-self-concept measurement (ALS\_6, ALS\_7, ALS\_8, ALS\_9, ALS\_10), five food saving attitude (ATT\_4, ATT\_5, ATT\_6, ATT\_7, ATT\_8), five socially responsible consumptions (SRCB\_1, SRCB\_3, SRCB\_4, SRCB\_5, SRCB\_6) and four from hunger awareness (HC\_1, HC\_2, HC\_3, HC\_5) respectively.

For convergent and discriminant validity, the study used the composite reliability (CR) and average variance extracted (AVE) (Hair *et al.*, 2010). The composite value ranged from 0.79 to 0.87, more than the threshold value of 0.70 (Bagozzi and Yi, 1988). Furthermore, the AVE values are higher than the threshold value of 0.40 (Fornell and Larcker, 1981). Besides, the current research kept two items (HC-3 and ALS\_6) less than 0.70. According to Janssens *et al.* (2008, pp. 294) researchers can retain those items in the constructs which are having there loading at 0.5 and must be significant (*T*-value > 1.96). Therefore, in this study research, these items were maintained because their significant level was greater than their threshold value. Researchers can retain items which are loading at 0.50 to 0.99 (Wolfinbarger and Gilly, 2003).

The CFA was used for all endogenous and exogenous latent variables. Maximum-likelihood estimation of CFA is performed. During CFA, the model could not achieve a good fit because the  $\chi^2$ -value was 4.29, the Goodness-of-Fit Index (GFI) value was 0.901, Comparative Fit Index (CFI) value was 0.89, Standardised Root Mean Square Residual (SRMR) value was 0.05, and Root Mean Square Error of Approximation (RMSEA) value was 0.07. All the cut-off values are acceptable except CFI values (less than 0.90); measurement model fit showed relatively poor fit.

In the first round by using the modification index, two co-variances were created between ALS\_6 to ALS\_7 and HC\_2 to HC\_3. Ideally, the average inter-item correlation for a set of items should be between 0.20 and 0.40, suggesting that while the items are reasonably homogenous, they do contain sufficiently unique variance not to be isomorphic. When values are lower than 0.20, the items may not represent the same content domain. If values are higher than 0.40, the items may only capture a small bandwidth of the construct (Cohen and Swerdlik, 2005). Moreover, the content of each item (ALS\_6 and ALS\_7) and similar (HC\_2 and HC\_3) are not going to overlap. On that basis, it’s hard for researchers to delete any item even though *t*-values of all the items are greater than 1.96 (Wolfinbarger and Gilly, 2003). As a result, upon making co-variances, the better-fitted model was then identified with

reduced  $\chi^2$ -value value 4.29–3.54, the GFI value was 0.92, CFI value was 0.92 and RMSEA value was 0.07. In this stance, all other fit indices showed substantial improvement to the overall fit to the model.

Besides, for testing the multicollinearity, the Herman single factor test was used, which gave 40.5% variation when all factors were placed on a single factor, was used to screen for common method bias (Chang *et al.*, 2010). This research's common latent factor test also verified no common method bias. The method recommended by Gaskin (2012) was employed in the execution of this examination. There was no greater than 0.20 difference between the standardised regression weights with and without the shared latent component.

#### 4. Results

The hypothesis related to consumer altruistic-self-concept H1 and H3 indicated a significant positive effect of altruistic-self-concept on attitude  $\beta = 0.19$  (5.31) and socially responsible consumption behaviour  $\beta = 0.25$  (3.99). Hence, consumer self-concepts have significantly influenced consumer attitude and behaviour. Accordingly, consumers try to improve the altruistic-self in their personalities for a socially responsible plate-food-saving attitude.

Similarly, H2 and H4 hypotheses related to consumer awareness were approved that hunger awareness has an insignificant effect on consumer food saving attitude  $\beta = 0.04$  (0.71), although the significant impact on socially responsible consumption towards plate-food  $\beta = 0.19$  (3.821). Further, the H5 hypothesis measures the relationship between altruistic-self-concept and consumer hunger awareness, which is the basic assumption to develop the congruence between variables. Hence,  $r$ -value highlights a significant relationship ( $r = 0.15$  and  $t = 3.35$ ) between altruistic-self and hunger awareness. Therefore, the study highlights that consumer altruistic-self-concept and awareness have a bivariate correlation.

Further, the H6 hypothesis indicated a significant positive congruence between altruistic-self and consumer hunger awareness on consumer food-saving attitude  $\beta = 0.44$  (8.68). This hypothesis proved that the higher the congruity between consumer altruistic-self-concept and awareness, the higher the effect on consumers socially responsible plate-food waste attitude. Hypothesis H7 indicated a significant positive effect  $\beta = 0.351$  (6.29) consumer food saving attitude on socially responsible consumption towards plate-food, as demonstrated in Table 2 and see Figure 2.

#### 5. Discussion

Under SCT and SAT, socially responsible plate-food consumption is a novel investigation concept. Recent research on ethical consumption has highlighted its significance as consumers advocate for ethical food consumption: there is a strong connection between altruistic-self and hunger awareness. Furthermore, despite consumers' awareness of the importance of sustainable eating and plate food consumption, consumers face challenges in transforming attitudes into real and consistent actions (Govind *et al.*, 2019). The current study investigates the underpinnings of consumers' altruism and hunger awareness to better understand socially responsible plate food consumption. The theoretical constructs altruistic-self-concept, attitude and hunger awareness were used in this study better to understand their impact on socially responsible food consumption. Furthermore, under the SCT perspective, a variable of congruence has been added between altruistic-self and hunger awareness to evaluate a further dynamic of influence of consumer behaviour, experienced in other sectors, but never in that on the use or waste of food. Current research has highlighted the unique nature of constructs in a single framework to eliminate food waste as a social concern.



| Hypothesis |  | <i>p</i> -value<br>( <i>p</i> ) | <i>t</i> -value<br>( <i>t</i> ) | Beta<br>( $\beta$ ) | Acceptance<br>or rejection |
|------------|--|---------------------------------|---------------------------------|---------------------|----------------------------|
| H1         | Altruistic-self positively influences the consumer food saving attitude  | 0.000                           | 5.309                           | 0.195               | ✓                          |
| H2         | Hunger awareness positively influences the consumer food saving attitude                                       | 0.480                           | 0.707                           | 0.043               | <i>x</i>                   |
| H3         | Altruistic-self positively influences the socially responsible plate-food consumption                          | 0.000                           | 3.990                           | 0.253               | ✓                          |
| H4         | Hunger awareness positively influences socially responsible plate-food consumption                             | 0.000                           | 3.816                           | 0.194               | ✓                          |
| H5         | There is a significant relationship between altruistic-self and hunger awareness                               | 0.000                           |                                 | 0.150               | ✓                          |
| H6         | Congruity between altruistic-self and hunger awareness positively influences the consumer food saving attitude | 0.000                           | 8.676                           | 0.441               | ✓                          |
| H7         | Consumer food saving attitude positively influences the socially responsible plate-food consumption            | 0.000                           | 6.286                           | 0.382               | ✓                          |

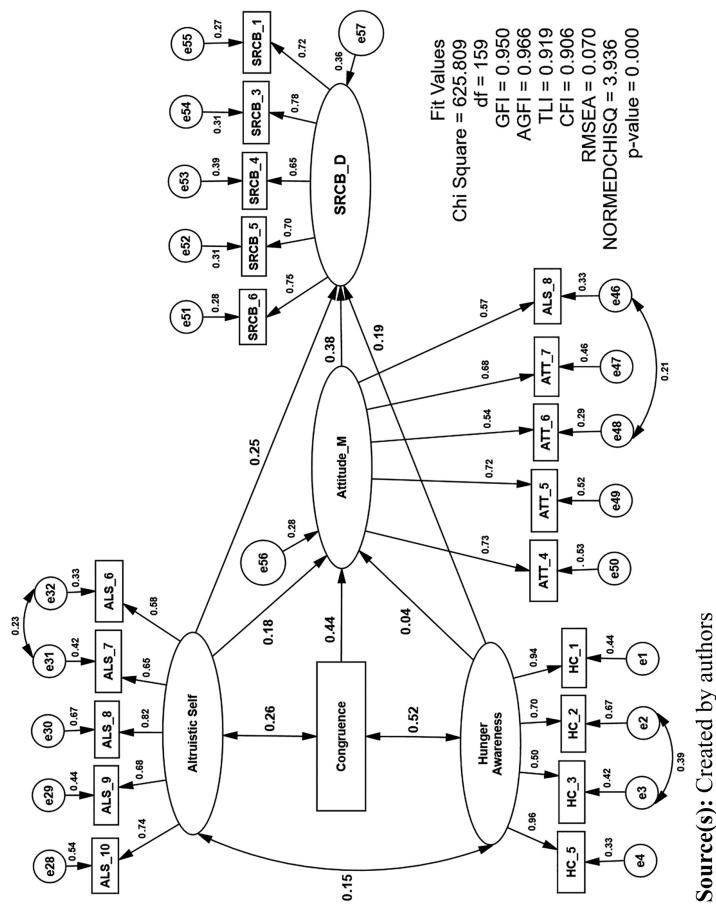
**Note(s):** *p*-value <0.000; CMIN/df = 3.936; GFI = 0.950; CFI = 0.906; SRMR = 0.046; TLI = 0.919; RMSEA = 0.070

**Source(s):** Created by authors

**Table 2.**  
Results

It has been discovered that consumers' altruistic-self is positively related to their attitude towards consumer plate-food with social responsibility. This aspect explains how responsible plate-food consumption results in sustainable food consumption for the entire society. Even though hunger awareness has no significant direct influence on attitudes, the construct significantly impacts socially responsible plate-food consumption (Dommeyer and Gross, 2009; Ishak and Zabil, 2012). According to research, consumer awareness contributes to ethical and socially responsible food consumption, as responsible food consumption is a matter of social and environmental concerns (Shaw and Newholm, 2002). Our research findings are consistent with previous findings, indicating that hunger awareness influences socially responsible plate-food consumption. Furthermore, it demonstrates that when consumers are fully aware of the global hunger situation, they quickly engage in socially responsible food consumption.

According to research, to reduce food waste, consumers should consume small portions (Freedman and Brochado, 2010). In this case, hunger awareness will not affect their food-saving attitude, despite research showing that smaller food portions do not reduce meal energy intake (Rolls *et al.*, 2007). As a result, public awareness campaigns and extensive research in this area are required to educate people about food portions and nutrients (Dankevych *et al.*, 2020). As previously stated, the altruistic-self significantly influences the food-saving attitude (Marra, 2014). Similarly, altruistic-self congruence and hunger awareness influence consumer food-saving attitudes rather than the altruistic-self and hunger awareness effects separately (Rensbury, 2003). In this way, it is possible to affirm that the variables of altruistic-self and hunger awareness, as from the foundations of SAT, consistently influence the problem under consideration, that is the responsible consumption of food but little on its attitude. According to the SCT, it was possible to ascertain that the alignment between the internal dimension of the altruistic-self and the external one of hunger awareness can have a considerable impact on attitudes and, therefore, through the mediation of this latter variable, on the responsible consumption of food. It is important to note that the food-saving attitude positively influences the socially responsible consumption of food plate. When consumers' altruistic-self is linked to hunger awareness, the relationship between altruism, hunger awareness and socially responsible plate-food consumption strengthens



Source(s): Created by authors

Figure 2.  
Structural model

with food-saving attitude mediation. As a result, while mediated by attitude, the congruence between altruistic-self and hunger awareness significantly influenced socially responsible plate-food consumption. It demonstrates that when a consumer wishes to opt for simple consumption and reduce food waste (Shaw and Newholm, 2002), the level of effect of socially responsible plate-food consumption and the congruity between altruistic-self and hunger awareness is significantly stronger when mediated by attitude. This aspect implies that consumer attitude is critical in reducing food waste. Therefore, it is necessary to consider consumers' altruistic-self to bring about social change in attitude and behaviour regarding socially responsible food consumption.

### 5.1 Theoretical contribution

This study has made a theoretical contribution in four ways. First, it has introduced a novel theoretical framework by meaningfully reinforcing the importance of presented research variables. This study has integrated research variables: altruistic-self, hunger awareness, congruity, food-saving attitude, and socially responsible plate-food consumption to highlight the importance of this social matter in marketing.

Second, the congruence theory application, used to develop the congruity between altruistic-self and hunger awareness, is a unique contribution of this study; an introduction of research variable that links the consumers' self with own awareness about hunger. In theory, this development has extended the congruence theory scope to understand the link between awareness and self.

Third, the congruence of consumer altruistic-self and consumer hunger awareness is meaningful for developing the attitude towards socially responsible plate-food consumption. To our observation, we conducted the first comprehensive, systematic study to identify and formulate a conceptual framework for socially responsible plate-food consumption with the support of altruistic-self, hunger awareness and attitude in the domain of SCT in the Malaysian context (Li and Uysal, 2016). From the present study's findings, it is concluded that the self-congruence does exist between altruistic-self and hunger awareness, and SCT is validated in plate-food consumers in the Malaysian context.

Fourth, the findings provide a strong connection between food-saving attitude and socially responsible plate-food consumption – a change in attitude is significant for food waste management campaigns. Meanwhile, congruence is measured between altruistic-self and consumer awareness. Finally, social consumer awareness could also measure the congruence between ideal-self, social-self and actual-self.

### 5.2 Practical implications

Marketers may think there are no incentives to reduce plate-food wastage (Wansink, 2018). They may also feel more food consumption will ensure high gains because of sales growth. However, the current study significantly contributes to practitioners ethically improving the business's efficiency.

First, astute marketers would anticipate the possibility of profiting from reducing food waste on their plate. Considering that people appear to be sensitive both to a reasonable reduction in the portion of food on their plate if this supports the fight against hunger and to feel an active part in the fight against food waste (Carrington *et al.*, 2010), marketing professionals have the opportunity to promote products rethought in quantity to represent a valid sustainable alternative to products that would instead contribute to food waste. Creative ad hoc designed advertisements could also have an impact on influencing consumer attitudes. Second, to satisfy ethical concerns reinforced by self-concept, buffet food service should be preferred in restaurants and public canteens, where persons with hunger

awareness can be held socially accountable for plate-food waste. According to studies, buffet food services can lower food waste (Silvennoinen *et al.*, 2015).

Furthermore, discouraging food waste through billboards and commercials with awareness messages will better impact their food-saving mentality, empowering people to be individually accountable for their food consumption. Third, in the face of the growing awareness of hunger and the increase in the socially responsible consumption of plates, creating a multidimensional communication strategy is the first step to be implemented by the government. Individuals should be more aware of the waste of food on their plates. In this context, educational institutions and media platforms can play a fundamental role in educating people of all ages. This education in food sustainability must then be applied in business contexts and seen as a possibility to increase one's profits and achieve social and environmental sustainability objectives. Besides, using eco-sustainable or recycled packaging also increases their attractiveness towards people aware of the hunger problem and therefore choose brands close to their sustainable awareness. For these reasons, companies should encourage green marketing for environmental sustainability as part of their CSR duties. Fourth, from the point of view of families, it is possible to say that parents, or in any case those who manage the household affairs, could sensitise other members of the family to consume the quantities of food necessary to have an economic savings for the family and also have an impact of social sustainability in the fight against hunger. This research has established theoretical underpinnings for the practical implications of reducing food waste. Managers and markets can use the findings of this study to develop a roadmap impacting product design, production, logistics and marketing in order to educate people about more sustainable behaviour and increase revenue and market shares.

### *5.3 Limitations and future research*

This study entails a particular limitation as any other social research. First, this study has focused on plate-food consumption. Future researchers can highlight food consumption sources diversification and propose related strategies to counter food wastage. For instance, food wastage can be analysed in specific industries, such as packed frozen foods during manufacturing and distribution.

Second, the currently proposed research model empirically provides room for another theoretical construct, potential moderators to improve the model fitness. Thus, future research can attend this gap to increase the richness of the research framework.

Third, the respondents in this study were students. This aspect can limit the findings of research for the multi-generational population. Thus, further analysis can consider respondents from different to increase the generalisability of the research.

Fourth, this research has focused on altruistic-self, hunger-awareness and attitude, limiting this study's results to individual responsibility for socially responsible plate-food behaviour. Meanwhile, future research can focus on group-level variables to analyse the phenomenon. Furthermore, starting from the concept evolution of food consumption and how it has been changed from nutrition needs to food consumption fashion, future research should analyse how it connects with co-responsibility practices in the present conceptualisation.

Fifth, this study measured the altruistic-self and hunger awareness congruence with the help of differential formulation, but future researchers may measure the self-congruency through discrepancy score concerning the proposed variables towards a conceptual framework.

Finally, this study was conducted in Malaysia which limits the context of this study. The current results cannot provide insight into developed countries' socially responsible

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consumption behaviour. Future research can eliminate this limitation by comparing data from developing and developed countries to understand the phenomenon better.

## 6. Concluding remarks

This study extended previous literature in the field of SDG 2: “Zero Hunger” by integrating established backgrounds of responsible food consumption behaviour into consumer SCT and SAT. The results contributed to the extensive literature documenting the effects of self-congruity between self-concepts, and brand/product image is undoubtedly an essential component of attitude and behaviour. Compared to the number of prior applications that focus on self-congruity between self-concepts (actual, idea, social and ideal social self) and brand image, the current study examined and reinforced self-congruence with altruistic-self and hunger awareness specific background of SCT and SAT. Consequently, scholars must emphasise consumer attitudes and behaviours’ direct predictors (self-concepts) and the fundamental factors that develop the self-congruity effect. Further, the present study applied an extended SCT that includes altruistic self-concept and hunger awareness. These added constructs for developing self-congruity showed better prediction for attitude in the context of plate food waste. Thus, scholars should consider that the mainstream self-congruity variable is not essentially better, while altruistic self-Hunger Awareness congruity-based predictors may be more relevant, as in the food waste phenomena. Conclusively, despite the limited use of SCT (Plewa and Palmer, 2014) in social marketing, the present study emphasised its significance in guiding food waste minimisation interventions. To the best of this study’s knowledge, this paper was the first in sustainable consumer behaviour to examine both the direct and congruity function of altruistic-self and hunger awareness. Future researchers can enhance this stream of knowledge through supplementary investigations of self-congruity effects in this domain.

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## Appendix 1

Socially  
responsible  
food  
consumption

| Variable                                |                     | Number | Percentage |
|---|---------------------|--------|------------|
| Gender                                  | Female              | 449    | 55.295567  |
|   | Male                | 363    | 44.704433  |
|   | Total               | 812    | 100%       |
| Age                                     | Less than 20        | 61     | 7.5123153  |
|   | 21–25 years         | 199    | 24.507389  |
|   | 26–30 years         | 345    | 42.487685  |
|   | 31–35 years         | 80     | 9.8522167  |
|   | 36–40 years         | 75     | 9.2364532  |
|   | 41–45 years         | 27     | 3.3251232  |
|   | 46–50 years         | 11     | 1.3546798  |
|   | Above 51 years      | 14     | 1.7241379  |
|   | Total               | 812    | 100%       |
| Current marital status                  | Single              | 338    | 41.625616  |
|   | Married             | 432    | 53.20197   |
|   | Widowed             | 33     | 4.0640394  |
|   | Separated           | 3      | 0.3694581  |
|   | Divorced            | 6      | 0.7389163  |
|   | Total               | 812    | 100%       |
| Number of family members living at home | None                | 13     | 1.6009852  |
|   | One                 | 51     | 6.2807882  |
|   | Two                 | 56     | 6.8965517  |
|   | Three               | 72     | 8.8669951  |
|   | Four                | 73     | 8.9901478  |
|   | Five                | 134    | 16.502463  |
|   | Six                 | 115    | 14.162562  |
|   | More than six       | 298    | 36.699507  |
|   | Total               | 812    | 100%       |
| Highest education completed             | High school or less | 275    | 33.866995  |
|   | Bachelor degree     | 421    | 51.847291  |
|   | Master              | 58     | 7.1428571  |
|   | Doctorate           | 25     | 3.0788177  |
|   | Other               | 33     | 4.0640394  |
|   | Total               | 812    | 100%       |
| Ethnicity                               | Malay               | 401    | 49.384236  |
|   | Indian              | 18     | 2.2167488  |
|   | Chinese             | 213    | 26.231527  |
|   | Iban                | 43     | 5.2955665  |
|   | Melanau             | 35     | 4.3103448  |
|   | Orang Ulu           | 39     | 4.8029557  |
|   | Bidayuh             | 34     | 4.1871921  |
|   | Other               | 29     | 3.5714286  |
|   | Total               | 812    | 100%       |
| Religion                                | Muslim              | 387    | 47.660099  |
|   | Hindu               | 18     | 2.2167488  |
|   | Christian           | 269    | 33.128079  |
|   | Buddhist            | 112    | 13.793103  |
|   | Others              | 26     | 3.2019704  |
|   | Total               | 812    | 100%       |
| Income level (RM)                       | Less than RM 1,500  | 298    | 36.699507  |
|   | RM 1,501 – RM 2,500 | 281    | 34.605911  |
|   | RM 2,501 – RM 3,500 | 144    | 17.73399   |
|   | RM 3,501 – RM 4,500 | 45     | 5.5418719  |
|   | RM 4,501– RM 5,000  | 25     | 3.0788177  |
|   | More than RM 5,000  | 19     | 2.3399015  |
|   | Total               | 812    | 100%       |

Source(s): Created by authors

**Table A1.**  
Summary of  
respondent's profile

| Constructs                               | Items  |   | SFL  | Alpha | AVE   | CR    |
|--|--------|---|------|-------|-------|-------|
| Altruistic-self                          | ALS_6  | Guides persons asking for direction   | 0.58 | 0.822 | 0.483 | 0.822 |
|  | ALS_7  | Provides some money to homeless   | 0.65 |       |       |       |
|  | ALS_8  | Participates in fund collection rallies   | 0.82 |       |       |       |
|  | ALS_9  | Donates blood in response to campaigns  | 0.66 |       |       |       |
| Hunger awareness                         | ALS_10 | Cooperates with colleagues  | 0.74 | 0.869 | 0.636 | 0.869 |
|  | HC_1   | Hungry people are increasing rapidly in the world   | 0.94 |       |       |       |
|  | HC_2   | Children are more affected by the scarcity of food  | 0.70 |       |       |       |
|  | HC_3   | There are many people around me who are food insecure                                     | 0.50 |       |       |       |
|  | HC_5   | Several organisations are working to relieve world hunger                                 | 0.96 |       |       |       |
| Attitude                                 | ATT_4  | I prefer a small quantity of food on the plate because it helps to save money             | 0.73 | 0.785 | 0.642 | 0.785 |
|  | ATT_5  | I believe minimum food on the plate saves the food for hungry people in the world         | 0.72 |       |       |       |
|  | ATT_6  | There is nothing wrong with plate food waste  | 0.54 |       |       |       |
|  | ATT_7  | Eating in an ethical way generally benefits the society                                   | 0.68 |       |       |       |
|  | ATT_8  | I believe minimum food on the plate because it helps to save the water                    | 0.57 |       |       |       |
| Social responsible consumption behaviour | SRCB_1 | People should be concerned about reducing or limiting the plate food waste in our society | 0.72 | 0.844 | 0.520 | 0.844 |
|  | SRCB_3 | I limit my plate food consumption to what I really need                                   | 0.78 |       |       |       |
|  | SRCB_4 | I generally try to consume all the food that is available on my plate                     | 0.65 |       |       |       |
|  | SRCB_5 | I hardly waste the plate food, which is attached to limited resources                     | 0.70 |       |       |       |
|  | SRCB_6 | I take only the portion of food I need to consume   | 0.75 |       |       |       |

**Note(s):** Model fit indices: chi-square/df (cmin/df) = 3.54, the Goodness of Fit Index (GFI) = 0.92, Comparative Fit Index (CFI) = at 0.92, and Root Mean Square Error of Approximation (RMSEA) = 0.07  
SFL, Standardised factor loadings, all loadings are significant below 0.001 level; Alpha, Cronbach's alpha; CR, composite reliability; AVE, average variance extracted  
**Source(s):** Created by authors

**Table A2.**  
Reliability and validity indices

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## Appendix 3

Socially  
responsible  
food  
consumption

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| Constructs   | 1(ALS)       | 2(HC)        | 3(ATT)       | 4(SRCB)      |
|--|--------------|--------------|--------------|--------------|
| 1. Altruistic-self (ALS)                             | <i>0.483</i> |              |              |              |
| 2. Hunger awareness (HC)                             | 0.438**      | <i>0.636</i> |              |              |
| 3. Attitude (ATT)                                    | 0.421**      | 0.571**      | <i>0.642</i> |              |
| 4. Socially responsible consumption behaviour (SRCB) | 0.388**      | 0.487**      | 0.341**      | <i>0.520</i> |

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**Note(s):** Square root of AVE in italic

\*\*Correlation is significant at the 0.001 level (2-tailed)

\*Correlation is significant at the 0.01 level (2-tailed)

**Source(s):** Created by authors

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**Table A3.**  
Result of the  
discriminant validity  
analysis

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