

Understanding the desire for green consumption: Norms, emotions, and attitudes

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ABSTRACT

Building on goal-directed behavior premises, this article sets out to develop a framework for explaining why consumers desire green products. Informed by a qualitative study exploring critical consumption incidents, the new model of green goal-directed behaviors (MGGB) presents a unique approach, tested empirically through a survey on the sustainable food consumption of 474 U.S. consumers. By combining the effects of pro-environmental and self-oriented motivations, the MGGB achieved a superior fit and predictive power compared to rival frameworks. Structural equation modeling results unveiled the salient role of personal norms, associated with affective and evaluative mechanisms. The important function of social and cognitive aspects is also revealed. The novel approach taken herein overcomes the limitations of rational theories, by introducing new processes, and showing how their contingency on outcome expectancies and consumer involvement regulates the arousal of green consumption desires. Important considerations are derived for theory development, future research, and marketing practice.

1. Introduction

The environmental crisis and consumerism receive widespread attention from the scientific community and society (EIB, 2021; UN, 2021; White et al., 2019), boosting the urgency to change consumption patterns. Green consumption behaviors are categorized as a sub-type of pro-environmental behaviors (Lee et al., 2014; Nascimento & Loureiro, 2022) and recognized as a global business opportunity (Deloitte, 2021; Park & Lin, 2020). They are defined as the purposeful choice of goods/services (e.g., *green products*) with reduced negative environmental impacts throughout the acquisition, consumption, or disposal stages (Stern, 2000). Green consumption captures individuals' predisposition to minimize adverse consequences to natural ecosystems, reflecting ethical/moral, sociocultural, and affective dimensions (Barbarossa & de Pelsmacker, 2016; Chowdhury, 2017; Hosta & Zabkar, 2021).

Thus far, research on green consumer behaviors is extensively grounded on the Theory of Planned Behavior (TPB) and other self-interest models (e.g., Ahmad et al., 2020; Leonidou et al., 2022; Minton et al., 2018). Not underestimating its theoretical and practical relevance, the use of TPB is challenged when (i) dealing with goal-directed behaviors rather than intentions (Perugini & Bagozzi, 2001;

Xie et al., 2013, 2015), (ii) outcomes that may be out of the individual's volitional control, requiring specific skills, knowledge or resources (Armitage & Conner, 2000; Sheppard et al., 1988), and (iii) accounting for the influence of moral norms and affects (Ajzen, 1991; Bamberg & Möser, 2007; Ravis et al., 2009).

Originally introduced to expand TPB's explanatory power, the model of goal-directed behaviors (MGB) advances that rational factors provide reasons to act, but not the motivational impetus required to trigger action, demonstrating how emotional mechanisms allow individuals to regulate decision-making (Perugini & Bagozzi, 2001). MGB predicts purposive behaviors, stipulating that desires hold a key motivational function for pursuing ecological behaviors (Carrus et al., 2008; Han & Yoon, 2015; Odou & Schill, 2020), and socially driven food experiences (Xie et al., 2013).

Concurrently with self-interest theories, separate workstreams dedicated to Value-Belief-Norm (VBN) and Norm Activation Model (NAM) frameworks (Schwartz, 1977; Stern, 2000) explored how personal norms, triggered by environmental values, concerns, and beliefs, drive pro-environmental intentions. Pro-social behaviors hardly provide any tangible short-term individual gain and may even imply meaningful trade-offs (Hartmann et al., 2018; Luchs & Kumar, 2017), considering

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the premium prices, reduced convenience, and/or availability of many green categories (Barbarossa & de Pelsmacker, 2016; González-Rodríguez et al., 2020; Guerreiro et al., 2023; Zhang et al., 2020). Therefore, moral responsibility should play an important role in pro-environmental motivations (Chowdhury, 2017; Spielmann, 2021; Stern, 2000). However, it is not demonstrated *how* it can enhance the MGB's ability to explain green consumption outcomes.

Regarding this background, this research aims to demonstrate how personal norms (PN) are associated with affective, evaluative, and cognitive factors to motivate green consumption. Given that deliberative processes are already captured in the existing frameworks (e.g., TPB/MGB, VBN/NAM), we propose a modified framework – the Model of Green Goal-directed Behaviors (MGGB) – to demonstrate how the desire to buy green products is influenced by both pro-self and pro-environmental aspects. We first conduct a qualitative approach, to explore the mechanisms associated with green purchase incidents, and inform the quantitative phase, particularly, by (a) ascertaining the interplay of self-oriented and pro-environmental motives, and (b) identifying the prevalent beliefs, norms, and emotions involved.

The MGGB model is examined in the context of sustainable foods, grounded in prior literature and findings from the exploratory phase. Food production, in general, is responsible for heavy environmental impacts (Hansmann et al., 2020). Sustainable food consumption evolved from a niche to a high-growth market segment (Leonidou et al., 2022; Yazdanpanah & Forouzani, 2015), and presents a complexity of motivations (Vermeir et al., 2020). Most prior contributions are anchored in rational-based theories, with self-oriented motives mainly represented by consumer attitudes and social acceptance. While the former stems from perceived healthiness and hedonic/sensory appeals (Hansmann et al., 2020; Lee et al., 2014), the significance of the latter is disputed in this context (Han et al., 2020; Hansmann et al., 2020; Laureti & Benedetti, 2018).

Despite the prevalence of cognitive and attitudinal factors, scholars emphasize the relevance of feelings and norms for broadening the understanding of ethical/sustainable food consumption choices (Antonetti & Maklan, 2014; Davies & Gutsche, 2016; Yazdanpanah & Forouzani, 2015). In this vein, we acknowledge the importance of emotional responses, associated with the activation of moral norms and rational antecedents.

The MGGB premises consider the trade-offs between pro-environmental (e.g., environmental cognitions, personal norms), and self-oriented (e.g., social norms, attitudes) elements, and the role of feelings related to goal achievement. The circumstances that amplify the activation of emotions and desires are revealed, with important implications for future research and managerial practice. This research contributes to the literature on green consumption by clarifying the dynamics between norms and feelings in the MGGB. We attempt to answer *how* and *when* such norms and affects influence desire, by unveiling the moderating effects of consumer involvement and outcome expectancies. Therefore, the MGGB model integrates the environmental cognitions and social influences required for norm activation, with the parallel attitudinal and affective mechanisms leading to the arousal of desire.

The remainder of this paper is structured as follows. Next, the literature review regarding MGB, and normative/cognitive aspects associated with pro-environmental behaviors, followed by the presentation of the proposed MGGB conceptual framework and hypotheses. The report of the empirical findings and discussion comes next considering earlier research. In the end, emerges the main contributions, limitations, and implications for research and practice.

2. Theoretical background

2.1. Model of goal-directed behaviors

The theoretical rationale for the incremental role of emotions in goal-

directed decision-making processes, and how they differ from attitudes, is described in social psychology and management literature (Bagozzi et al., 1999, 2021; Perugini & Bagozzi, 2001), and lies on the following: (a) attitudes are evaluative, cognitively constructed responses toward an object, shaped through learning, and remain relatively stable over time, while emotions are dynamic, spontaneous and self-regulatory responses, sensitive to context; (b) anticipated emotions are framed based on achieving one's goals, while attitudes are relative to task completion; (c) negative and positive feelings may co-occur, and thus, should be treated as unipolar constructs, which is not the case with attitudes.

Desires are different from emotions. Desires are activated by deliberative and affective processes, transforming reasons into *motivation to act* (Perugini & Bagozzi, 2001; Xie et al., 2013). They provide the state of mind required to determine behaviors. Such motivation depends on whether the outcome enables (or not) goal achievement (Perugini & Bagozzi, 2001). Although different from emotions, desires are energized by them, in the sense that they account for decisions to act, rather than specific motives for doing so (Bagozzi et al., 1999).

The importance of emotions for sustainable and ethical consumption is well documented (e.g., Antonetti & Maklan, 2014; Liang et al., 2019; Odou & Schill, 2020). Yet, the conditions by which desires are formed by the combined impacts of evaluative, normative, and affective factors are under-studied in sustainable consumption settings (Table 1). In particular, MGB premises unfold a sequence of prerequisites for goal formation, namely that people: (a) positively value a given object (e.g., protecting the environment), (b) recognize a discrepancy between the object's actual and desired states, and (c) are compelled to reduce this discrepancy through their own action (Vermeir et al., 2020).

If consumers are not aware of such discrepancies (e.g., lack knowledge about environmental issues), or do not feel morally responsible for intervening, they will not engage in attaining pro-environmental goals. Yet, the MGB framework neglects environmental-related and moral beliefs (Han et al., 2016). Pro-environmental dispositions are only accounted for when aligned with self-interest (e.g., social approval or favorable evaluations). As such, it should be extended to capture a broader understanding of sustainable consumption motives.

2.2. The role of environmental beliefs and norms for forming sustainable consumption desires

Concurrently with self-interest motives, moral obligation is explored as a primary cause for green behaviors (Kim & Seock, 2019; Onwezen et al., 2013; Stern, 2000). The role of personal norms emerges in literature as the mainstay for pro-environmental choices, as conceptualized in norm activation theory (e.g., González-Rodríguez et al., 2020; Hartmann et al., 2018; Shin et al., 2018), which holds that altruistic behavior occurs in response to the intensity of internalized norms (Schwartz, 1977). Such norms depend on the individual's value system, represented by beliefs about environmental problems and the responsibility to solve them. Building on this theoretical framing, VBN extends the sequence causing pro-environmental predispositions, connecting general and enduring value orientations to specific environmental beliefs (Stern, 2000). Under the lens of VBN/NAM, moral obligations represent a commitment to biospheric values and reflect one's green identity (Hartmann et al., 2018; He & Zhan, 2018).

In support of the view that moral principles shape consumer feelings and desire toward sustainable products, this research explores the likelihood that the motivational sequence is driven by personal norms, beyond the effects of attitudes. The MGB framework is thus extended with personal norms (based on NAM theory), and the environmental-related beliefs required to form them.

Several types of environmental beliefs are associated with norm activation, representing one's predisposition to take interest in learning about, feeling concerned for, and/or acting to conserve the natural environment (Nascimento & Loureiro, 2022), such as environmental attitudes (Felix & Braunsberger, 2016; Minton et al., 2018; Nguyen et al.,

Table 1
Empirical studies grounded on MGB for examining sustainable consumer behaviors.

Study	Additional constructs ⁽¹⁾	Context	Main findings
Bagozzi et al. (2021)	Boundary conditions (materialistic values)	Second-hand clothing consumption	Anticipated emotions and attitudes were confirmed as significant predictors of desires, with non-significant effects observed for social norms and behavioral control.
Carrus, Passafaro & Bonnes (2008)	None	Recycling and using public transportation	Anticipated emotions and past behavior are significant determinants of PEB (via desire formation), above the effects of TPB constructs.
Chen et al. (2023)	Environmental awareness/concerns, PEB	Visiting nature tourism destinations (wetland parks)	The additional environmental-related motives added to the explanatory power of the MGB baseline framework, but behavioral control was not a significant predictor of desires.
Han, Jae & Hwang (2016)	Environmental awareness/responsibility, PN	PEB tendencies of sustainable cruise travelers	Higher predictive power obtained by combining the MGB variables with the sequential NAM framework. A key mediating role was revealed for PN, activated by social and pro-environmental beliefs.
Han, Moon & Hwang (2020)	Environmental awareness/responsibility, PN, self-oriented benefits, green image	Choosing eco-friendly hospitality services (hotels and restaurants)	Cognitive (e.g., related to environmental impacts) and deliberative aspects determine sustainable consumption outcomes. Moral and emotional dimensions were non-significant predictors when parallel to (instead of driven by) social and cognitive factors.
Han & Yoon (2015)	Environmental awareness, self-efficacy, green image, PEB	Choosing eco-friendly hotels	Self-efficacy exhibited a significant role, as opposed to behavioral control. Environmental cognitions are verified as an important trigger for customer attitude formation.

Table 1 (continued)

Study	Additional constructs ⁽¹⁾	Context	Main findings
Hwang, Cho & Kim (2019)	Self-oriented benefits (psychological)	Eco-friendly (drone) food delivery services	Desires stem from anticipated emotions, formed by three sub-dimensions of self-oriented benefits (e.g., warm glow, self-expressive benefits, nature experiences).
Kim, Njite & Hancer (2013)	None	Visiting eco-friendly restaurants	Anticipated emotions (regret) add explanatory power to the TPB rational approach. The impact observed for behavioral control was non-significant.
Kuo et al. (2018)	PEB, PN, environmental awareness	Engaging in energy-saving activities	Environmental-related motives augment the ability of deliberative factors to influence PEB.
Odou & Schill (2020)	None	Fighting climate change through PEB	Behavioral control partly mediates the impacts of emotions on intentions, but the effects depend on individual's engagement level.
Passafaro et al. (2014)	None	Using a bike in a large city instead of driving	Emotions influence sustainable behaviors directly and mediate the effects of rational factors.
Song et al. (2012)	PEB, environmental awareness, self-efficacy	PEB tendencies of festival visitors	The extended MGB framework with environmental motives, and self-efficacy obtained superior explanatory power. The effects of negative emotions and behavioral control were non-significant.
This study	Environmental knowledge, PN, boundary conditions (OE, involvement)	Sustainable food consumption	Introduced a revised MGB framework, revealing the predominant role of PN for triggering emotions and desire, and how it stems from cognitive and social factors. The normative and affective mechanisms were amplified by OEB and involvement.

Notes: ⁽¹⁾Additional to the original MGB (model of goal-directed behaviors) comprised of: social norms, attitude, anticipated emotions, perceived behavioral control, and past behavior as predictors of behavioral outcomes (e.g., desires, intentions). PN: personal norms, OE: outcome expectancies, PEB: pro-environmental behaviors, TPB: theory of planned behavior, NAM: norm activation model. (Source: created by authors).

2016), awareness (Zhang et al., 2020), consciousness (Ahmad et al., 2020), or concerns (Hamzah & Tanwir, 2021; Hartmann & Apaolaza-Ibanez, 2012). Cognitive factors emerged in extended rational frameworks as an awareness of consequences and environmental knowledge. The former is represented in VBN/NAM (e.g., Choi et al., 2015; Hartmann et al., 2018), while the latter is considered in TPB-based approaches (e.g., Jaiswal & Kant, 2018; Kumar et al., 2017). Both capture the level of awareness about environmental problems and solutions but differ conceptually in one key aspect. While environmental knowledge is concerned with the ability to understand environmental issues (Hamzah & Tanwir, 2021), awareness of consequences focuses on the extent to which people are aware of the negative consequences to natural ecosystems (Shin et al., 2018). We adopt environmental knowledge, as it is less restrictive –

not limited to the existence of negative impacts – and propose that (Fig. 1):

H1: Environmental knowledge is positively associated with (1a) personal norms and (1b) attitude toward behavior.

We argue that personal norms reflect social influences, in addition to knowledge about environmental issues. The assumption that, in certain contexts, both social and personal norms can trigger a sense of moral responsibility is acknowledged in TPB’s theoretical premises (Ajzen, 1991), and the influence of social expectations on personal norms is well established in the literature (Bamberg & Möser, 2007; Ravis et al., 2009). The lack of mediation may explain why, on many occasions, prior studies failed to verify the significant impacts of social norms on pro-environmental behaviors (e.g., al Mamun et al., 2018; Choi et al., 2015; Swaim et al., 2014). Thus, the activation of personal norms is triggered by social influences, independently from the effects of environmental knowledge:

H2: Social norms are positively associated with personal norms.

Moral foundations are reflected in self-conscious emotions, which hold a motivational role by providing individuals with instant gratification or punishment, signaling the moral acceptability of behaviors

(Bagozzi et al., 2018). In psychology, emotions are regarded as pathological reactions similar to feelings and affects (APA, 2022), which suggests that they are modulated to the extent that people react to something (e.g., stimuli or the possibility of a given outcome). Although overlooked in consumer behavior research (Chowdhury, 2017; Xie et al., 2015), the interactions between norms and emotions were investigated in a comprehensive model comparison (Onwezen et al., 2013), which served to demonstrate how emotions are evoked by norms in pro-environmental settings.

The emotional consequences of goal attainment assist consumers in evaluating the morality of someone’s (or their own) conduct, which is widely acknowledged in the literature (e.g., Antonetti & Maklan, 2014; Bagozzi et al., 2021, 2022; Xie et al., 2015). Positive feelings, such as a sense of ‘warm glow’ (Spielmann, 2021) are rooted in moral foundations, and represent emotional intrinsic motivations for ethical/green choices. Conversely, guilt and other negative feelings stem from personal responsibility in the case of *not acting* pro-environmentally (Culiberg et al., 2022). We expect that moral aspects determine the nature or intensity of emotions anticipated by consumers, which subsequently triggers volitions, as described in the following hypotheses:

H3: Personal norms are positively associated with positive (H3a) and negative (H3b) anticipated emotions.

H4: Positive (H4a) and negative (H4b) anticipated emotions are positively associated with desire.

Personal norms also influence desire directly beyond the mediation of emotions. Environmental and social motives are connected to green consumption outcomes through moral guidelines, regardless of affects (Hartmann et al., 2018; Kim & Seock, 2019). The desire for altruism derives from moral identities, which provide a greater sense of self, and directly reinforce the propensity to make the ‘morally right’ choice (Spielmann, 2021). In this study’s conceptualization, the influence of morality is combined with self-interest to activate desire.

In the original MGB framework, Perugini and Bagozzi also describe the downstream consequences of desire. However, as shown in Table 1,

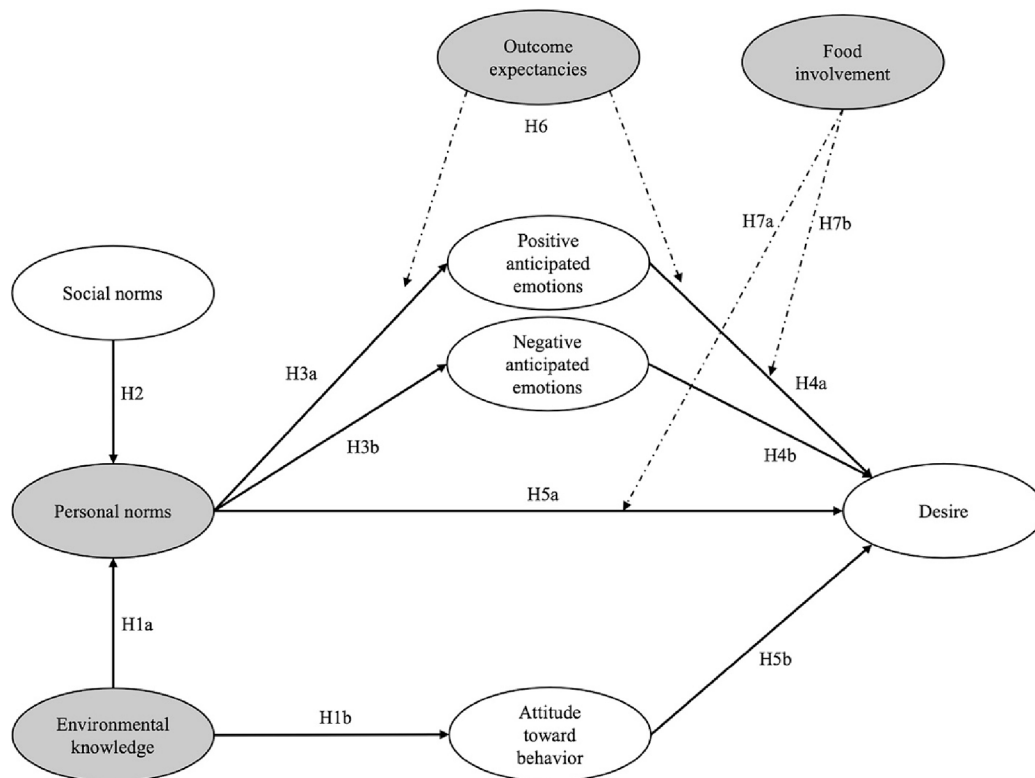


Fig. 1. The new Model of Green Goal-directed Behaviors (MGGB) Note: The grey shapes indicate constructs newly added to the original MGB framework. (Source: created by authors)

the role of desire for predicting behavioral expectations or intentions (Bagozzi et al., 2021; Chen et al., 2023; Han & Yoon, 2015; Song et al., 2012), and behaviors (Carrus et al., 2008), is already often analyzed, so we focus on how green consumption desires are induced. Here, personal norms and attitudes are parallel mediators regulating the influence of social and environmental beliefs. Although it is possible that, under some conditions, norms, and attitudes interact with each other (Zhang et al., 2020), we propose that normative and evaluative processes operate in separate paths (Shin et al., 2018; Yazdanpanah & Forouzani, 2015):

H5: Personal norms (H5a) and attitude toward behavior (H5b) are positively associated with desire.

2.3. Moderating variables

2.3.1. Outcome expectancies

Environmental beliefs are among the most important aspects influencing green consumption deliberative and emotional processes (Ahmad et al., 2020; al Mamun et al., 2018; Amatulli et al., 2019; Jaiswal & Kant, 2018). Expectancy beliefs about *action efficacy*, in particular, reflect the extent to which consumers consider that their efforts contribute to environmental protection, representing their internal locus of control (e.g., whether their action can provoke the desired effect) (Ajzen, 1991; Hosta & Zabkar, 2021). These differ conceptually from self-efficacy – defined by social cognitive theories as the confidence to carry out a task (Armitage & Conner, 2000; Bandura, 1986) – which is incorporated in TPB (Ajzen, 1991) as perceived behavioral control and often found to be non-significant in prior research (Table 1).

People with a weaker locus of control believe that their choices are insignificant and that only the actions of powerful others will produce meaningful outcomes (Steg & de Groot, 2010). Similarly to behavioral control (Liang et al., 2019), outcome expectancies strengthen normative and emotional motivations and are relevant for explaining green consumption outcomes (He & Zhan, 2018; Park & Lin, 2020). We hypothesize that positive emotions and desire formation are amplified for those with stronger outcome expectancies, due to their personal norms:

H6: Outcomes expectancies strengthen the relationship between personal norms and desire through positive anticipated emotions.

2.3.2. Food involvement

Consumers become more involved with a product when it offers important value or fulfills meaningful needs (Ahmad & Zhang, 2020). Described as a state of arousal, consumer involvement captures the amount of interest that people direct toward brands and products (Berens et al., 2005), interfering with ethical and food consumption contexts (Drichoutis et al., 2007; Osburg et al., 2019). Highly involved consumers are more willing to invest in self-reflection, comparing a course of action with their moral principles, and experiencing stronger emotions as a result (Bezençon & Blili, 2010; Malär et al., 2011). The concept of food involvement was developed to analyze the importance attributed to foods in particular (Bell & Marshall, 2003), and was previously employed in a modified MGB framework, amplifying the effects of the determinants of desire (Xie et al., 2013). Accordingly, we hypothesize that the impacts of personal norms and positive emotions on desire depend on the extent to which consumers are involved with foods:

H7: Food involvement strengthens the relationship between personal norms and desire (H7a) and between positive anticipated emotions and desire (H7b).

3. Qualitative approach

Four focus group sessions were held to understand the underlined motivations driving sustainable food consumption. Participants' perceptions and opinions were openly explored by stimulating group discussions and scrutinizing the topics of interest from diverse perspectives

(Tynan & Drayton, 1988). Particularly, we followed a semi-structured script to elicit prevalent beliefs, types of emotions, and contingencies that affect consumer experiences, and collect insights into how norms and affective responses are formed.

3.1. Participants and procedure

Twenty U.S. consumers of diverse ages, occupations, and cultural and educational backgrounds were selected in a gender-balanced frame through a purposive sampling approach (e.g., lifestyle and food-related online communities, sample profile in Appendix 1). The discussions were held online for about 60 min and were video recorded with explicit consent. The participants' experiences were accessed by using the critical incident technique with small homogeneous groups to ensure authentic interactions. This technique became widely recognized in the field of social science (Flanagan, 1954). The participant is prompted to recall and describe a time when a particular occurrence had an impact, either positively or negatively, on a specific outcome (e.g., "Do you remember a specific situation where you considered buying, or did buy, a green product/service?").

The systematic procedure has allowed us to acquire high-quality qualitative data about green buying incidents from observers who have firsthand experience. A total of 241 data points were categorized by two senior researchers in MaxQDA2020 by employing open and axial coding procedures (Braun & Clarke, 2012; Gioia et al., 2013). A high level of inter-coder agreement was obtained (e.g., 88.7 %, Cohen's kappa = 0.78; Landis & Koch, 1977). Thematic analysis was used to organize related concepts in broader categories forming higher-level themes, which were subsequently associated with key concepts from literature by axial coding techniques.

3.2. Findings

Consumers more engaged in sustainable food consumption expressed *higher awareness* of environmental impacts, associated with ethical and health-related concerns:

I thought a lot about the consequences of eating meat, to health, the environment, but also the ethical reasons for not eating animals. (Nick, 24 years old)

Cows produce a lot of gas. If we don't reduce consumption, we will be in trouble! (Luis, 22)

Bio products are made with fewer chemicals and are less harmful to you and the environment. My choice is about climate change. (Maria, 38)

Concurrently, the effects of socialization and perceived expectations of important others represent a major driver of experimentation:

My ex-boyfriend is a vegetarian and a very good cook. I would eat what he was making, so I was also a vegetarian for a while. (Patricia, 25)

She's doing tasty vegan food, so I could try to reduce eating meat. She's not putting any pressure over anybody. (Roberto, 24)

My mother always bought organic food, so I guess I was kind of influenced by her. (Frank, 21)

Perceptions about what is *socially appropriate* also emerged from the actions performed by others:

I've tried it because I see them [her classmates] eating it every day. (Li, 23)

I saw the difference when I arrived here, because in my country, people eat fish or meat only a few times per week. (Helga, 23)

The differences between injunctive and descriptive social norms are widely debated (Elgaaied-Gambier et al., 2018). Although the impacts of the surrounding social environment (e.g., cultural habits, celebrities) were also observed, this research focused on compliance with the expectations of significant others as the dominant type of (injunctive) social norm.

When I was spending holidays with my friends, they convinced me to not buy meat. (Ronald, 27)

Such social influences appear to be internalized in consumers' moral beliefs, influencing their emotional responses and willingness to consume sustainable foods. Shame, embarrassment, and guilt were the most salient negative emotions. Pride and delight – resulting from pleasurable experiences and/or group belongingness – were the main positive feelings.

There will be more people in the [vegan] group, so you don't want to be left out, you want to be part of it. It makes you feel proud! (Andrew, 36)
Nowadays, I know vegan people who ask me: "why do you still eat meat, why don't you replace it with something else?" And I take it into consideration. They make me feel guilty. (Beatrice, 30)

The prevalent beliefs, norms, and emotion types are aligned with extant literature (e.g., Amatulli et al., 2019; Antonetti & Maklan, 2014; Hosta & Zabkar, 2021), and were incorporated in the questionnaire. Another important insight lies in the non-homogeneous way in which feelings and desires are evoked by personal norms. The differentiating circumstances appear to be related to the: (a) extent to which people believe their decisions can make a difference, (b) the importance attributed to food choices.

If the government or influencers show people how doing small things can lead to big differences, a lot more people will get involved. (Jian, 24)
In the supermarket, I usually go to the 'bio' section. Trying new types of eco-friendly, healthy, tasty foods matters to me. (Marcia, 42)

These contingencies warrant further consideration and will be investigated as possible moderators. Overall, findings from the qualitative data underline the idea that norm activation is a core component of pro-environmental decision processes, providing an empirical hint that PN is associated with emotions and desire, especially for highly involved people and/or for those exhibiting strong beliefs about their ability to produce tangible outcomes.

4. The main study

4.1. Sample and data collection

A cross-sectional study was conducted with a convenience sample of U.S. consumers recruited on Prolific, one of the most reputable crowdsourcing platforms for scientific research, with a wider diversity of respondents and lower attention-check failure rates (Peer et al., 2017; Shin et al., 2018). The survey was completed in exchange for a small monetary incentive and the geographic origin of IP addresses was verified. A brief explanation about the study's objective, data confidentiality, and a definition of sustainable foods was provided beforehand (e.g., "organic, locally grown, vegan/vegetarian, or others which can minimize negative impacts on the environment").

From the 486 responses received, 474 usable observations were retained after screening for failed attention checks (Kung et al., 2018) and invalid cases. The minimum sample size of 250–300, retrieved from literature, verified in G*Power and similar software (Cohen, 1992; Faul et al., 2007; Hair et al., 2014) was surpassed, suitable for models with relative complexity, low commonalities, and under-identified constructs. Sample characteristics were as follows (Appendix 2). Age ranges from 18 to 81 years (mean: 33.7). The sample was comprised of 261 (55.1%) female and 199 (42.0%) male respondents, and most do not have children (70.9%).

4.2. Measurement instrument

The questionnaire was distributed in English and verified by six native-English speakers and three senior university marketing professors. Their examination was conducted separately and they were

individually interviewed shortly after. The items used for the measurement scales relied on empirically validated scales from literature (Appendix 3), with minor adjustments according to the qualitative phase and suggestions received. The instrument was pre-tested with 30 U.S. consumers. All items were measured with five-point Likert scales, anchored by "strongly disagree" and "strongly agree", except for positive/negative anticipated emotions (PAE/NAE, measured by a five-point unipolar scale: "Not at all", "Slightly", "Moderately", "Quite", "Very much") and attitude toward behavior (ATB, measured by a five-point bipolar scale, e.g., "Extremely negative/positive"). The socio-demographic control variables were recoded as dummy variables (Diamantopoulos et al., 2003): age was recorded as "0" or "1", respectively, for values below or above the median, and the presence of children was recorded as "1" for cases different from zero. Past behavior was measured by: "Never", "A very few times", "Occasionally", "Often", and "Very frequently".

Sociodemographic factors were included due to contradictory evidence about their impacts. A comprehensive review (Diamantopoulos et al., 2003) shows that women are more likely to hold stronger pro-environmental attitudes, and offers partial support for the impact of age, as confirmed concerning the willingness to pay more for energy-saving appliances (Zhang et al., 2020). Other studies pointed toward the presence of kids in the household affecting electric vehicle adoption (e.g., Jansson et al., 2017). Conversely, other studies suggest that socio-demographic differences do not appear to influence pro-environmental behaviors in a consistent way (Ahmad et al., 2020; He & Zhan, 2018; Odou & Schill, 2020). To verify this possibility, gender, age, and the presence of kids were controlled for. Past behavior was also treated as a control variable, considering it plays a significant role in the original MGB (Perugini & Bagozzi, 2001), and the fact that food habits are difficult to change.

4.3. Data analysis

After preliminary inspections of data quality, a two-step process was implemented (Anderson & Gerbing, 1988; Bagozzi & Yi, 1988). First, a confirmatory factor analysis (CFA) was conducted to verify the measurement model's robustness. Second, a series of structural equation modeling (SEM) analyses were completed for evaluating the internal structure fit of the proposed framework, in comparison with rival specifications. Diverse fit measures were analyzed (Bagozzi & Yi, 1988; Hu & Bentler, 1999) to avoid dependency on chi-square tests for goodness-of-fit, due to sensitivity to sample size (Anderson & Gerbing, 1988; Bagozzi & Yi, 1988; Hair et al., 2014). Root-mean-square error of approximation (RMSEA < .06) and standardized root-mean-square residual (SRMR < .08) cut-offs were emphasized to evaluate the absolute fit between the specified model and data (Bagozzi & Yi, 2012; Hair et al., 2014; Hu & Bentler, 1999). Comparative (CFI) and Tucker-Lewis (TLI) indices (>.95) were used to assess incremental fit, and Akaike Information Criteria (AIC) for model comparison (Hair et al., 2014; Hu & Bentler, 1999). The CFA and SEM analyses were supplemented with PROCESS mediation, moderation, and conditional process analyses (Appendix 5) to evaluate the estimates for direct, indirect, and interaction effect sizes, in conjunction with the associated bootstrap confidence intervals (Hayes, 2014). All data analyses were performed in R-studio.

5. Results

5.1. Common method bias

The dataset was tested with the marker variable technique to detect the potential effects of common method bias (Podsakoff et al., 2003). The selected variable is theoretically unrelated to any model's variable, with three items (e.g., 'I like the color blue') measured by a similar scale to the focal constructs. Loadings, validity, and reliability indicators

(Cronbach alpha = 0.72) were satisfactory. The addition of the marker variable had no effect on the loadings of indicators on substantive constructs, all correlations remained unchanged, and no statistically significant correlation was found with any other variable. Chi-square test results ($\Delta\chi^2 = 5.46$, $\Delta_{DF} = 5$, $p = 0.36$) confirmed that common method bias is unlikely to pose a plausible threat to data or influence results.

5.2. Measurement model

The CFA yielded overall acceptable model fit ($\chi^2(288) = 917.6$, $\chi^2/DF = 3.2$, SRMR = 0.04, RMSEA = 0.07, CFI = 0.94, TLI = 0.92). The chi-square (χ^2) test statistic was significant, which is not surprising considering the large sample size (Anderson & Gerbing, 1988; Bagozzi & Yi, 1988; Hair et al., 2014). Nevertheless, the χ^2/DF ratio surpassed only marginally the 3:1 cut-off associated with better-fitting models (Kline, 1998). The constructs' internal consistency was adequate, with satisfactory levels of reliability and validity (Table 2): composite reliability values were above .60 (Bagozzi & Yi, 1988), and all Cronbach alphas were above .70 (Bagozzi & Yi, 2012).

Convergent validity was established with significant loadings ($p < .01$) and item reliabilities above the .70 threshold (Fornell & Larcker, 1981), except for the FI item "Compared with other daily decisions, my food choices are important" (loading slightly below .70, see Appendix 3), which was kept for retaining two items in the construct (Xie et al., 2013). The average variance extracted (AVE) followed the .50 standard (Bagozzi & Yi, 1988; Fornell & Larcker, 1981), indicating that the variance of the measurement error is smaller than the variance captured by the construct. Discriminant validity of all construct measures was supported based on Fornell and Larcker's criterion, with the square root of each construct's AVE higher than the correlation coefficient with any other construct. The variance inflation factor was below 0.3 (Hair et al., 2014) for all constructs, confirming that data is free from multicollinearity concerns. A sufficient level of reliability and unidimensionality was attained.

5.3. Structural model and hypotheses tests

5.3.1. Testing the original MGB

First, we evaluated the fit of a baseline MGB framework, which was close to pre-defined thresholds: $\chi^2(170) = 653.93$, $\chi^2/DF = 3.85$, CFI = 0.94, TLI = 0.93, RMSEA = 0.08, SRMR = 0.05. Under MGB premises, the desire to buy (DTB) was significantly ($p < 0.001$) influenced by ATB ($\beta = 0.76$) and PAE ($\beta = 0.16$). Social norms (SN, $\beta = 0.05$) and NAE ($\beta = 0.00$) were found to be nonsignificant predictors, contrary to the original specifications (Perugini & Bagozzi, 2001). Considering these results, we reflect on two plausible explanations: (a) negative emotions are only experienced from failing to consume green foods when deriving from

moral orientations (driven by socialization and/or environmental beliefs), (b) social expectations only influence pro-environmental outcomes when internalized in consumers' moral system. The proposed MGGB accounts for both possibilities, as explored hereafter.

5.3.2. Testing the extended MGGB with environmental knowledge and personal norms

The proposed model extends the original MGB by representing pro-environmental motivations through the addition of a belief-norm sequence, as described in VBN/NAM theories (Schwartz, 1977; Stern, 2000). Environmental knowledge (EK) was included as antecedent, and PN as a mediating variable predicting emotions and desire. The MGGB fit well to the data: $\chi^2(170) = 471.32$, $\chi^2/DF = 2.77$, CFI = 0.96, TLI = 0.95, RMSEA = 0.05, SRMR = 0.04. Besides exhibiting better fit results, the amount of explained variance captured for DTB increased from 62.8% to 67.5%, when compared to the MGB baseline, suggesting that the MGGB provides a fuller explanation. Both PN ($\beta = 0.27$) and ATB ($\beta = 0.52$) were significantly ($p < 0.001$) and positively influenced by EK, in support of hypotheses H1a and H1b (Table 3). The significant role of SN as an independent predictor of PN was also confirmed ($\beta = 0.40$, $p < 0.001$), as proposed under H2.

We then examined the consequences of norm activation for emotions (H3) and desire formation (H4). Based on the empirical results, PN significantly predicted PAE ($\beta = 0.68$, $p < 0.001$) and NAE ($\beta = 0.28$, $p < 0.001$), in support of H3a and H3b, respectively. The magnitude of the effects indicates that the influence held by personal norms is stronger on positive emotions. With regards to the determinants of DTB, both PAE (H4a: $\beta = 0.12$, $p < 0.01$) and NAE (H4b: $\beta = 0.11$, $p < 0.05$) were confirmed as significant predictors, even though only a marginally significant impact was verified for the latter. A closer inspection of the correlation matrix shows how positive feelings are more highly correlated with PN and DTB than negative ones. Evaluating the possibility of a mediated norm-emotion-desire path, we expected that an indirect impact would occur via PAE, in accordance with extant research, which points out how positive emotions constitute a more meaningful determinant of pro-environmental behaviors than negative ones (Liang et al., 2019; Odou & Schill, 2020; Spielmann, 2021). As expected, the PN-PAE-DTB sequence was confirmed ($\beta = 0.08$, $p < 0.01$).

Next, we verified the hypotheses that PN (H5a: $\beta = 0.42$) and ATB (H5b: $\beta = 0.45$) directly and significantly ($p < 0.001$) affected DTB. These results represent the combined role of pro-self (evaluative) and pro-environmental motives. We concluded that the influence of personal norms is only partially mediated by positive emotions, as the PN-DTB direct path was still significant when controlling for PAE. In addition, two other theoretically meaningful indirect effects were observed, which highlights the important role of personal norms for transforming cognitions and social expectations into desire: SN ($\beta = 0.17$, $p < 0.01$) and EK ($\beta = 0.11$, $p < 0.01$) indirectly affected DTB through PN.

Table 2
Correlation matrix, construct validity, and reliability.

Constructs and items	α	CR	AVE	Construct correlations								
				1	2	3	4	5	6	7	8	9
1. Environmental Knowledge	0.86	0.86	0.68	0.83	0.38	0.43	0.57	0.33	0.1	0.43	0.52	0.16
2. Social Norms	0.93	0.93	0.83	0.38	0.91	0.54	0.46	0.43	0.23	0.43	0.37	0.28
3. Personal Norms	0.91	0.91	0.73	0.43	0.54	0.85	0.73	0.57	0.36	0.75	0.57	0.27
4. Attitude toward Behavior	0.93	0.93	0.81	0.57	0.46	0.73	0.90	0.57	0.23	0.76	0.53	0.36
5. Positive Anticipated Emotions	0.88	0.87	0.71	0.33	0.43	0.57	0.57	0.84	0.44	0.57	0.53	0.27
6. Negative Anticipated Emotions	0.84	0.86	0.67	0.1	0.23	0.36	0.23	0.44	0.82	0.24	0.14	0.14
7. Desire to Buy	0.85	0.87	0.68	0.43	0.43	0.75	0.76	0.57	0.24	0.82	0.46	0.28
8. Outcome Expectancy Beliefs	0.88	0.88	0.72	0.52	0.37	0.57	0.53	0.53	0.14	0.46	0.85	0.37
9. Food Involvement	0.72	0.64	0.73	0.16	0.28	0.27	0.36	0.27	0.14	0.28	0.37	0.85
Mean				3.61	2.83	3.53	4.09	3.21	1.57	3.94	3.81	3.23
Standard Deviation				1.04	1.18	0.91	0.84	1.29	0.92	1.01	1.07	1.12

Notes: Bold figures in the diagonal of the correlation matrix represent the square root of AVE (Average Variance Extracted).
 α : Cronbach's alpha; CR: Composite Reliability. (Source: created by authors).

Table 3
Structural equation model results.

Hypothesized paths	Coefficients	t values	Results
H1a) Environmental knowledge → Personal norms	0.27***	4.91	Supported
H1b) Environmental knowledge → Attitude toward behavior	0.52***	11.32	Supported
H2) Social norms → Personal norms	0.40***	9.53	Supported
H3a) Personal norms → Positive anticipated emotions	0.68***	11.13	Supported
H3b) Personal norms → Negative anticipated emotions	0.28***	6.44	Supported
H4a) Positive anticipated emotions → Desire	0.12**	3.09	Supported
H4b) Negative anticipated emotions → Desire	0.11*	1.98	Supported
H5a) Personal norms → Desire	0.42***	6.73	Supported
H5b) Attitude toward behavior → Desire	0.45***	6.53	Supported
H6) Personal norms * Outcome expectancies → Positive anticipated emotions	0.10**	2.78	Supported
Positive anticipated emotions * Outcome expectancies → Desire	0.06*	2.23	Supported
H7a) Personal norms * Food involvement → Desire	0.08*	2.01	Supported
H7b) Positive anticipated emotions * Food involvement → Desire	0.10*	2.31	Supported
Significant indirect paths			
Personal norms → Positive anticipated emotions → Desire	0.08**	3.04	
Social norms → Personal norms → Desire	0.17**	5.83	
Environmental knowledge → Personal norms → Desire	0.11**	4.04	
R²			
Personal norms: 38.4 %, attitude toward behavior: 30.2 %, positive emotions: 33.3 %, negative emotions: 13.5 %, desire: 67.5 %			
Notes: *** p < 0.001; ** p < 0.01; * p < 0.05. The coefficients are standardized. No control variables were included. Their effects were non-significant (p > 0.05): age (β = -0.00), presence of kids (β = -0.17), past behavior (β = 0.02), gender (β = 0.00). (Source: created by authors).			

Overall, the results demonstrate how the MGGB, augmented by EK and PN, enabled the confirmation of a wider range of hypotheses and provided a more substantial explanation of sustainable consumption decision-making processes.

5.3.3. Model comparisons

The MGGB was compared with four plausible rival specifications inspired by literature, to determine if the proposed framework is the best-fitting model for the data. Model 2 tested if moral beliefs directly affect sustainable food evaluations, as proposed by Zhang et al. (2020). Model 3 assessed an inverted *emotions-norm* sequence (Han et al., 2017), under which MGB constructs hold a parallel influence over PN and DTB. Model 4 investigated the possibility that the effects of AE and PN run separately, without any correlational path between them. Finally, model 5 examined the possibility of PN effects being fully mediated by emotions.

Based on results (Appendix 4), the MGGB outperforms all four alternative (and the original MGB) frameworks, on account of three criteria: (i) improved model fit results, (ii) significantly better chi-square test results, and (iii) capturing a higher portion of the variability in DTB. Moreover, even though models 2 (e.g., adding a PN-ATB path) and 5 (e.g., removing the PN-DTB direct path) exhibit a nearly comparable fit, in these rival explanations the explained variance for DTB is lower, and the NAE-DTB path is non-significant, thus reinforcing the superiority of the proposed model.

5.3.4. Moderation effects

The hypothesized effects were not equally pronounced for all individuals and were reinforced in the presence of certain circumstances. Based on findings from the qualitative study, we explored the interaction of outcome expectancies and food involvement with the affective and moral processes associated with DTB.

To assess the moderating role of outcome expectancy beliefs (OEB) proposed in H6, we first confirmed that it significantly interacted with the individual paths in the PN-PAE-DTB sequence. OEB positively and significantly moderated the PN-PAE (β = 0.10, p < 0.01), and PAE-DTB (β = 0.06, p < 0.05, see Table 3) effects. Then, we tested OEB's moderated mediation effect (PN was specified as an independent variable, PAE as the mediator, and DTB as the outcome). As shown in Appendix 5, the index of moderated mediation did not contain zero (b = 0.02, SE = 0.006, 95 % CI [0.007, 0.031]). The indirect effects of PN on DTB were significant for people with low (b = 0.04, SE = 0.014, 95 % CI [0.015, 0.069]), average (b = 0.08, SE = 0.017, 95 % CI [0.049, 0.115]),

and high levels of OEB (b = 0.13, SE = 0.029, 95 % CI [0.078, 0.194]). These results suggest that the more consumers believe that their actions can make a difference in protecting the environment, the more their internal norms drive the desire for sustainable foods through positive emotions.

The moderation tests also indicate that FI interacts significantly (p < 0.05) with the activation of DTB by PN (H7a: β = 0.08) and PAE (H7b: β = 0.10). The effects of norms and emotions were magnified for those highly involved with foods. The moderated mediation was non-significant for FI (b = 0.020, SE = 0.028, 95 % CI [-0.033, 0.079]). These findings support that OEB and FI moderate the relationships between PN, PAE, and DTB (Fig. 2).

5.3.5. Control variables

Finally, three socio-demographic variables and past behavior (PB) were controlled for, which combined explained a low portion of variance (<3%). Age (β = -0.00), presence of kids (β = -0.17), and PB (β = 0.02) did not exhibit any significant effects on DTB, contrarily to gender (β = 0.20, p < 0.05), implying that female consumers are more likely to purchase green foods. However, we found no evidence that gender could affect the results, considering that when adding gender to the model: (a) no significant impacts were detected, (b) the other predictors retained the significance and magnitude of their effects, (c) the model fit did not improve.

6. Discussion

This research set out to demonstrate how the combined effects of affective, normative, and deliberative factors motivate the desire for sustainable consumption. The results suggest that, for an appropriate conceptualization of green purchasing decision processes, affects stem from personal norms (Onwezen et al., 2013), in contrast to rival explanations (Han et al., 2017). We argue that in pro-social considerations, automatic (emotional) responses occur as a consequence of moral identities parallel to evaluative mechanisms. Our findings expand the knowledge about how emotions entail a prefactual appraisal that boosts motivations in goal-directed behaviors, associated with environmental and moral responsibility (Xie et al., 2015). The combined influence of emotions, reinforced by the contextual support of personal norms, shapes the extent to which individuals feel the desire for sustainable products.

Secondly, we found empirical evidence for the influence of EK on both pro-self (e.g., via attitude formation) and pro-environmental (e.g.,

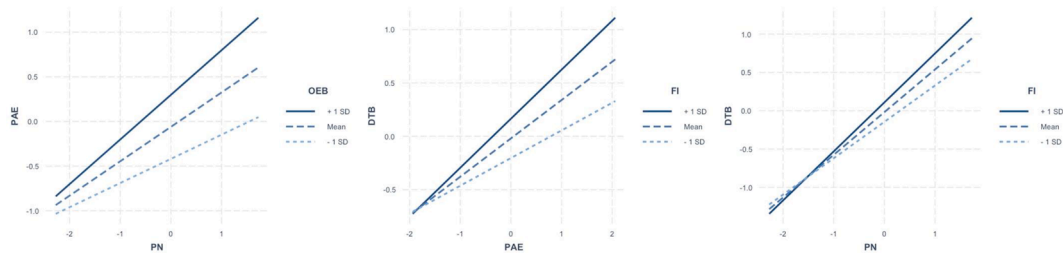


Fig. 2. Interaction slopes between: (1) Personal Norms (PN) and Outcome Expectancy Beliefs (OEB); (2) Personal Norms (PN) and Food Involvement (FI); (3) Positive Anticipated Emotions (PAE) and Food Involvement (FI). (.

Source: created by authors)

via moral norms' activation) routes, building on previous attempts to connect rational models to environmental cognitions (Kumar et al., 2017), and personal norms (He & Zhan, 2018). The former – more than competing with – actually reinforces purchasing attitudes over and above the effect on the latter.

Thirdly, we uncovered a fully mediated link between SN and PN, in support of the concept of internalized norms (Kim & Seock, 2019). Several interesting issues are raised, shedding light on why non-significant effects are reported for SN in pro-environmental studies where the inclusion of a mediator is not considered (e.g., al Mamun et al., 2018; Hosta & Zabkar, 2021; Yazdanpanah & Forouzani, 2015). The idea that social stimulus requires the intermediation of PN to motivate behaviors is not consensual among scholars (Nguyen et al., 2016). Our interpretation is that social influences are insufficient to trigger sustainable actions unless assimilated into moral principles. Indeed, social expectations are perceived regardless of EK. We infer that social compliance works due to the importance attributed to the *relationship* with important others, and not due to the *content* of social messages.

Fourthly, new insights were provided about the circumstances when the arousal of emotions and desires is magnified. Consumers who have stronger outcome expectancies about their consumption choices are more likely to feel good when act according to their moral goals. As expected, we found significant differences in how desires are derived from norms and emotions, as the effects were significantly stronger for highly involved consumers. The influence of consumer involvement on emotional/behavioral outcomes traces back to literature on brand attachment and ethical purchases (Bezençon & Blili, 2010; Malär et al., 2011; Osburg et al., 2019). Considering how this arousal state build-up is more pronounced for people highly involved with foods, a new question opens about to which extent such effects could be reproduced concerning other green products.

Finally, our results confirmed that, while desires are central to transforming motives into decisions to engage in goal-directed actions, as specified under the lens of MGB, pro-environmental volitions are a consequence of interconnected normative, emotional, and attitudinal processes. Taking the above, MGGB achieved a higher explanatory power than the competing frameworks.

6.1. Theoretical contributions

This research addresses two major gaps in sustainable consumption research. First, we uncovered the role of personal norms in influencing the desire for green products, thus extending Han et al.'s (2016) study. Most research to date in the pro-environmental behaviors field investigates either self-interest or altruistic motives independently but does not explain how both mental processes are integrated. This study examined the conditions under which desires are aroused through the combined impacts of moral obligations and deliberative processes, extending the rationale of the MGB framework (Perugini & Bagozzi, 2001), and its validity in sustainability and food consumption contexts (Bagozzi et al., 2021; Xie et al., 2015). Moreover, we theorized (and

demonstrated) how emotions derive from moral beliefs, partly shaping their impacts on consumer decisions. Important implications are suggested for pro-social behavior scholars, with regards to incorporating non-rational elements in their specifications and addressing a fundamental shortcoming in cognitive/attitudinal-based theories.

Second, our conceptualization of how personal norms are activated contributes to the theory. The MGGB brings together cognitive and socialization aspects, by identifying two important antecedents associated with moral obligations, in the form of environmental knowledge and social norms, and by unveiling how green decision-making processes are initiated. The empirical demonstration of how social and personal norms are connected expands the view of seminal critical reviews of rational-based frameworks (Bamberg & Möser, 2007; Ravis et al., 2009; Shepard et al., 1988). The final contribution relates to the circumstances under which central effects are amplified. Outcome expectancies and food involvement were identified as moderators interacting with normative/affective routes for the arousal of desire.

6.2. Managerial implications

Green products/brands are yet to realize their full potential (Deloitte, 2021). Our findings hold important implications for practitioners operating in this market. Three important issues are highlighted for managers to consider for accelerating the switch to sustainable products, in general (and foods, in particular). First, feelings and desires constitute fundamental elements in consumer decisions. A key challenge for managers is to balance informative and emotional message framing when promoting food products. A promising approach is to convey a sense of pride and belongingness, enhancing individuals' self-image associated with the stereotype of environmentally conscious consumers. Managers can offer cues that highlight how adhering to pro-environmental choices symbolizes empowerment to strengthen the emotional impact (and, consequently, the desirability) of sustainable foods. This empowerment is especially relevant for individuals who actively contribute to environmental protection, and firmly believe in the influence of their own actions.

Second, personal norms are another central aspect. This research shows how norms can be activated by the combined effects of social and cognitive factors. Practitioners are advised to raise public awareness of the environmental impacts of non-sustainable foods and provide tangible evidence about why sustainable foods are important for fighting climate change. Providing a reason-why that resonates with environmental and moral beliefs, not only influences individual choices but provides ways for green consumers to persuade others around them. We highlight conformity with *what other people approve of* in this study, but we conjecture that *what other people do* can also be exploited. Business managers and policymakers can use opinion leaders, celebrities, and influencers to advocate for ecological values and show how a sustainable diet can be enjoyable, convenient, and healthier for everyone.

Third, the extent to which consumers are involved with foods regulates (magnifies) the intensity of their responses. Food brands and retailers should prioritize highly involved segments, that are more likely to

respond favorably to sustainable food claims and, possibly, be motivated to modify their habits.

6.3. Limitations and further research

Even though a wide range of influencing factors may affect DTB, we only examined a limited variable set. We recommend that further green consumption enablers or impediments are studied. For instance, personal values could be considered, as proposed by Value-Attitude-Behavior frameworks (Ahmad et al., 2020). Future research could look into the role of empowerment through pro-environmental habit formation (Han & Yoon, 2015; Hartmann et al., 2018), and a wider diversity of emotions and social influences. Scholars would also benefit from exploring a larger set of outcomes (e.g., intentions, actual behaviors), as we only considered desire. It will also be relevant to verify the effects of gender.

While this study relied on a U.S. representative panel, future scholars are encouraged to adopt cross-cultural surveys to enhance the validity and generalizability associated with the sampling frame. Data collection across distinct geographic locations is pertinent to validate if the model performs equally to U.S. samples. In addition, as with all survey data, causal relationships cannot be inferred. Future studies should consider longitudinal or experimental designs. Academics are also advised to include specific tests for social desirability bias and/or measure actual purchasing data, instead of relying on self-reports.

A question with theoretical and practical relevance is whether the framework can be applied to other green product types (e.g., electric vehicles, sustainable fashion). Future research is required to evaluate the MGGB in alternative categories. Finally, considering the small magnitude of the impacts of negative emotions, it is worthwhile to

examine the reasons why and identify the conditions under which their influence could be increased.

In sum, the core gap that scholars address in this domain is how to increase the predictability of green purchasing outcomes. This research explored the interplay between self-oriented and pro-environmental motives, and demonstrated the joint influence of personal norms and affects. Based on the empirical findings, the MGGB provides a foundation for advancing knowledge on sustainable consumption. The new framework will assist green marketers in their efforts, and guide researchers to spur further theoretical refinement.

CRediT authorship contribution statement

Jorge Nascimento: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sandra Maria Correia Loureiro:** Writing – review & editing, Validation, Supervision, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1

Sociodemographic characteristics of the qualitative study participants. (Source: created by authors).

Pseudonym	Gender	Age	Household size	Occupation	Session nr.
Nick	Male	24	1	Entrepreneur	1
Luis	Male	22	3	Student	1
Li	Female	23	3	Student	1
Frank	Male	21	2	Student	1
Roberto	Male	24	1	Unemployed	1
Patricia	Female	25	2	Unemployed	2
Ronald	Male	27	1	Freelance worker	2
Bernard	Male	23	1	Bartender	2
Jian	Female	24	3	Student	2
Helga	Female	23	2	Shop assistant	2
Beatrice	Female	30	1	Non-for-profit	3
Inês	Female	33	2	Marketing exec	3
John	Male	45	3	Finance director	3
Maria	Female	38	2	Tourism worker	3
Elizabeth	Female	49	4	Housewife	3
Marcia	Female	42	3	Flight attendant	4
Phil	Male	50	4	Marketing exec	4
Sofia	Female	43	2	Telecom engineer	4
Andrew	Male	36	2	Teacher	4
George	Male	44	4	Consultant	4

Appendix 2

Sociodemographic characteristics of the quantitative study sample (N = 474). (Source: created by authors).

	Frequency	%
<i>Gender</i>		
Female	261	55.1 %
Male	199	42.0 %
Other / prefer not to say	14	3.0 %
<i>Age (years)</i>		
<= 21	29	6.1 %
22–32	228	48.1 %
33–43	119	25.1 %
44–54	70	14.8 %
>=55	28	5.9 %
<i>Frequency of sustainable foods' consumption (past behavior)</i>		
Never	32	6.8 %
A very few times	52	11.0 %
Occasionally	110	23.2 %
Often	171	36.1 %
Very frequently	109	23.0 %
<i>Presence of kids in household</i>		
None	336	70.9 %
1	72	15.2 %
2	47	9.9 %
3 or more	19	4.0 %

Appendix 3

Questionnaire items and sources. (Source: created by authors).

Constructs and items	Loadings	Source
Environmental Knowledge		Rausch & Kopplin (2021);Yadav & Pathak (2016)
<i>Do you agree with the following statements about environmental issues?</i>		
I know well how to live in a sustainable manner	0.78	
I understand well how to reduce the negative environmental consequences of my behaviors	0.84	
I understand well how to protect the environment in the long-term	0.85	
Social Norms		Ajzen (1991)
<i>Now tell us about the expectations of others about your food choices:</i>		
People whose opinions I value prefer me to buy/eat sustainable foods	0.87	
Most people who are important to me think I should consume sustainable foods	0.91	
Most people who are important to me want me to choose sustainable foods	0.94	
Personal Norms		Shin et al. (2018)
<i>How do you feel about your obligation to choose sustainable foods (regardless of what others say)?</i>		
I believe I have a moral obligation to choose sustainable foods	0.82	
Choosing sustainable foods is consistent with my moral principles	0.86	
My personal values encourage me to buy sustainable foods	0.86	
I have a moral responsibility to use sustainable foods	0.87	
Attitude toward Behavior		Ajzen (1991)
<i>My attitude toward sustainable foods is...</i>		
Extremely negative – Extremely positive	0.93	
Extremely unfavorable – Extremely favorable	0.85	
Extremely bad – Extremely good	0.94	
Positive Anticipated Emotions		Perugini & Bagozzi (2001)
<i>Consider you're buying foods and choose the sustainable option. How would you feel...</i>		
Proud	0.82	
Hopeful	0.83	
Delighted	0.88	
Negative Anticipated Emotions		Perugini & Bagozzi (2001)
<i>Consider you fail to buy sustainable foods and buy regular foods instead. How would you feel...</i>		
Embarrassed	0.80	
Ashamed	0.87	
Guilty	0.80	
Desire to Buy		Perugini & Bagozzi (2001)
<i>How would you describe your current desire for sustainable foods?</i>		
I desire to eat sustainable foods	0.90	
I want to eat more sustainable foods in the future	0.79	
I feel an urge to eat sustainable foods	0.78	
Outcome Expectancy Beliefs		Antonetti & Maklan (2014)
<i>Do you agree with the following statements about environmental issues?</i>		
I believe that my personal consumption choices will benefit the environment	0.92	
My personal actions do matter to affect environmental problems	0.79	
Environmental quality is improved by my individual choices	0.83	

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(continued)

Constructs and items	Loadings	Source
Food Involvement (a)		Bell & Marshall (2003)
<i>How would you describe your involvement with food in general?</i>		
Talking about what I ate or am going to eat is something I like to do.	0.74	
Compared with other daily decisions, my food choices are important	0.66	
<i>Note: (a) The item "I don't think much about food each day" (R) was removed due to low factor loading (0.58).</i>		

Appendix 4

Path results and model fit for the alternative models. (Source: created by authors).

Alternative models	χ^2	DF	χ^2/DF	CFI	TLI	RMSEA	SRMR	AIC	$\Delta\chi^2$
Original MGB	653.9	170	3.9	.94	.93	.08	.05	22 977.38	n/a
MGGB (proposed model)	471.3	170	2.8	.96	.95	.06	.04	22 794.77	–
Norms-attitudes direct link (model 2)	630.5	175	3.6	.94	.93	.07	.05	22 943.97	Yes***
Inverted emotions-norms path (model 3)	742.8	173	4.3	.93	.91	.08	.12	23 060.29	Yes***
Emotions and norms as parallel predictors (model 4)	649.4	171	3.8	.94	.93	.08	.07	22 970.82	Yes***
Full mediation by emotions (model 5)	518.9	171	3.0	.96	.95	.07	.05	22 840.38	Yes***

Notes: *** p < 0.001; ** p < 0.01; * p < 0.05; (ns): non-significant. $\Delta\chi^2$: refers to the significance of the chi-square test differences for model comparison (not applicable to the original MGB, as it is a non-nested model). To allow for comparable model fit results, moderating effects were not considered. No control variables were included in the analysis.

Original MGB	β	t value
Social norms → Desire	0.05 (ns)	1.43
Attitude toward behavior → Desire	0.76***	13.35
Positive anticipated emotions → Desire	0.16***	3.71
Negative anticipated emotions → Desire	0.00 (ns)	0.06
R²		
Desire: 62.8 %		
Norms-attitudes direct link (model 2)	β	t value
Environmental knowledge → Personal norms	0.32***	5.44
Social norms → Personal norms	0.43***	9.27
Environmental knowledge → Attitude toward behavior	0.27***	7.24
Personal norms → Attitude toward behavior	0.47***	14.23
Personal norms → Positive anticipated emotions	0.64***	11.71
Personal norms → Negative anticipated emotions	0.26***	6.67
Positive anticipated emotions → Desire	0.12**	3.08
Negative anticipated emotions → Desire	0.11 (ns)	1.96
Personal norms → Desire	0.37***	6.77
Attitude toward behavior → Desire	0.48***	7.27
R²		
Personal norms: 35.1 %, attitude toward behavior: 61.0 %, positive emotions: 34.0 %, negative emotions: 14.0 %, desire: 67.0 %		
$\Delta\chi^2[5] = 159.2, p < 0.001$		
Inverted emotions-norms path (model 3)	β	t value
Environmental knowledge → Attitude toward behavior	0.46***	10.93
Social norms → Personal norms	0.40***	9.09
Positive anticipated emotions → Personal norms	0.14**	3.41
Negative anticipated emotions → Personal norms	0.22***	3.53
Positive anticipated emotions → Desire	0.14**	3.94
Negative anticipated emotions → Desire	0.11*	1.98
Personal norms → Desire	0.36***	7.27
Attitude toward behavior → Desire	0.49***	8.68
R²		
Personal norms: 33.1 %, attitude toward behavior: 24.9 %, desire: 62.0 %		
$\Delta\chi^2[3] = 271.5, p < 0.001$		
Emotions and norms as parallel predictors (model 4)	β	t value
Environmental knowledge → Attitude toward behavior	0.54***	11.53
Environmental knowledge → Personal norms	0.32***	5.38
Social norms → Personal norms	0.42***	9.09
Positive anticipated emotions → Desire	0.13**	3.17
Negative anticipated emotions → Desire	0.11*	2.02
Personal norms → Desire	0.37***	6.85
Attitude toward behavior → Desire	0.47***	7.12
R²		
Personal norms: 34.4 %, attitude toward behavior: 32.0 %, desire: 67.1 %		
$\Delta\chi^2[1] = 178.0, p < 0.001$		
Full mediation by emotions (model 5)	β	t value
Environmental knowledge → Personal norms	0.32***	5.42
Social norms → Personal norms	0.43***	9.28
Environmental knowledge → Attitude toward behavior	0.52***	11.28

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(continued)

Original MGB	β	t value
Personal norms → Positive anticipated emotions	0.64***	11.89
Personal norms → Negative anticipated emotions	0.26***	6.68
Positive anticipated emotions → Desire	0.18***	4.31
Negative anticipated emotions → Desire	0.09 (ns)	0.17
Attitude toward behavior → Desire	0.78***	14.35
R²		
Personal norms: 35.3 %, attitude toward behavior: 30.3 %, positive emotions: 35.0 %, negative emotions: 14.1 %, desire: 62.7 %		
$\Delta\chi^2[1] = 47.6, p < 0.001$		

Appendix 5

PROCESS analysis results. (Source: created by authors).

Direct effects

Independent variable	Outcome	No covariate Estimate	t value	(SE) CI _{95%}	Covariate	Estimate	t value	(SE) CI _{95%}
SN	PN	0.47***	12.68	(.037).398,.544	EK	0.40***	10.38	(.038).322,.473
SN	DTB	0.07*	2.19	(.029).007,.131	EK	(n.s.)	1.50	(.032) -.015,.110
EK	PN	0.42***	8.84	(.048).329,.516	SN	0.26***	5.66	(.046).170,.351
EK	ATB	0.43***	12.81	(.034).366,.498	SN	0.35***	10.24	(.034).282,.417
EK	DTB	(n.s.)	0.96	(.380) -.038,.110	SN	(n.s.)	1.95	(.039) -.001,.152
PN	PAE	0.56***	12.88	(.043).474,.645	ATB	0.44**	8.96	(.048).342,.535
PN	NAE	0.23***	7.12	(.033).168,.296	ATB	0.20***	5.02	(.040).122,.279
PN	DTB	0.54***	16.12	(.033).472,.603	ATB	0.34***	9.01	(.038).266,.415
PAE	DTB	0.19***	6.58	(.029).135,.249	ATB	0.11**	3.69	(.038).052,.171
NAE	DTB	0.25***	4.37	(.050).150,.351	ATB	(n.s.)	0.54	(.056) -.082,.142
ATB	DTB	0.75***	17.18	(.044).665,.836	PN	0.41***	8.79	(.046).316,.498

Mediation analysis⁽¹⁾.

Independent variable	Mediator	Outcome	No covariate Estimate	(SE) CI _{95%}	Covariate	Estimate	(SE) CI _{95%}
SN	PN	DTB	0.25	(.029).199,.311	EK	0.20	(.208).150,.260
EK	PN	DTB	0.22	(.033).162,.290	SN	0.13	(.028).079,.191
EK	ATB	DTB	0.32	(.036).256,.398	SN	0.25	(.031).187,.308
PN	PAE	DTB	0.11	(.018).073,.145	ATB	0.04	(.012).019,.066
PN	NAE	DTB	(n.s.)	(.009) -.020,.017	ATB	(n.s.)	(.015) -.120,.071

Moderation analysis⁽²⁾.

Independent variable	Moderator	Outcome	Estimate	(SE) CI _{95%}
PN	FI	DTB	0.08	(.038).008,.156
PAE	FI	DTB	0.12	(.055).008,.224
PN	OEB	PAE	0.11	(.037).279,.491
PN	OEB	DTB	(n.s.)	(.026) -.031,.071
PAE	OEB	DTB	0.08	(.023).019,.122

Moderated mediation analysis⁽³⁾.

Independent variable	Mediator	Outcome	Moderator	Estimate	(SE) CI _{95%}
PN	PAE	DTB	FI	(n.s.)	(.028) -.033,.079
PN	PAE	DTB	OEB	0.02	(.006).007,.031

Notes: *** p < 0.001; ** p < 0.01; * p < 0.05. (n.s.) = Non-significant. (SE) CI_{95%} = (Standard error) Bootstrap 95 % confidence intervals. EK = Environmental Knowledge, SN = Social Norms, PN = Personal Norms, PAE = Positive Anticipated Emotions, NAE = Negative Anticipated Emotions, ATB = Attitude Toward Behavior, DTB = Desire To Buy, FI = Food Involvement, OEB = Outcome Expectancy Beliefs. The control variables were not included in this analysis. The analysis were conducted with the following PROCESS models (one per effect): ⁽¹⁾ model 4, ⁽²⁾ model 15 (model 7 for PN*OEB → PAE), and ⁽³⁾ model 58. The coefficients are unstandardized (Hayes, 2014).

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