A Value-Basis Framework for Promoting Plant-Based Diets

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Plant-based diets have the lowest environmental footprint and improve human health dramatically. The current research presents a systematic review of the academic literature from marketing and other fields that examine effective ways to encourage consumers to shift towards environmentally sustainable and healthy plant-based diets. The authors synthesize insights from this review and develop a conceptual framework relying on Stern & Dietz's (1994) value-basis theory for environmental concern to advance understanding of the routes to a transition to a more plant-based diet. Two categories of value orientations (i.e., self-enhancement and self-transcendence) and three environmental (i.e., egoistic, altruistic, and biospheric) concerns are integral factors of the framework to spur greater consumption of plant-based foods. This review of plant-based diets in consumer research and the proposed framework add to our understanding by bringing attention to diet as an environmentally sustainable and healthful consumption practice and formulating novel theoretical propositions and directions for future research that focuses on promoting and adopting more plant-based diets.

Keywords: sustainable consumption, plant-based diets, dietary choices, values, environmental concern

INTRODUCTION

> *"Nothing will benefit human health and increase the chances for survival of life on Earth as much as the evolution to a vegetarian diet." (Albert Einstein)*

Consumers' dietary choices have tremendous implications for their personal health and the well-being of our planet. Adopting a plant-based diet which is a pattern of eating predominantly (or only) plant-based foods such as fruits, vegetables, legumes, and nuts, and decreasing (or eliminating) intake of meat and other animal-based foods such as eggs and dairy is a vital sustainable consumption practice with several health benefits. Agriculture is responsible for more than 34% of all greenhouse gas (GHG) emissions caused by human activities (Crippa et al., 2021). Ruminant meat is up to 100 times more damaging to the environment than plant-based foods (Clark & Tilman, 2017). Transitioning from a typical meat-based diet to an entirely plant-based diet can cut most people's diet-related greenhouse gas emissions by 70% (Kim et al., 2020). Hence, adopting a 100% plant-based diet is the most impactful way consumers can curb their environmental footprint considering reductions in greenhouse gases, land use, and water use (Carrington, 2018; Poore & Nemecek, 2018). A United Nations (UN) report created by more than 100 climate science experts also urges animal meat consumption reductions and recommends adopting a plant-based diet to deal with climate change (Schiermeier, 2019). Even in the presence of massive cuts to fossil fuel use, large reductions in diet-

related GHG emissions through greater adoption of plant-based diets will be necessary by 2075 to remain within the 1.5 °C global warming threshold (Eisen & Brown, 2022).

In addition to having the lowest environmental impact, plant-based foods promote improved health (Clark, Springmann, Hill, & Tilman, 2019). That is, shifting consumers' dietary choices towards healthier foods such as fruits, vegetables, nuts, and legumes improves environmental sustainability as those foods demand fewer natural resources to produce and cause less harm in comparison to the environmental footprint of animal-based foods (Rust et al., 2020). The mainstream consumption practices concerning food choices contradict to desirable sustainable dietary choices for achieving and maintaining health and longevity. Despite the multiple ecological benefits of plant-based foods, most consumers are not aware of the environmental impact of their dietary choices (Bussel, Kuijsten, Mars, & Veer, 2022; Hartmann, Lazzarini, Funk, & Siegrist, 2021). Further, even though a healthy diet rich in fruits and vegetables can prevent many chronic diseases such as cardiovascular disease, type 2 diabetes, some cancers, and obesity, less than 10% of American adults meet the daily recommended intake of fruits and vegetables (Lee-Kwan, Moore, Blanck, Harris, & Galuska, 2017). Considering the implications of consumers' dietary choices, marketing scholars should explore and examine processes and mechanisms to promote sustainable and healthful plant-based diets.

Human-induced climate change has been posing existential threats to our planet, and marketing scholars should explore potential solutions by examining processes and mechanisms to move people away from carbon-intensive lifestyles and toward environmentally friendly consumption practices and habits (Galdón et al., 2022; Helm & Little, 2022). This paper intends to bring much-needed attention to plant-based diets as an environmentally sustainable consumption practice with various health benefits, as our literature review revealed that consumer research scholars have vastly overlooked diet from an environmental sustainability perspective. Because this neglect may indicate a lack of awareness among consumer research scholars, we provide an accessible summary of environmental science studies on diet's environmental impact. Further, we review relevant sustainable consumption literature and propose a framework that offers different mechanisms consisting of value orientations and environmental concerns, leading to routes towards more plant-based diets. Our proposed framework with theoretical propositions for future research directions can guide consumer researchers in exploring and examining processes and mechanisms motivating consumers to adopt sustainable and healthful diets.

PLANT-BASED DIETS

A plant-based diet refers to a diet that entails the consumption of predominantly plant-based foods such as vegetables, fruits, legumes, nuts, seeds, and herbs. Vegans follow a 100% plant-based diet and avoid consuming any animal-based foods such as animal meat, dairy, and eggs. Veganism is a concept broader than only dietary choices, as vegans do not consume products such as leather and animal-tested cosmetics as they necessitate animal suffering. Vegetarians avoid the intake of animal meat and consume other animal-based products such as eggs and dairy. Our focus is on shifting towards the adoption of a more plant-based diet, which is not necessarily a vegan or vegetarian diet. Increasing plant-based food consumption without completely eliminating animal-based foods still provides substantial sustainability benefits.

Shifting from an animal-based diet to a plant-based diet presents significant environmental, health, and moral benefits. Transitioning from a diet that entails animal products to a plant-based diet is the most impactful way for an individual consumer to minimize their ecological footprint (Carrington, 2018; Eisen & Brown, 2022; Poore & Nemecek, 2018). Hence, adopting a plant-based diet is vital for consumers who want to curb their carbon footprint and consumer researchers interested in studying sustainable consumption. The following sections discuss environmental sustainability, health, and moral aspects of plant-based diets. As our focus is on diet as a sustainable consumption practice, more details are shared about the ecological impact of consumers' dietary choices.

Environmentally Sustainable Plant-Based Diets

Consumption practices are integral to any discussion on human-induced climate change. The detrimental impact of consumption choices and patterns has caused surmounting concern among individuals who are proponents of environmental sustainability. Due to growing threats from climate change, sustainable consumption is of utmost importance for individuals, corporations, and regulators genuinely interested in environmental sustainability (e.g., Berger & Burkhalter, 2022; de Kervenoael, Schwob, Hasan, & Ting, 2021; Ganglmair-Wooliscroft & Wooliscroft, 2022; Gómez-Olmedo, Carrero Bosch, & Martínez, 2021). The UN recognizes the importance of consumption choices for an environmentally sustainable world, as it includes sustainable consumption in its sustainable development goals (United Nations, 2022). Sustainable consumption includes practices that respect the world's ecological limitations and shuns excessive degradation of natural resources (White, Habib, & Hardisty, 2019) and is defined as "consumption that simultaneously optimizes the environmental, social, and economic consequences of the acquisition, use, and disposition in order to meet the needs of both current and future generations" (Phipps et al., 2013, p. 1227).

Consumers' dietary choices affect the well-being of our planet and function as a significant contributor to climate change (See Table 1). What consumers prefer to eat has profound implications on the Earth, considering the diet's ecological footprint in terms of habitat and wildlife loss, GHG emissions, water use, and land use needed for the production, processing, and consumption of food (Xu et al., 2021). Current agriculture systems used for today's mainstream diets and their estimated growth in the future are likely to cause major habitat loss and endanger the survival of 90% of all terrestrial animal species by 2050 (Williams et al., 2021). Further, global food systems are responsible for 34% of all global greenhouse gas emissions (Crippa et al., 2021) and 70% of freshwater use (Whitmee et al., 2015). Additionally, half of all habitable land in the world is used for agriculture (Ritchie, 2019).

Animal-based foods are significantly more responsible for environmental degradation. They cause very high GHG emissions, require excessive land and water use, and drive deforestation and biodiversity loss (Xu et al., 2021). For example, beef has a very high carbon footprint and requires 36 times more GHG emissions than peas (Poore & Nemecek, 2018), and Impossible Foods' plant-based burger produces 89% fewer GHG emissions than a conventional beef burger (Khan, Dettling, Hester, & Moses, 2019). The resource-intensive nature of animal-based foods is also striking in land use, as the vast majority of arable land is used for pasture and to grow crops to feed farm animals (Theurl et al., 2020). Production of animal-based foods also has a high water footprint because they necessitate high levels of water use and cause significant acidification and eutrophication (Kim et al., 2020; Santo et al., 2020). Finally, mainstream meat-based diets and growing demand for meat worldwide necessitate much greater agricultural land use for animal farming and animal feed and cause massive deforestation and biodiversity loss (Williams et al., 2021; WWF, 2020).

Dietary shifts from a traditional Western diet to a more plant-based diet offer solutions to GHG emissions, land and water use, and biodiversity loss (Aleksandrowicz, Green, Joy, Smith, & Haines, 2016). More precisely, moving from a typical animal-based diet to an entirely plant-based diet can decrease GHG emissions by 49%, reduce land use for food by 76%, and lower acidification by 50%, according to an article published in *Science* (Poore & Nemecek, 2018). Another study estimates that transitioning from current typical diets to a vegan diet reduces per capita diet-related GHG by 70% in more than 140 countries (Kim et al., 2020). Further, plant-based diets are an important way to counteract adverse environmental effects of habitat, biodiversity, and wildlife loss crises that are triggered by the animal agriculture industry (Williams et al., 2021). In addition to preserving and restoring natural habitats and wildlife, a shift towards plant-based diets provides additional environmental benefits. Eliminating the animal agriculture industry would free vast arable land and incur a carbon sequestration process that can stabilize global GHG levels for the next three decades (Eisen & Brown, 2022; Hayek, Harwatt, Ripple, & Mueller, 2021).

TABLE 1
DIET AND ENVIRONMENTAL SUSTAINABILITY

Indicator	Environmental Impact	Source
GHG emissions	Replacing fossil fuels in energy production and transportation with renewable energy systems will not be sufficient to address climate change challenges. Even in the presence of massive cuts to fossil fuel use, large reductions in diet-related GHG emissions will be necessary by 2075 to remain within the 1.5 °C global warming threshold. Eliminating the animal agriculture industry would offset 68% of current anthropogenic CO2 emissions in the world.	(Eisen & Brown, 2022)
	Fully plant-based diets have the lowest carbon footprint in terms of GHG emissions. The current typical meat-dominant diets have the highest GHG emissions rates among all possible diet alternatives. Current typical meat-based human diets and livestock feed are the main determinants of GHG emissions from food systems.	(Theurl et al., 2020)
	Transitioning from current typical diets to a vegan diet in more than 140 countries reduces per capita diet-related GHG by an average of 70%.	(Kim et al., 2020)
	GHG emissions from dairy beef are 36 times greater than GHG emissions from peas.	(Poore & Nemecek, 2018)
	Plant-based Impossible Burger produces 89% fewer GHG emissions than a conventional beef burger.	(Khan et al., 2019)
Land use	Most of the arable land is used for pasture or crops for animal feed. If everyone in the world transitioned from their current diets to a 100% plant-based diet, land use required for food would drop by 76%.	(Poore & Nemecek, 2018)
	Carbon opportunity cost refers to carbon sequestration through the restoration of the ecosystem currently used by the animal agriculture industry. In a scenario in which the current dietary system is replaced with vegan diets and animal agriculture is eliminated by 2050, the land no longer required for food cultivation can remove around 547 gigatons of carbon dioxide. That figure is estimated to be equal to the fossil fuel emissions that took place in the last 16 years in the world.	(Hayek, Harwatt, Ripple, & Mueller, 2021)
	42% of arable land in the U.S. would be freed up if beef production was replaced with beans.	
	Plant-based Impossible Burger requires 96% less land than a conventional beef burger.	(Khan et al., 2019)

Water use	A shift from current diets to a diet that excludes animal products can reduce acidification by 50%, eutrophication by 49%, and scarcity-weighted freshwater withdrawals by 19%. Plant-based Impossible Burger requires 87% less water and contributes 92% less aquatic pollutants than a conventional beef burger.	(Poore & Nemecek, 2018) (Khan et al., 2019)
Habitat & wildlife	Current agriculture practices and projected expansion in farmland will threaten habitats for 90% of all terrestrial animal species by 2050. Reducing demand for animal-based foods can mitigate the negative effects of this projected biodiversity crisis. Current global food systems are the biggest cause of tropical deforestation and biodiversity loss on land and freshwater. Dietary change is integral to reforming the current food systems, reversing this damage, and restoring biodiversity. A shift toward more plant-based diets can counteract habitat and biodiversity loss and save species.	(Williams et al., 2021) (WWF, 2020)

Healthful Plant-Based Diets

Plant-based diets are conducive to the well-being of our planet and improved personal health. They provide substantial health benefits for individuals and society's healthcare systems (Kahleova, Levin, & Barnard, 2020). The health benefits of adopting a plant-based diet are numerous (McMacken & Shah, 2017; Satija & Hu, 2018; Williams & Patel, 2017). They include a reduced likelihood of suffering from common non-communicable chronic diseases such as heart disease, diabetes, various types of cancer, and Alzheimer's (Campbell & Jacobson, 2014; Jabs, Devine, & Sobal, 1998). Greater intake of plant-based foods promotes overall health and longevity (Huang et al., 2020), and people with the highest adherence to a plant-based diet have an 18% to 25% decrease in all-cause mortality (Kim et al., 2019). A diet with high levels of fruit, legumes, vegetables, and nuts can protect against age-related cognitive decline and reduce the risk of Alzheimer's disease by more than 50% (Morris et al., 2015). In addition to having the lowest environmental footprint, plant-based foods protect against several diseases, improve human health, and offer longevity (Clark et al., 2019; Rust et al., 2020).

Moral Plant-Based Diets

Several people who prefer to consume mostly or only plant-based foods have moral arguments for their dietary choices. Eating animal meat cannot take place without harming animals, and animal rights and welfare are probably the most common moral argument for vegetarians and vegans. Cruelty and harm inflicted on sentient creatures are indispensable aspects of animal-based food consumption (Cockshaw, 2021; Reese, 2018). Another moral argument for choosing a plant-based diet revolves around equity and social justice issues. The industrialized nations have been causing much more significantly human-caused climate change through activities such as greater fossil fuel use and animal meat consumption per capita. People who live in less developed nations tend to suffer more directly and immediately due to climate-change-related extreme weather events, deforestation, and habitat loss. Plant-based diets can free up substantial arable land to produce crops for human consumption and replace livestock feed with crops to feed undernourished people in the less developed parts of the world (Johnston, Szabo, & Rodney, 2011; WWF, 2020). The last typical moral argument for plant-based diets pertains to sustainability. Some people who follow such diets are mindful of their environmental footprint's impact on the world that children and future generations inherit (Beverland, 2014; Trudel, 2019).

PLANT-BASED DIETS IN CONSUMER BEHAVIOR RESEARCH

The present article explores how consumers' dietary choices have been studied in the consumer behavior literature to synthesize insights and provide clear future research directions. We initially searched for relevant literature in the top marketing journals that publish consumer research.

Literature Review Search Process

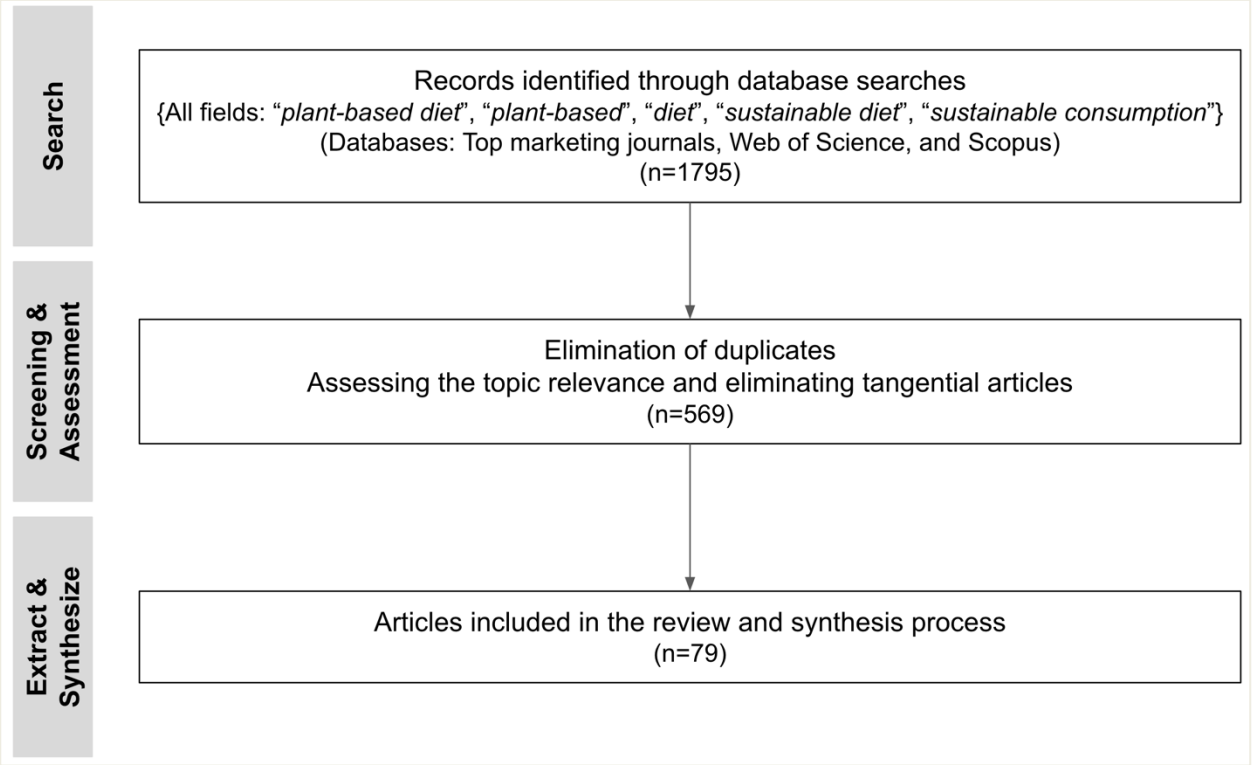
Similar to the approach used in previous review papers (Mihalache & Mihalache, 2016; White et al., 2019), we focused only on top peer-reviewed marketing journals in our search and excluded other publications such as books, chapters, conference proceedings, dissertations, and working papers. Our focus is on plant-based diets as a sustainable consumption choice and practice. Articles that examine dieting (e.g., fighting obesity and weight loss) and from an ecologist perspective (e.g., calculation of greenhouse gas emissions from different diets) are not within our focus for review purposes. We structured our literature review in a hybrid-narrative format to propose a theoretical framework and guide future research in this domain (Paul & Criado, 2020; Snyder, 2019; Tsiotsou, Koles, Paul, & Loureiro, 2022).

We utilized the most recent academic journal ranking lists created by two independent organizations (i.e., the Australian Business Deans Council and Chartered Association of Business Schools) to have an objective criterion to assess which journals can be deemed leading. We selected journals that received the highest rankings possible in both of those journal ranking lists as those top journals contribute more to the creation of validated knowledge and possess the preeminent position to exert influence on and shape an entire field (Mihalache & Mihalache, 2016; Tranfield, Denyer, & Smart, 2003). The final list of publications in our review contains eight journals, including some journals that are also part of the Financial Times' top 50 journals list, such as the Journal of Consumer Research, the Journal of Consumer Psychology, and the Journal of Marketing. The complete list of journals and other literature review process details are available in the Web Appendix.

Using this set of journals, we conducted a literature search with the following keywords: "Sustainable consumption", "sustainable diet", "plant-based diet", "plant-based", and "diet". Our literature review revealed that no published article explicitly focused on plant-based diets as a sustainable consumption practice in the top marketing journals. Next, we expanded our literature search to Web of Science and Scopus databases using the same key terms to find articles specifically focused on plant-based diets as consumption practices.

In our literature search process (see Figure 1), we read the titles and abstracts of 1795 articles identified through the initial search stage. We screened and assessed 569 articles in the next step after removing unrelated and duplicated articles. In the final stage, we utilized 79 articles for extracting and synthesizing relevant and valuable insights for formulating future research directions.

FIGURE 1
LITERATURE SEARCH PROCESS



Results

The top marketing journals have failed to recognize the importance of plant-based diets as they have yet to publish any articles on this topic. This finding is striking because these journals are the leading forces in the field to create knowledge and bring attention to substantive issues. This lack of attention on plant-based diets in the top marketing journals can be a reflection of the lack of awareness about the implications of plant-based diets among marketing and consumer behavior research scholars. The current paper brings attention to this overlooked topic and motivates a stream of consumer research on promoting the adoption of more plant-based diets.

Our literature search on databases revealed studies that specifically focused on promoting the adoption of plant-based diets and increasing consumption of plant-based foods (see Table 2). Most of those studies were published in non-marketing journals such as Appetite (Graça, Calheiros, & Oliveira, 2015), Technological Forecasting and Social Change (Bauer, Aarestrup, Hansen, & Reisch, 2022), European Journal of Clinical Nutrition (Lea, Crawford, & Worsley, 2006), and PNAS (Garnett, Balmford, Sandbrook, Pilling, & Marteau, 2019). Some of those articles were published in marketing journals such as Journal of Marketing Communications (Phua, Jin, & Kim, 2020), Journal of Macromarketing (Beverland, 2014), and Journal of the Association for Consumer Research (Malan et al., 2022). All of those studies examine different ways to increase consumers' preference for plant-based foods, and two main themes emerge based on the findings from these articles. First, increasing the availability of plant-based options leads to a greater preference for plant-based foods and meals at university cafeterias (Garnett et al., 2019). Second, sharing environmental sustainability messages about the benefits of choosing plant-based foods was able to generate increased preference for low-carbon plant-based foods in settings of a university dining hall (Malan et al., 2022), a supermarket (Bauer et al., 2022) and an online restaurant menu (Blondin, Attwood, Vennard, & Mayneris, 2022). These studies and findings reflect a nascent and promising stream of research on motivating consumers to a path toward more plant-based diets.

TABLE 2
ARTICLES ON DIET AS A SUSTAINABLE CONSUMPTION PRACTICE

Author	Journal	Main Findings
(Beverland, 2014)	Journal of Macromarketing	This paper focuses on the importance of sustainable plant-based diets in developed economies. Mainstreaming plant-based diets in such countries is important because of higher levels of meat consumption in those countries and their overall influence on other countries.
(Lea, Crawford, & Worsley, 2006)	European Journal of Clinical Nutrition	Most consumers in society are not ready to switch to a plant-based diet. Many consumers were not aware of the benefits of adopting a plant-based diet. Those who recognized the health, ethical, environmental, and animal welfare benefits of a plant-based diet were most likely to adopt and maintain these types of diets.
(Garnett, Balmford, Sandbrook, Pilling, & Marteau, 2019)	PNAS*	Results from longitudinal observational and experimental studies indicated that doubling the availability of vegetarian meals at a university cafeteria increased sales of vegetarian meals by 41% to 79%. Further, adding more vegetarian options did not negatively affect overall sales.
(Graça, Calheiros, & Oliveira, 2015)	Appetite	Many consumers feel animal meat attachment, which contains the dimensions of hedonism, affinity, entitlement, and dependence. This type of meat attachment hinders meat consumption reduction and a transition to more plant-based diets.
(Graça, Oliveira, & Calheiros, 2015)	Appetite	Motivations to limit meat consumption and choose a more plant-based diet were explored. Disgust feelings attached to meat, moral questioning of animal meat consumption, and low levels of meat attachment were factors for individuals to be more inclined to adopt a more plant-based diet.
(Kristiansen, Painter, & Shea, 2021)	Environmental Communication	The public awareness of the link between animal meat consumption and human-caused climate change is low. This low level of awareness is a significant challenge for the widespread adoption of plant-based diets. Media coverage of the impacts of animal meat consumption on environment was limited between 2006 and 2018.
(Phua, Jin, and Kim 2020a)	Journal of Marketing Communications	Celebrities' vegan identity can exert social influence on consumers. Egoistic motivations (i.e., health benefits) for becoming were more influential in shaping consumers' intention to learn more about veganism than altruistic motivations (i.e., concerns about animal welfare and environmental sustainability).
(Phua, Jin, and Kim 2020b)	Online Information Review	Pro-vegan messages from brands received more favorable reactions from subjects than the same messages from non-profit organizations. Altruistic pro-veganism messages about animal welfare and environmental sustainability were considered to have more informational value than egoistic pro-veganism messages with health benefits.

Author	Journal	Main Findings
(Schösler, Boer, & Boersema, 2012)	Appetite	A transition towards a more plant-based diet is influenced by meal formats, familiarity, and skills needed to prepare vegetarian meals. Meat has a unique appeal for many consumers because it is integral to structural aspects of typical and popular meals. The inclusion of plant-based meals can increase options and offer a path for partial transition to dietary change for variety-seeking consumers.
(Blondin, Attwood, Vennard, & Mayneris, 2022)	World Resource Institute	In a controlled experiment, ten different diet-related sustainability messages in a restaurant menu choice scenario were presented to subjects. Participants exposed to descriptive sustainability messages ordered roughly doubled vegetarian meals compared to the control group that received no message. Communicating various benefits of plant-based foods with effective message framing can nudge consumers to increase their plant-based food intake.
(Mullee et al., 2017)	Appetite	Motivations to choose a vegetarian diet and beliefs about meat consumption were explored in Belgium. The most popular reason for considering and choosing a vegetarian diet was health, and only 11% reported climate change as a motivator. Many omnivores in the sample reported inaccurate beliefs about meat consumption and vegetarianism.
(Bauer, Aarestrup, Hansen, & Reisch, 2022)	Technological Forecasting and Social Change	A field experiment in the context of a Danish supermarket shows that social-norm messaging and promoting recipe ideas can increase vegetable and fruit sales. Supermarkets can promote increased fruit and vegetable consumption levels, which is beneficial for human health and environmental sustainability.
(Malan et al., 2022)	Journal of the Association for Consumer Research	A field experiment at a college dining hall examined the effectiveness of promoting climate benefits of plant-based meals during an academic semester. These messages were able to produce more than 50% increase consumption of low-carbon entrees (i.e., plant-based meals and fish) but not able to reduce consumption of high-carbon entrees such as beef.

*PNAS: Proceedings of the National Academy of Sciences of the United States of America.

THEORETICAL IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH

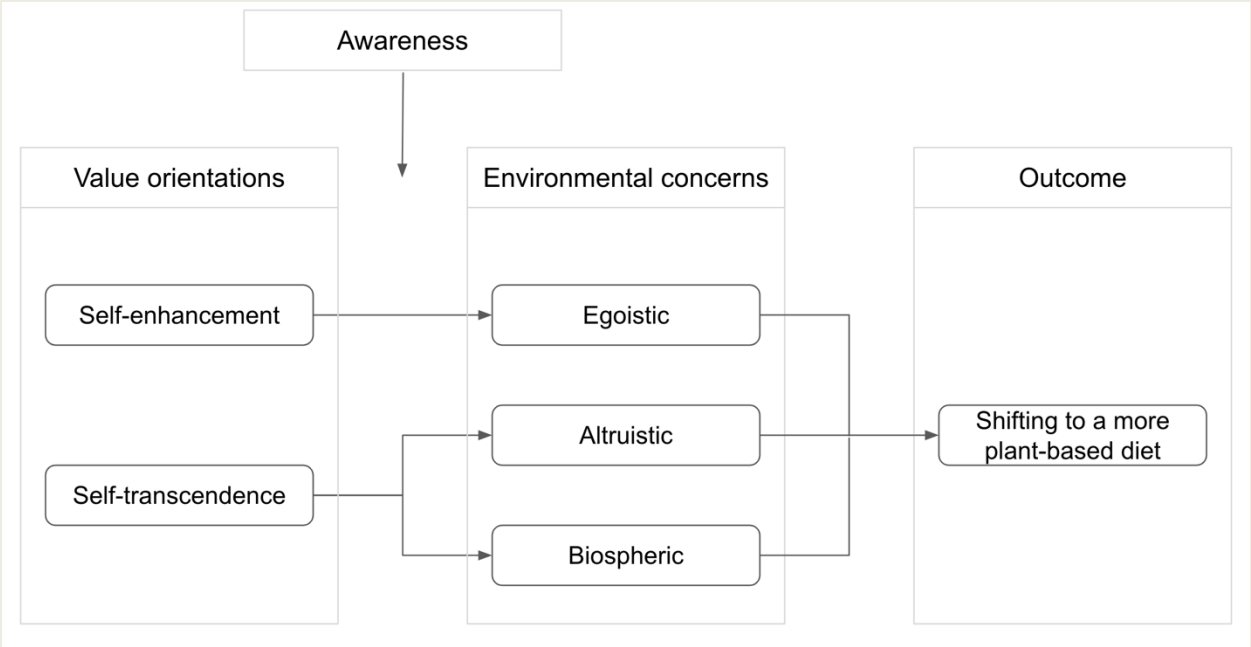
Our literature review revealed that the top marketing journals (e.g., Journal Marketing, Journal of Consumer Research, and Journal of the Academy of Marketing Science) had not published any articles focusing on plant-based diets. This lack of attention is an issue because these journals typically act as leading forces for knowledge creation in the field and bring attention to vital topics and subjects. Failure to study and examine the importance of diet as a sustainable consumption practice points to a parallel between a lack of awareness of this issue in society and among consumer researchers. The current paper intends to bring attention to plant-based diets by proposing a theoretical framework and discussing future direct directions to help sustainable consumption scholars study this crucial topic.

Framework for Promoting Plant-Based Diets

We synthesize findings and insights from our literature review into a framework by relying on the value-basis environmental concern theory (Stern & Dietz, 1994), which suggests that the underlying individual value orientations lead to different types of environmental concern, producing environmental attitudes and behavior. In this theoretical framework, value orientations are self-enhancement (i.e., a focus on self) and self-transcendence (i.e., seeing an overlap between self and others and care for others), and they act as precursors for three types of environmental concerns (i.e., egoistic, altruistic, and the biospheric) (Schwartz, 1992; Stern, Dietz, Kalof, & Guagnano, 1995). Further, the level of awareness of the harmful effects on valued objects (i.e., valuing self, other people, or the biosphere) moderates the relationship between value orientations and environmental concerns (Schultz, 2001). This value-basis theory of environmental concern (Stern & Dietz, 1994) is widely used to discuss and examine individuals' pro-environmental attitudes and behavior (De Groot & Steg, 2007; Leonidou, Gruber, & Schlegelmilch, 2022).

We adopt the value-basis environmental concern theory to propose a framework that focuses explicitly on a shift towards a more plant-based diet as a crucial sustainable consumption practice and formulate propositions relying on the findings and insights from our literature review to provide directions for future research. Value orientations and environmental concerns are the two factors that can lead to the adoption of a plant-based diet as a long-term habit. Finally, the level of awareness moderates the relationship between different value orientations and environmental concerns on a path to adopting more plant-based diets. The central premise of our proposed framework is that a transition to a more plant-based diet can be accomplished through different mechanisms and for individuals with strong self-enhancement and self-transcendence value orientations.

FIGURE 2
VALUE-BASIS FRAMEWORK FOR PROMOTING PLANT-BASED DIETS



Outcome

The desired outcome of the proposed framework (see Figure 2) is shifting consumers' diet to a more plant-based diet as a long-term habit. In this paper, diet refers to an individual's long-term dietary choices and patterns. Dieting, which is used to describe short-term (e.g., a few days or weeks) dietary interventions to lose weight or getting in shape, is not within the focus of this paper. The following sections describe

value orientations and environmental concerns as they are essential antecedents of environmental preferences, intentions, concerns, and behavior (Stern & Dietz, 1994; Van der Werff, Steg, & Keizer, 2013).

The relationships between value orientations and environmental concerns have been examined and studied in pro-environmental behavior contexts in a general sense, considering sustainable consumption practices such as recycling, reusing, bicycling, and donating to environmental groups (e.g., Leonidou et al., 2022; Schultz, 2001; Stern et al., 1995). We specifically focus on adopting a more plant-based diet as a sustainable consumption practice as it has the potential to provide several ecological benefits and reduce a consumer's environmental footprint and demand for limited natural resources.

Previous studies measured changes in preference for plant-based foods in different settings to assess the effectiveness of environmental sustainability messages related to dietary choices (Blondin et al., 2022; Garnett et al., 2019; Malan et al., 2022). This assessment is an effective proxy for transitioning towards a more plant-based diet. Because diet is a long-term habit, future studies can assess consumers' intentions to learn more about plant-based diets and maintain plant-based diets for a long time. A better and more challenging way future studies can assess adopting and maintaining a plant-based diet can involve tracking research participants' food choices longitudinally. The initial transition period to a plant-based diet is a crucial phase as engaging in the same behavior becomes progressively easier. Because turning healthy behaviors into habits may take two to three months (Gardner, Lally, & Wardle, 2012), long-term dietary behavior change can be tracked for at least a couple of months in future studies.

Environmental Concerns

The environmental concern issues in value-basis theory focus on three valued objects: self, other people, and the biosphere (Stern & Dietz, 1994). These three environmental concerns (i.e., egoistic, altruistic, and biospheric) were shown to be separate and correlated constructs of environmental attitudes (Schultz, 2001). While egoistic concerns reflect an individual's concerns for self (e.g., me, my health, my lifestyle, and my future), altruistic concerns capture a person's worry for others (e.g., people in my community, all people, children, and future generations). The last construct indicates concerns for the biosphere (e.g., forests, animals, marine life, and birds).

Value Orientations

Values refer to individuals' trans-situational goals that serve as guiding principles in their lives and tend to be abstract, general, and stable over time (Feather, 1995; Schwartz, 1992). Self-enhancement, which contains concepts such as power, achievement, and hedonism, and self-transcendence, which contains concepts such as universalism and benevolence, are two overarching value orientations that encapsulate various human values in the value-basis environmental concern theory (Stern et al., 1995). Our proposed framework suggests that both self-enhancement and self-transcendence value orientations can lead to a path toward a more plant-based diet through different mechanisms. Those are reflected in the three environmental concern categories as plant-based diets have implications for self (e.g., my personal health), other people (e.g., indigenous people who live in forests and future generations), and the biosphere (e.g., animals, dramatically reduced GHG emissions, and much less demand for land and water use).

Self-Enhancement. This value orientation entails a focus on actions and outcomes that benefit the self (Huang & Yang, 2022). Self-enhancement is positively correlated with egoistic environmental concerns and negatively correlated with altruistic and biospheric environmental concerns (Schultz, 2001). That is, people with high self-enhancement value orientation are likely to report high levels of egoistic concerns as they are worried about how environmental protection and sustainability will influence themselves (e.g., their health, lifestyle, and quality of life) (Stern & Dietz, 1994; Stern et al., 1995). Understanding how sustainable consumption practices can affect an individual's personal well-being and lifestyle may be complicated for many consumers and may require a long-term perspective. As a result, self-enhancement is typically not a good predictor of intentions to engage in environmentally sustainable consumption practices (Gifford & Nilsson, 2014; Urien & Kilbourne, 2011).

The first path to a more plant-based diet in our proposed framework focuses on the health benefits of increasing plant-based food consumption and reducing the intake of animal-based foods. As discussed

earlier in the paper, plant-based diets improve overall health and provide several health benefits compared to typical and widespread Western diets. Adopting a plant-based diet can significantly reduce the risk for several chronic diseases such as cardiovascular disease, type 2 diabetes, some cancers, and obesity (Lee-Kwan et al., 2017). In cohort studies, people who followed a predominantly plant-based diet had significantly lower all-cause mortality rates (Kim et al., 2019). A higher intake of plant-based foods is associated with a lower risk of frailty (Maroto-Rodriguez et al., 2022; Struijk et al., 2022). These are some of the health benefits of plant-based diets, and they can offer a path from self-enhancement value orientation to adopting a more plant-based diet through egoistic concerns. People with a high self-enhancement orientation may have greater egoistic concerns over their personal health, which can produce a dietary transition.

P1. *Self-enhancement leads to a transition towards a more plant-based diet via egoistic concerns.*

The link between value orientations and environmental concerns is moderated by the level of awareness of the consequences to the valued objects (Schultz, 2001; Stern & Dietz, 1994). When we consider a person with a high self-enhancement orientation, the focus of egoistic concern is the effect of dietary choices on their health and overall well-being. People may possess varying levels of knowledge and understanding regarding how their dietary choices influence their health, overall well-being, and quality of life. Many consumers may not be familiar with the medical research on the various health benefits of plant-based diets. Our review of literature revealed that in comparison to sharing altruistic motivations (i.e., environmental sustainability benefits), celebrities sharing their egoistic motivations (i.e., health benefits) to adopt a plant-based diet was found to increase consumers' intentions to increase plant-based food consumption and health consciousness (Phua et al., 2020). Marketing communication efforts can play an integral role in increasing such awareness to strengthen the relationship between self-enhancement and egoistic concerns, leading to a transition to a more plant-based diet. Future research should examine effective messaging and framing to raise awareness of general (e.g., overall health) and specific (e.g., reduced likelihood of suffering from heart disease and type 2 diabetes) health benefits of plant-based diets to target and inform consumers with high self-enhancement.

P2. *The level of awareness positively moderates the relationship between self-enhancement and egoistic concerns on a path to a more plant-based diet.*

Self-Transcendence. This value orientation reflects a focus on actions and outcomes that benefit entities beyond the self (Huang & Yang, 2022). People with high self-transcendence perceive a greater sense of overlap between their own self-concept and others. Self-transcendence orientation was shown to have a positive direct and indirect effect on a person's pro-environmental behavioral intentions (Stern et al., 1995). For this value orientation, the focus of dietary choices is the impact of diet on other people, including children, indigenous people who live in forests, and future generations. All these parties suffer due to the rising demand for animal-based foods. While children and future generations inherit a much more polluted world with fewer natural resources and more extreme weather events, indigenous communities are forced out of their lands in forests as animal grazing and cultivating animal feed cause immense deforestation (WWF, 2020). Because self-transcendence is positively correlated with altruistic concerns (Schultz, 2001), people with a high self-transcendence orientation can have greater altruistic concerns about other people, motivating a dietary transition.

P3. *Self-transcendence leads to a transition towards a more plant-based diet via altruistic concerns.*

When we consider a person with a high self-transcendence orientation, the focus of altruistic concern is the effect of dietary choices on other people's life and well-being. For an average consumer, it can be difficult to comprehend or be aware of how their everyday dietary choices can negatively influence others they may never meet in a lifetime. Marketing communication efforts can play an integral role in increasing

such awareness to strengthen the relationship between self-transcendence and altruistic concerns, leading to a transition to a more plant-based diet. Consumer researchers should study and examine how to effectively raise awareness of this moral responsibility attached to dietary choices and towards others, including people who live in other parts of the world, children, and future generations.

P4. *The level of awareness positively moderates the relationship between self-transcendence and altruistic concerns on a path to a more plant-based diet.*

Self-transcendence value orientation can also produce a transition toward a more plant-based diet through the underlying mechanism of the biospheric concerns, which entails care and attention for nature, including forests, mammals, birds, and marine life. People with high self-transcendence see a greater overlap between their self-concept and the outside world. As a result, they can feel more concern about all living species in the world, and the biospheric concerns were shown to be positively related to pro-environmental attitudes, intentions, and sustainable consumption practices (Schultz, 2001; Schultz et al., 2005). Therefore, people with a high self-transcendence orientation can feel more significant biospheric concerns, motivating a dietary transition as an environmentally sustainable consumption practice.

P5. *Self-transcendence leads to a transition towards a more plant-based diet via biospheric concerns.*

For a person with a high self-transcendence orientation, the focus of altruistic concern is the effect of dietary choices on all life on the Earth (e.g., forests, birds, mammals, and marine life). Most consumers are not adequately aware of the environmental sustainability outcomes of their dietary choices. GHG emissions, land and water use, and deforestation are among the food systems' impacts on climate change. Further, even though it is clear that eating animal-based foods necessitates cruelty inflicted on animals, many would prefer to ignore or fail to make the connection between eating animal-based foods and the suffering farm animals experience on a massive scale (Beverland, 2014). Marketing communication efforts can effectively increase awareness of how dietary choices affect the valued object of the biospheric constituents for individuals with a high self-transcendence value orientation, motivating environmentally sustainable dietary choices. Future research can explore how to increase such awareness among consumers effectively.

P6. *The level of awareness positively moderates the relationship between self-transcendence and biospheric concerns on a path to a more plant-based diet.*

CONCLUSION

Consumers' dietary choices are directly connected to personal health and the well-being of our planet. This paper summarizes environmental science studies to highlight the importance of plant-based diets as an environmentally sustainable consumption practice with various health benefits. Further, we argue that different routes can lead to a transition towards more plant-based diets. Human values are integral for studying sustainable consumption practices, as they tend to remain stable over time and act as the main drivers of environmental attitudes and behavior (Schwartz, 1992). Typically, individuals with a strong self-enhancement value orientation may be more reluctant to adopt sustainable consumption practices as they do not perceive self-benefits as a result of such actions (Schultz, 2001). In contrast, self-transcendence value orientation is positively related to pro-environmental behaviors (Schultz et al., 2005). Because adopting plant-based diets is a vital environmentally sustainable consumption practice with several health benefits, self-enhancement and self-transcendence value orientations can produce a shift towards adopting more plant-based diets.

After reviewing the relevant literature, we propose a framework that builds upon the value-basis theory of environmental concern (Stern & Dietz, 1994) to advance our theoretical understanding of promoting environmentally sustainable and healthful plant-based diets through different mechanisms. In the first route, the focus is on the health benefits of greater plant-based foods intake, and self-enhancement value

orientation can produce a transition towards a more plant-based diet through egoistic concerns. This effect is expected to get stronger as consumers' awareness of how dietary choices affect personal health increases. Next, the second path involves the impact of self-transcendence value orientation on transitioning to a more plant-based diet transmitted through altruistic concerns. Because the focus is on moral responsibility towards others for this path, the level of awareness of the implications of dietary choices on others positively moderates this effect. Finally, self-transcendence value orientation can lead to a transition toward a more plant-based diet through biospheric concerns, which are directly related to worry over harm and destruction inflicted on all living creatures in the environment due to dietary choices. Increasing awareness of the dietary choices' impacts on animal welfare, wildlife loss, climate change, and natural resources can effectively strengthen this effect.

In summary, our review indicates that plant-based diets need to receive much more attention from marketing and consumer behavior scholars. We propose a theoretical framework to spur future research in this vital topic and assist researchers in studying and examining different mechanisms for promoting greater adoption of plant-based diets. The central premise of our proposed framework is that a transition towards a more plant-based diet is possible through three broad psychological routes for individuals with self-enhancement and self-transcendence value orientations. Effective marketing communication efforts are integral in increasing awareness of how dietary choices affect different valued objects (i.e., self, others, and the biosphere). The level of awareness moderates the relationships between value orientations, environmental concerns, and the adoption of a more plant-based diet.

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APPENDIX

Our literature review revealed that the top marketing journals had not published articles on dietary choices as a sustainable consumption behavior. We expanded our search to Web of Science and Scopus databases to find articles specifically focused on plant-based diets as a sustainable consumption practice.

TABLE 3
LIST OF TOP MARKETING JOURNALS

Journal Name	ABDC Ranking	CABS Ranking	FT
Journal of Consumer Research (JCR)	A*	4*	√
Journal of Consumer Psychology (JCP)	A*	4*	√
Journal of Marketing (JM)	A*	4*	√
Journal of Marketing Research (JMR)	A*	4*	√
Journal of the Academy of Marketing Science (JAMS)	A*	4*	√
Marketing Science (MS)	A*	4*	
International Journal of Research in Marketing (IJRM)	A*	4	
Journal of Retailing (JR)	A*	4	

Notes: ABDC; Australian Business Deans Council (A* is the highest grade in this list), CABS; Chartered Association of Business Schools (4* and 4 are the two higher grades in this list), FT; the Financial Times top 50 journals list.

Search: This systematic domain-based review concentrates on research examining diet as a sustainable consumption choice and practice. We did not impose a date range for our search process. This initial search process entailed searching for the keywords of sustainable consumption, sustainable diet, plant-based diet, plant-based, and diet in any parts of published articles (e.g., title, abstract, keywords, and anywhere in the manuscript) in published journal articles. The authors read the titles and abstracts of all articles in the search results. This initial search process produced a total of 1975 articles.

Screen & assess: Not all articles in the search results were relevant to diet as a sustainable consumption choice and practice. During this phase, we eliminated duplicated articles in the search results. Further, many articles were not of interest to our review purposes. For example, many articles focused on dieting to lose weight in a short time, and those articles were excluded from our review. This filtering process reduced the number of articles to 569. We included articles related to sustainable consumption in general as they can provide insights in the subsequent phase of proposing a framework and formulating future research directions.

Extract & synthesize: After the screening and assessment process, we carefully examined 79 articles whose topics were closest to our focal attention in this review to grasp their subjects, theoretical perspectives, findings, and implications pertaining to sustainable consumer behavior. These articles with full citations are listed at the end of this document. Their findings and insights on sustainable consumer behavior in a general sense provided us valuable perspectives to formulate future research directions on plant-based diets. Additionally, we were able to find published articles that examined different ways to increase the adoption of a more plant-based diet or increase plant-based food intake. The list of those articles and a summary of their findings are presented in the paper (see Table 2).