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Environmental values and sustainability: Mediating role of nature connectedness, and love for nature toward vegan food consumption

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Abstract

The study aims to ascertain the mediating influence of nature connectedness and love for nature in the association of terminal and instrumental values with stated buying behavior in the vegan food context. Drawing theoretical underpinning from Value-Belief-Norm (VBN) in terms of value dichotomy and the *Biophilia Hypothesis* for sustainable consumption, the research hypotheses were tested using covariance-driven structural equation modeling. Cross-sectional data of 524 participants was collected through an online agency from an emerging market (India). Although the results suggest that improved terminal and instrumental values contribute to stated buying behavior, this effect transpires only through the love for nature. Furthermore, the role of love for nature as a mediating construct in the relationship between the terminal and instrumental values and the corresponding influence on stated buying behavior has been confirmed. Thus, the present study empirically corroborates the rationality of Value-Belief-Norm as well as the *Biophilia Hypothesis* as its novel theoretical contributions. Marketers of vegan food products should formulate terminal and instrumental value-oriented strategies that reinforce nature connectedness and love for nature, which are anticipated to exert a significant stated buying behavior-enhancing influence.

1 | INTRODUCTION

In the last few decades, a major change in food consumption has been observed a shift from non-vegan to vegan (Martinelli & De Canio, 2022), and notwithstanding social stigma, veganism is gaining popularity to develop, produce and market innovative plant-based food products (Brouwer et al., 2022). In the year 1944, the term "vegan" was coined by British woodworker Donald Watson and it is now used to describe "non-dairy vegetarians" who exclude all forms of animal products to discard animal exploitations (Wright, 2015). Accordingly, veganism is a practice or philosophy of abstaining from the use of animal products—especially in food and rejecting the commodity status of animals (Siebertz et al., 2022). Rapid intensification of agriculture-based production and business is required to meet the increasing food demand, address the sustainability crisis, curb climate change, and be cost-effective (Kautish & Sharma, 2020; Krizanova et al., 2021). Past research substantiates that the greenhouse effect is greatly predisposed by unmindful production and consumption of food products (Hunecke & Richter, 2019), as carbon emissions can be minimalized by refraining from meat consumption (Poore & Nemecek, 2018). Therefore, many individuals are switching to a plant-based diet, for example, vegan food which is considered a healthier and environmentally sustainable option.

This transition is fueled by several reasons, such as ecological and nutritional value (Truong, Lang, & Conroy, 2021), sustainable

mindfulness (Richter & Hunecke, 2020; Siebertz et al., 2022), ethical motives (Radnitz et al., 2015), adverse environmental situation (Castañé & Antón, 2017), morality and value orientation (Napoli & Ouschan, 2020). According to the United Nations and the European Commission, the food consumption movement toward a plant-based diet is essential to neutralize natural environment deterioration as plant-based food uses natural resources in a way that the earth's capacity does not get exhausted for future generations (Alvaro, 2017; European Commission, 2020). Primarily, researchers view sustainable consumption as an act of anti-consumption or voluntary simplicity and pronounce it as an individual's lifestyle culminated out of environmental value orientation to averse, avoid, and abandon (Jaiswal et al., 2022; Thøgersen et al., 2019). In particular, there are two literature gaps that need to be addressed, first, sustainable consumption is viewed as an outcome of the interaction between individuals and materials but basically ignored the ways in which emotions give rise to and affect consumer behavior (Antonetti & Maklan, 2014). Second, relatively few studies have examined the effects of the dimensions of emotions such as love for nature (passion, intimacy, and commitment) to explain the value-cognitive-emotional-behavior path. Therefore, this study aims to fill the identified research gap by investigating the role of individual value disposition (instrumental and terminal), nature connectedness, and love for nature on the stated buying behavior of consumers.

Western societies have witnessed the Go-Vegan movement owing to its several environmental and health benefits. Globally, veganism has grown in popularity, and this trend appears to be rising in emerging markets too. According to a survey conducted by Rakuten Insights (2022), veganism is on the rise in India (estimated US $33.3 billion by 2030) with reasons such as animal welfare, vegetarian diet, food allergies, healthiness, environment, taste, and new food habits related trends. This healthy lifestyle-linked inclination toward vegan food is primarily observed among urban Indian consumers but its wider acceptance cannot be ignored (Kautish & Sharma, 2020; Malik & Jindal, 2023). Given the rise in health awareness, sustainability-driven popularity, and consumption of vegan food products in India, it is essential to research and establish the relationship between individual value drives (value orientation) and associated objects (nature) based on symbolic interactionism, for example, connectedness, feelings, love, or emotions (Antonetti & Maklan, 2014; Kautish & Sharma, 2019). Identifying individualistic variables that underpin decisions toward sustainable consumption is therefore a crucial element in understanding and transforming behavior (Perera, Daronkola, & Johnson, 2022; Perera, Kalantari, & Johnson, 2022). The literature on vegan food consumption assumes that human value orientation, attitude, and perception yield buying behavior. However, some claims related to social and psychological factors in this area remain abstemiously unexplored (Bryant et al., 2022; Kautish, Khare, & Sharma, 2023).

Sustainable consumption involves the outcomes of connections between individual values, objects (materials), and environmental surroundings. Past studies have mostly ignored how human feelings give rise to and positively influence sustainable product choices (Dong et al., 2020). This argument resonates with the proposition put forth by Omoto and Packard (2016) that sustainable choices have a closer relationship with humanly positive emotions (e.g., pride and love) as well as negative emotions (i.e., guilt and hate) than simple cognition. As the robust form of intimate connection, universalist human values proposed by Rokeach (1973) (in terms of terminal/instrumental dichotomy), a sense of care, and love can fortify the link between consumers and objects (Gibbins & Walker, 1993). While certain studies have addressed the human value dichotomy of the terminal and instrumental values jointly (Kautish, Khare, & Khare, 2023), empirical insight into their interface with nature connectedness and love for nature remains scanty, particularly in the vegan food context.

The current research focuses on the mediating role of nature connectedness and love for nature in affecting the association between terminal/instrumental values and stated buying behavior, thereby extending Krizanova and Guardiola (2021) and Siebertz et al. (2022) work. Nature connectedness has been shown to exert a significant effect on developing a love for nature or one's desire to connect, and remain connected, a need to associate with the larger human community, and a craving to become a social member (Mayer & Frantz, 2004). Therefore, implying the individual's willingness to secure efforts at sustaining nature for future generations (Kautish et al., 2021). Here, the study proposes human value-driven nature connectedness and love for nature as critical mediating variables in the relationship that terminal/instrumental values share with stated buying behavior in the vegan food consumption context, that is, empirically understanding the role of customers' terminal *end-stated* and instrumental *means-stated* facets in explaining stated buying behavior via nature connectedness and love for nature, thereby offering a novel theoretical contribution. Thus, the present study aims to respond to the literature gap through the following research questions (RQs): RQ1: How do terminal and instrumental value facets influence nature connectedness, love for nature, and stated buying behavior for vegan food consumption? and RQ2: How do nature connectedness and love for nature mediate the relationship between terminal and instrumental value facets and stated buying behavior for vegan food consumption?

To achieve research objectives, the rest of the paper is organized as follows: In sections two and three, we reviewed key literature related to the core concepts and developed a theoretical framework linked with a set of empirical research hypotheses. In section four, we deliberate on the research design and statistical data analysis, followed by section five with an outline of our significant implications for theory and practice, limitations, and future research directions.

2 | THEORETICAL FRAMEWORK

Several sustainable consumption studies (Kautish et al., 2022) on green product purchases have employed the Value-Belief-Norm (VBN) theory. According to VBN theory, distinct value orientation may influence environmental concerns. This study adopts Kautish et al. (2020) demarcation of human value orientation which operationalizes terminal value facets as those focusing on maximizing individual outcomes such as freedom, wisdom, a sense of accomplishment, the world of beauty, a comfortable and exciting life, and instrumental value facets as those

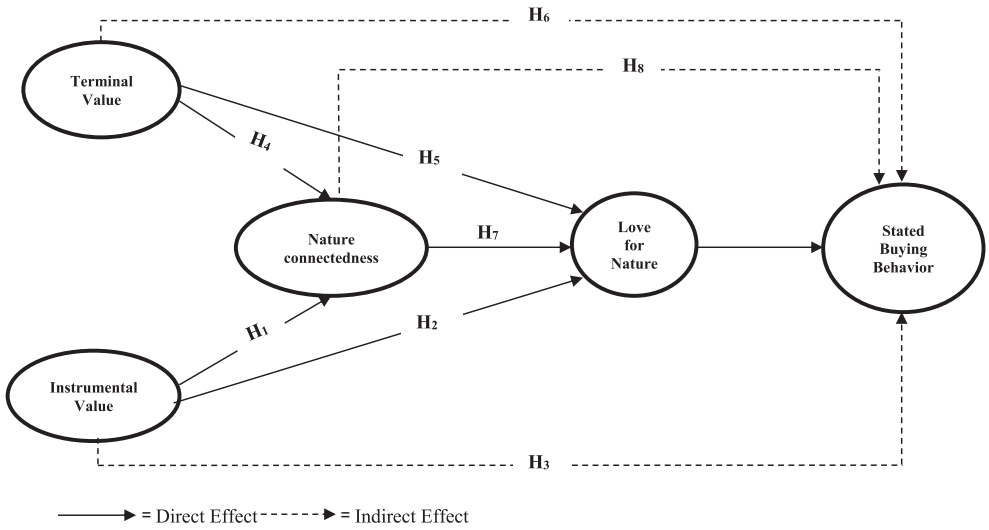


FIGURE 1 Conceptual framework.

focusing on maximizing individual outcomes such as love, self-control, logical, intellectual, responsible, clean, and broad-minded. Based on the terminal and instrumental value orientation rationale vis-à-vis VBN theory, the study presents a pertinent review of literature on key concepts of instrumental, terminal value, nature connectedness, love for nature, and stated buying behavior in the vegan food consumption context, as well as develops the *Biophilia Hypothesis* dovetailed with conceptual framework in subsequent sections. *Biophilia* is a combination of two ancient Greek words: *Bio* (life) and *Philia* (love), literally meaning "love of life." German-born American psychoanalyst Eric Fromm coined the term *Biophilia* in his seminal book *The Anatomy of Human Destructiveness* in the year 1973 which defined *Biophilia* as "the passionate love of life and of all that is alive" (p. 406). Wilson (1984) defined *Biophilia* as "the inner urge to affiliate with other forms of life." The *Biophilia Hypothesis* proclaims the idea that human being holds an inborn propensity to seek connections with nature and different forms of life on this planet (Wilson, 1984). Figure 1 presents the conceptual framework with a description of the hypotheses.

3 | LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

3.1 | Instrumental value and its facets

According to Rokeach (1979), instrumental values are considered as personal abilities (e.g., honest, capable, and responsible), beliefs about desirous outcomes (e.g., self-controlled, ambitious, and imaginative), and human capacities (e.g., independent, broad-minded, cheerful, and courageous) which allow achieving specific goals set by individuals. Primarily, instrumental values are goal-driven (i.e., clean, responsible, and logical), action-oriented (i.e., intellectual, independent, and forgiving), and categorically inclined toward desire (i.e., love, cheerful and forgiving) to make an effective judgment (Allen et al., 2002). Because the issues of environmental sustainability are more concerned with humanoid choices (e.g., broad-minded, self-controlled, and logical) and actions, social scientists have much to contribute to our knowledge of how personal values explain the phenomenon. In recent years, interest in the *value-oriented* food paradigm has rapidly emerged as a dominant force (Gibbins & Walker, 1993; Kautish, Khare, & Khare, 2023). Several human value facets have been proffered, including *value dichotomy* (Kautish et al., 2022), *human values* (Dagevos & van Ophem, 2013), *life values*, and *environmental values* (Perera, Daronkola, & Johnson, 2022; Tolppanen & Kang, 2020), to name a few, revealing the concepts' growing importance concerning sustainable consumption.

Theoretical research on the nature of human value states that it is a dynamic concept as far as sustainable products are concerned (Kang & Moreno, 2020) though a few studies have attempted to understand its dynamicity (Kautish et al., 2022; Sharma & Jha, 2017). For instance, climate change induces individuals to rethink their beliefs concerning dietary choices and becomes a stimulating ethical issue for veganism defenders to provide a new motive to support the cause because any animal-based foods have high greenhouse gas production (Kortetmäki & Oksanen, 2021). Extending the instrumental value facets, Tziva et al. (2020) assert that many researchers have started to deliberate about protein diet shifts to find more environmentally sustainable sources of protein that can substitute meat and milk. Owing to the vegan consumers' proactive influence on their environmental and health consciousness, instrumental value facets reveal the consumers' intent to reach logical, helpful, responsible, intellectual, self-control-driven, and audacious goals, thereby helping to reduce meat consumption through substitution with natural food (Devia et al., 2021; Kautish & Sharma, 2019). Anecdotal and research evidence suggests that humans are genetically attached to nature with its rich diversity, of shapes, colors, and life-filled natural fauna and flora (Wilson, 1984). Thus, instrumental values' core facets such as logic, helpfulness, responsible, intellect, self-control, and courage differentiate them from other value conceptualizations, which do not fully apprehend such human value-driven intricacies (Gibbins & Walker, 1993). Based on the arguments offered above, we posit as follows:

H1. *Instrumental value has a direct effect on nature connectedness.*

H2. *Instrumental value has a direct effect on love for nature and an indirect effect on love for nature via nature connectedness.*

H3. *Instrumental value has an indirect effect on stated buying behavior via love for nature and nature connectedness.*

3.2 | Terminal value and its facets

Rokeach (1979) defined terminal values as the echo of an individual's desired state of existence such as happiness, a sense of accomplishment, an exciting life, pleasure, inner harmony, wisdom, and a comfortable life. Terminal values are end-stated facets (e.g., salvation), that drives an individual to seek personal (freedom) or social benefits (e.g., equality), beliefs about desirous outcomes (a sense of accomplishment, happiness, and an exciting life), and personal reflections of how one would like the biosphere (i.e., a world at peace, and wisdom) or eco-sphere (i.e., mature love and inner harmony) to be and where one would like to transpire (Kautish & Sharma, 2021). In a consumption-driven context, Allen et al. (2002) asserted that terminal values stimulate individuals to purchase and consumer products that provide expressive and symbolic benefits while undermining functional and non-functional aspects (Kautish, Khare, & Khare, 2023). Perera, Daronkola, and Johnson (2022) attest to environmental values' multidimensional nature by identifying its anthropocentric, egobiocentric, and biospheric dimensions through the effect of customers' environmental identity to explain green product purchase intention (Chen, 2020), thus taking a parallel effect of consumption values view (Matum et al., 2021). Terminal values are induced by the customers' product purchase/consumption-related functions and by their terminal end-stated (e.g., vegan food) notions, care, or love-motivated life experiences (Kautish, Khare, & Sharma, 2023).

Though its valence can differ in its magnitude or intensity (i.e., regular/occasional/rare), some environmentally friendly product purchases occur more consciously, become a habit, or are more strongly valenced (Truong, Lang, & Conroy, 2021; Tziva et al., 2020). For example, affective or cognitive, and explicit or implicit attitudes toward vegetarian and vegan food reflect a customer's state of optimal disposition toward food consumption and may be characterized by a few terminal values in terms of wisdom or mindfulness, social recognition, pleasure, happiness, and active life (Kautish & Sharma, 2021; Siebertz et al., 2022). Terminal values get reflected not only by the customers' food purchase/consumption but also by their food-related preferences (Kautish, Khare, & Khare, 2023). It is therefore vivacious for marketers to recognize how terminal value facets propose meaningful nature-oriented life experiences and affect consumer behavior toward sustainable products (e.g., by adapting vegan food or plant-based options (Elzerman et al., 2013; Kautish & Sharma, 2019).

TABLE 1 Conceptual definitions.

Terminal values	Terminal values are the life goals or end-state of existence that individual wish to achieve as the highest values in a person's value system.
Instrumental values	Instrumental values are the modes of behavior or preferred ways that an individual wish to follow as the highest values in a person's value system.
Nature connectedness	Nature connectedness refers to how individuals identify themselves within a natural environment and the relationships which they form with nature.
Love for nature	Love for nature refers to how individuals perceive emotional affinity towards nature which entails traits relating to natural experiences such as self-extension and self-expansion.
Stated buying behavior	Stated buying behavior is the internal state of the individuals driven by values (openness to change, ethical self, and self-identity) and associated with willingness to purchase facets.

H4. *Terminal value has a direct effect on nature connectedness.*

H5. *Terminal value has a direct effect on love for nature and an indirect effect on love for nature via nature connectedness.*

H6. *Terminal value has an indirect effect on stated buying behavior via love for nature and nature connectedness.*

3.3 | Nature connectedness, love for nature, and stated buying behavior

There is a growing concern that contemporary ways or conducts of urban living undermine the intimate connection between consumers and a sense of belongingness to nature which builds a narrative for their identity beyond the extended self (Bragg, 1996). Early research addressed a few specific environmental facets; however, more efforts are required for a reconceptualization of individualistic relationships toward values, nature, and buying behavior. Schultz (2000) described nature connectedness as "the extent to which any individual embraces nature within the cognitive illustration of self" (p. 67). Thus, nature connectedness has been described as "an individual's trait level of feeling connected to the natural ecosphere as a potential means of cultivating emotional bonding" and love for nature (Dong et al., 2020).

To date, social scientists interested in environmental sustainability have applied information familiarity from the literature on motivations and attitudes (Judge & Wilson, 2019; Kautish et al., 2019), personality and normative influence (Tan et al., 2021), persuasion, and

TABLE 2 Constructs, scale, and descriptive statistics.

Terminal value ($M = 4.88$; $SD = 1.16$)	***M***	**SD**	**λ**
We can live an environmentally comfortable vegan life.	4.24	1.21	.751
We can live a healthy life with vegan food products.	5.42	1.04	.762
The world climate will be at peace with a vegan lifestyle.	4.91	1.12	.796
It is environmentally important to consume vegan food products.	5.23	1.13	.787
It is a pollution-free choice to embrace a vegan lifestyle.	4.74	1.17	.881
I feel happy and contended to consume vegan food products.	2.85	1.34	.793
It is essential to avoid veganism. (rc)	5.42	1.27	.736
I feel environmentally friendly with a vegan lifestyle.	5.02	1.16	.862
Consuming vegan food products is like saving our natural life.	5.64	1.15	.822
There should be some social recognition for the vegan lifestyle.	5.32	1.21	.817
Vegan food products are truly environmentally friendly.	5.22	1.14	.791
Vegan is a wise pro-environmental decision.	5.24	1.12	.775
The world will be very beautiful with vegan food products.	5.09	1.03	.754
To care about our loved ones, we should hold a vegan lifestyle.	4.74	1.12	.880
The vegan lifestyle is a mature love for nature.	2.86	1.24	.796
It is self-respect to consume vegan food products.	5.74	1.07	.733
There is a sense of accomplishment for the natural environment.	5.32	1.25	.862
There is an inner harmony in veganism.	4.91	1.11	.784
Instrumental value ($M = 4.78$; $SD = 1.18$)			
It is quite environmentally ambitious to be vegan.	5.38	1.10	.853
It is broad-minded to adopt vegan food products.	5.39	1.06	.825
I am capable of embracing veganism for the natural environment.	5.21	1.04	.783
Life is quite cheerful to consume vegan food products.	4.73	1.12	.882
I feel courageous to stand for environmental well-being.	2.83	1.14	.795
I feel unforgiving if the next generation suffers due to natural disasters.	5.41	1.26	.731
I am quite helpful towards animal welfare being a vegan.	5.03	1.20	.860
It is honest and sincere to embrace a pro-environmental lifestyle.	4.33	1.33	.716
I feel imaginative and creative about a pro-environmental lifestyle.	5.24	1.24	.792
One independently decides not to be environmentally friendly. (rc)	5.34	1.30	.760
Intelligent people are environmentally friendly.	4.42	1.43	.729
It is love towards other creatures to consume vegan food products.	4.47	1.31	.702

(Continues)

TABLE 2 (Continued)

Terminal value ($M = 4.88$; SD = 1.16)	*M*	SD	λ
It is quite logical and rational to be environmentally friendly.	4.34	1.32	.716
Vegan food products are clean for nature.	5.23	1.01	.783
We should make or cook environmentally friendly food products.	4.74	1.12	.881
I politely accept vegan lifestyle is environmentally friendly.	2.85	1.31	.792
We are responsible for natural environmental deterioration.	5.73	1.07	.734
We need to exercise self-control as an environmentally friendly consumer.	5.39	1.01	.861
Nature connectedness ($M = 4.89$; SD = 1.21)			
Being vegan…			
It is a sense of openness to nature to look around.	5.82	1.15	.881
Nature is a community to which we belong.	5.83	1.10	.765
I appreciate the presence of other living organisms.	5.79	1.17	.884
I sense a disconnect from nature. (rc)	5.62	1.08	.742
I can visualize a part of the cyclical process of natural inhabitants.	5.21	1.16	.815
I sense a connection with plants and animals.	4.32	1.25	.712
I sense a reciprocal belonging with mother earth.	2.96	1.36	.766
I understand about activities adversely affect nature.	3.73	1.23	.774
I sense a natural network of life.	5.07	1.34	.806
All creatures, human and non-human share a mutual life.	5.31	1.30	.751
I feel engrained within the natural world.	5.13	1.31	.784
I can reflect on the top of the hierarchy in nature.	3.63	1.30	.742
I can contribute to a small part of the natural ecosphere.	5.35	1.13	.793
Being vegan, I can make sure of nature's well-being.	4.80	1.15	.757
Love for nature ($M = 4.78$; SD = 1.27)			
Being vegan…			
I can visualize nature with a vegan lifestyle and feel happy.	5.24	1.19	.793
Experiencing nature can be very stimulating with a vegan lifestyle.	5.38	1.12	.754
I find myself craving vegan food when I am not surrounded by nature.	4.41	1.36	.729
One can touch nature through veganism as a dream come true.	4.46	1.31	.704
I discern the fact that nature with a vegan lifestyle is of little interest to people around me.	4.34	1.29	.716
I really do not understand the link between nature and veganism. (rc)	5.24	1.19	.793

TABLE 2 (Continued)

Terminal value ($M = 4.88$; $SD = 1.16$)	*M*	SD	λ
I enjoy spending time with nature and consuming vegan food products in my personal life.	5.37	1.30	.761
I delight to share my vegan orientation with nature.	4.42	1.32	.729
I want to learn about nature and vegan food consumption.	4.45	1.28	.704
I love to keep in touch with nature while purchasing vegan food products.	4.34	1.33	.715
We cannot imagine parting nature and avoiding a vegan lifestyle. (rc)	5.10	1.32	.732
Nature is irreplaceable and I love vegan food products.	4.64	1.27	.824
Stated buying behavior ($M = 5.24$; $SD = 1.25$)			
I have become a regular buyer of vegan food products.	5.16	1.21	.809
I buy vegan food products even when conventional substitutes are available.	5.20	1.25	.832
I do not mind buying vegan food products at a premium price.	5.37	1.31	.761

Abbreviations: M, mean; rc, reverse coded; SD, standard deviation; λ, standardized loading.

commitment (Perera et al., 2020). In addition, love for nature is observed as a characteristic of a consumer's bonding with nature, reflecting on the spirit and intensity of their positive emotional attachment toward nature (Mayer & Frantz, 2004). The degree to which an individual sense connectedness to the natural ecosphere can be a positive predictor of a love for nature which in turn lead to pro-environmental behavior such as green product purchases. But what is not clear is the relationship between *why* one feels nature connectedness, *how* one gets emotionally involved such as love, and *when* one acts pro-environmentally (conceptual definitions of constructs are given in Table 1). Principally, nature connectedness and love for nature refer to a deep-rooted relationship people carry for nature and natural surroundings, and it is related to and often demarcated by individuals' emotions, bonding, beliefs, and behavioral dispositions (i.e., buying green products) toward nature (Whitburn et al., 2020).

According to social psychologists, nature connectedness and love for nature are linked to social closeness, altruism, and attitude structure (Mayer & Frantz, 2004). Elaborating on the idea to connect with nature, Wilson's (1984) *Biophilia Hypothesis* posits that human beings hold an innate kinship, interest, and life prerequisite necessity to connect with and fit into the wide-ranging natural world. Fromm (1973) described Biophilia as a psychological orientation or a human personality trait that has a biological foundational basis to explain the harmonious relationship between human beings and the biosphere. Wilson (1984, p. 28) demarcated *Biophilia* as "the innate tendency to concentrate on life and lifelike evolutions and further explained *Biophilia* in the context of preservation beliefs as it incorporates a set of wisdom-focused values that fall along several human emotions (e.g., love): from aversion to action, indifference to awe, and panicking to peacefulness" (p. 35). Based on these underlying relationships (Figure 1), the study hypothesizes as follows:

H7. *Nature connectedness has a direct effect on love for nature.*

H8. *Nature connectedness has an indirect effect on stated buying behavior via love for nature.*

4 | METHODOLOGY

4.1 | Measures

Table 2 displays the items that were adapted to measure the independent variables as follows: terminal and instrumental values were adapted from Kautish et al. (2022), nature connectedness and love for nature were adapted from Dong et al. (2020), and lastly, dependent factor stated buying behavior adapted from Talwar et al. (2021). A seven-point Likert-type scale with values anchoring from strongly agree (7) to strongly disagree (1) was used.

4.2 | Pretest and pilot study

Prior to the survey administration to respondents, the questionnaire was pretested with five researchers, marketing faculty, and doctoral

students to validate its content. A few minor corrections were incorporated in terms of format, language, unambiguousness, and ease of completion (Brislin, 1986). Later, a pilot study was executed in which 100 questionnaires were administered in public locations (Baker, 1994), for example, shopping malls, railway stations, parks, and educational institutions to understand its contextual relevance. Deliberately, the pilot study with a limited number of samples was conducted to evaluate the question's clarity and sequencing for the final instrument (De Vaus, 1993). Following this, some modifications (item sequencing and expression) were made to the arrangement of questions and lexical clarity about vegan food.

4.3 | Common method bias

Following the guidelines of Podsakoff et al. (2003), common method bias (CMB) was minimalized through rigorous survey design and execution along with statistical checks. The former encompassed procuring data from several respondents after the pretest and pilot survey, ensuring respondent anonymity, survey question improvement with randomization, and avoiding dual-barred questions. The latter encompassed data scrutiny using Harman's single-factor and assessing the amount of variance explained (34%) by the unrotated factor by the first factor. In line with the recommended threshold, Harman's single-factor test revealed less than 50%, thus, CMB was not a critical issue in this research.

4.4 | Data collection method

To select the respondents, *Prolific Academic* was used with the aim to get a diverse group representation through a convenience sampling method from five state capitals in India. The present research was conducted in India, an emerging vegan food market owing to its rising health consciousness and knowledge about healthy eating habits (Kautish, Khare, & Khare, 2023). Vegan food consumption was chosen as the research topic due to two gripping reasons, first, food production and consumption conspicuously contribute to environmental hazards (Tziva et al., 2020), and second, the Government of India is fairly keen on promoting healthy lifestyle and sustainable food consumption (Sharma & Jha, 2017). Initially, an email was sent to 100 customers who purchased vegan food in the last 120 days and requested to further circulate the questionnaire to at least 10 who they know frequently purchase vegan food. The criteria for inclusion in the sample were a few initial qualifying questions because no population frame (vegan food consumers) exists. Data were gathered over an eight-week duration in two time-lagged manners, yielding a response rate of around 34% with 570 fully completed responses. The data were purified for half-finished responses and multivariate outliers. Due to insufficiency and non-usability, 46 responses were removed and consequently retaining 524 suitable responses for further data analysis.

4.5 | Sampling, and sample size

The study employed structural equation modeling to test the hypotheses, thus, according to Tabachnick and Fidell (2021), a sample size should be at least 300. Another approach is to consider the ratio of subjects vis-à-vis items rather than mere sample size. Hair et al. (2021) suggest a 10:1 ratio is preferable. Nevertheless, in the present study employing G*Power, the sample size was determined to be 310 (real power of 80.01). The sample size is in line with Hair et al. (2021) rule of thumb that an Structural Equation Modeling (SEM) study with 65 observed variables should have at least 325 respondents (65×5). The 524 responses who purchased vegan food in the last 4 months that were collected for this study were, therefore, adequate (>325) to complete an SEM analysis. The response bias was confirmed through Oppenheim's (2001) procedure of comparing initial and later-stage data received, wherein, the *t*-test exhibited no significant difference between initial and late responses (p. 282).

4.6 | Respondents profile

Table 3 details the respondents' demographic characteristics. In comparison to recent studies on vegan food (Tan et al., 2021), the number of females (60.31%) and males (39.69%) was relatively equitable. Most respondents (53.24%) were highly educated and younger in the age group (68.51%) between 18 and 32 years old. Additionally, the majority (73.09%) had a high income above US $1207.39 per month and only less than 11% (56 respondents) had a monthly income between US $603.51 and 965.91. The sample characteristics were in line with the previous research on organic food products contexts (Kautish, Khare, & Sharma, 2023).

5 | DATA ANALYSES AND RESULTS

All the Skewness and Kurtosis estimates were within the specified limits, indicating the data normality. The variance inflation factor was below 5 and above 0.1, indicating that there was no issue of multicollinearity. Therefore, a two-stage covariance-based structural equation modeling technique with SPSS AMOS *v*. 26.0 was employed to test hypotheses for measurement and structural models.

5.1 | Measurement model

The analysis of confirmatory factor revealed a satisfactory model fit: chi-square $(\chi^2) = 471.38$, $\chi^2/df = 3.67$; CFI = .92; GFI = .91; SRMR = .075. According to Fornell and Larcker's (1981) criterion, convergent validity is confirmed with factor loadings suggestively exceeding the threshold of .50; average variance extracted (AVE) is

TABLE 3 Respondent details ($N = 524$).

Variable	Regular consumers	Occasional consumers	Frequency	%
Gender				
Female	174	142	316	60.31
Male	113	95	208	39.69
Age (in years)				
18–24	82	50	132	25.19
25–32	110	117	227	43.32
33–40	79	34	113	21.56
40–45	24	28	52	9.93
Education				
Graduate	98	86	184	22.51
Postgraduate	165	114	279	53.24
Professional	43	18	61	24.25
Occupation				
Service	215	106	321	61.25
Business	94	74	168	32.06
Others	23	12	35	6.69
Marital status				
Single	127	113	240	45.80
Married	166	118	284	54.20
Family income (monthly)				
USD 603.51–965.91	12	44	56	10.68
USD 965.91–1207.39	32	53	85	16.23
USD 1207.39–1811.08	119	49	168	32.06
Above 1811.08	138	77	215	41.03

Abbreviations: INR, Indian National Rupee; US$1, INR82.82 (as on September 22, 2023).

TABLE 4 Fornell-Larcker and Heterotrait-Monotrait measures.

	Fornell-Larcker					HTMT				
TV	**.729**					TV				
IV	.657	**.771**				IV	.527			
CN	.611	.568	**.718**			CN	.362	.379		
LN	.629	.642	.624	**.824**		LN	.424	.420	.417	
SBB	.625	.598	.568	.623	**.765**	SBB	.516	.385	.366	.415

Note: Bold values indicate the square root of the average variance extracted (AVE). The lower row values denote the squared correlation among constructs.
Abbreviations: CN, nature connectedness; IV, instrumental value; LN, love for nature; SBB, stated buying behavior; TV, terminal value.

more than .50, and composite reliabilities are also a minimum of .60. The results directed toward convergent validity of measurement scales. Furthermore, discriminant validity holds when AVE values are more than the squared correlation estimates and Heterotrait-Monotrait (HTMT) criterion is less than .85 (Hair et al., 2021). Table 4 displays that the AVEs of all constructs exceed their respective squared correlations for each construct duo, hence, establishing discriminant validity. Additionally, an improved criterion for discriminant validity in SEM (HTMT2) was also considered to ascertain the robustness of the model (Roemer et al., 2021).

5.2 | Structural model

For the hypotheses H1–H8 testing (e.g., direct/indirect effects), SEM was executed through maximum likelihood estimation (MLE) (Baron & Kenny, 1986; MacKinnon et al., 2007). The direct effect testing hypotheses, Model 1 (e.g., without a mediator), which links to the conceptual framework (Figure 1). Model 1 suggests a decent good fit: $\chi^2 = 584.57$; df = 432; $\chi^2/df = 1.353$; CFI = .94; RMSEA = .59, and GFI = .93 (see Table 5). Overall, the results specify that all projected direct paths (instrumental value-nature connectedness, instrumental

TABLE 5 SEM analyses.

Model	χ^2	df	χ^2/df	Assessment	CFI	PCFI
Model 1	584.57	432	1.353	2.311/3 ($p = .52$)	.94	.77
Model 2	582.38	429	1.357	Compared base	.94	.76

	Model 1: Proposed model		Model 2: Partial mediation	
	Coefficient	SE	Coefficient	SE
Love for nature → Stated buying behavior	.53*	.061	.53*	.074
Nature connectedness → Stated buying behavior			.14	.104
Terminal value → Stated buying behavior			.01	.072
Instrumental value → Stated buying behavior			.06	.090
Nature connectedness → Love for nature	.45*	.087	.45*	.104
Terminal value → Love for nature	.57*	.092	.57*	.091
Instrumental value → Love for nature	.62*	.081	.62*	.078
Terminal value → Nature connectedness	.52*	.092	.52*	.096
Instrumental value → Nature connectedness	.68*	.079	.68*	.082
R^2				
Stated buying behavior		.86		.85
Love for nature		.68		.67
Nature connectedness		.79		.78

*$p < .05$; ***$p < .001$.

TABLE 6 Direct and indirect effects.

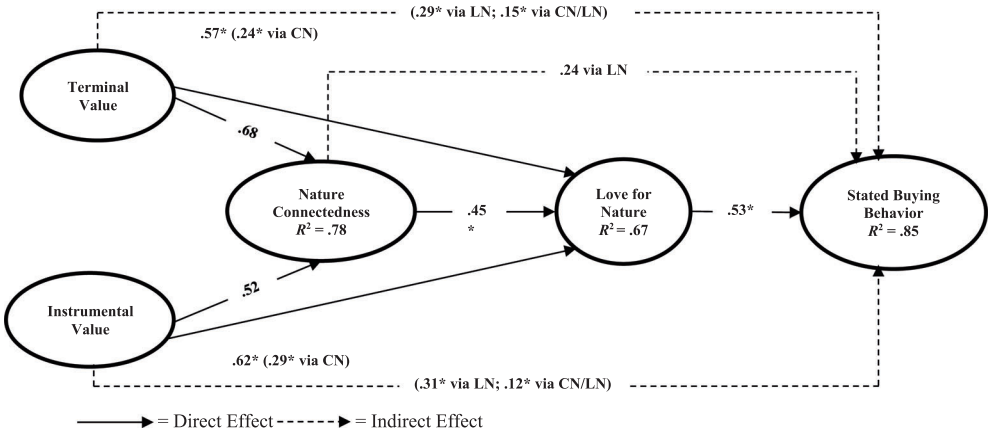
	Terminal value	Instrumental value	Nature connectedness	Love for nature
Nature connectedness				
Direct effects	.52*	.68*		
Indirect effects				
Love for nature				
Direct effects	.57*	.62*	.45*	
Indirect effects	.24* Via Nature connectedness	.29* Via Nature connectedness		
Stated buying behavior				
Direct effects				.53*
Indirect effects	.29* Via Love for nature .15* Via Nature connectedness/ Love for nature	.31* Via Love for nature .12* Via Nature connectedness/ Love for nature	.24* Via Love for nature	

*$p < .05$; ***$p < .001$.

value-love for nature, terminal value-nature connectedness, terminal value-love for nature, and nature connectedness-love for nature) are significant.

Previous literature extends the argument that nature connectedness/love for nature mediates the relationship of personal value connotations with buying behavior across a wide range of sustainable consumption contexts other than vegan food (Dong et al., 2020; Kautish et al., 2021). The current study, therefore, inspects the magnitude of these connotations for vegan food consumption. To achieve this objective, Model 2 was verified, where all paths from the independent variables and mediators were linked to the dependent variables. The results showed Model 2's realistic data fit: $\chi^2 = 582.38$; df = 429; χ^2/df = 1.357; CFI = .94; RMSEA = .61; GFI = .92. Nevertheless, a model-comparison method specified that Model 2 ($p = .51$) did not achieve significantly improved results than Model 1. On the predicaments of Vandekerckhove et al. (2015) parsimonious model selection, the current research, accordingly, we reserved Model 1 as the preferred model. Moreover, Model 2 does not significantly advance explanatory strength (e.g., R^2) for any of the endogenous constructs, and none of its other paths are significant. Table 4 provides a summary of the observed direct effects.

FIGURE 2 Structural model.



5.3 | Hypotheses testing

The research also executed a Sobel test to inspect the achieved indirect effects (Sobel, 1988) based on the chosen model (e.g., Model 1). Findings of the direct/indirect effects are shown in Table 6 (Figure 2) and to detail the hypotheses test. H1 posits that instrumental value has a positive influence on nature connectedness, supported by data ($\beta = .68$*). Furthermore, H2a and H2b are also confirmed because the instrumental value has a significant positive direct influence on love for nature ($\beta = .62$*) and exercises an indirect influence on love for nature via nature connectedness ($\beta = .29$*). H3a and H3b suggest that instrumental value has an indirect influence on stated buying behavior: (i) via love for nature; and (ii) via nature connectedness/love for nature, thus, H3a ($\beta = .31$*) and H3b ($\beta = .12$*) are validated.

H4 postulates that terminal value has a positive influence on nature connectedness, which is supported ($\beta = .52$*). Furthermore, H5a and H5b are also supported because terminal value positively and directly affects love for nature ($\beta = .57$*) and via nature connectedness ($\beta = .24$*). H6a envisages terminal value to exert an indirect influence on stated buying behavior via love for nature, and H6b supposes that terminal value indirectly affects stated buying behavior via nature connectedness/love for nature, both are supported (H6a-$\beta = .29$*; H6b-$\beta = .15$*). H7 proposes that nature connectedness positively influences love for nature, which is too supported ($\beta = .45$*). Lastly, H8 envisages that love for nature mediates the influence of nature connectedness on stated buying behavior, which is supported as nature connectedness has a significant indirect influence on stated buying behavior via love for nature ($\beta = .24$*).

Lastly, the study results confirm the mediating influence of nature connectedness and love for nature in the relationship that instrumental/terminal values share with love for nature/stated buying behavior. Because the data analyses illustrate that the direct influence of instrumental/terminal values (confirmed in Model 2) on stated buying behavior was not significant (Table 5), accordingly, signifying full mediation. These results indicate that instrumental/terminal values apprise stated buying behavior, but only via nature connectedness and love for nature. These findings are in line with the argument that there is no direct association between environmental values and sustainable consumption (Fuentes & Fuentes, 2017; Sharma & Jha, 2017) and individualistic variances in how they relate to nature cannot be discounted (Kunchamboo et al., 2017).

6 | DISCUSSION

Based on the extant literature review, the current research conceptualized and tested a model that contains instrumental and terminal values, nature connectedness, and love for nature for stated buying behavior of vegan food products. By employing SEM-based analyses, the study empirically tested the theoretical model. The results ascertain nature connectedness and love for nature as significant mediators in the hypothesized relationship that instrumental and terminal values share with stated buying behavior in a vegan food context. The research findings can be summarized as follows.

First, addressing RQ1, concerning direct influences, instrumental and terminal values were found to positively affect nature connectedness and love for nature. Specifically, nature connectedness yields a love for nature, and love for nature promotes stated buying behavior for vegan food products. Note that first, the proposed direct influence of instrumental and terminal values on stated buying behavior did not receive empirical sustenance. A possible explanation is that customers prefer not to buy vegan food products, for example, effective implicit or explicit attitudes (Siebertz et al., 2022), personality (Tan et al., 2021), and lifestyle choices (Radnitz et al., 2015), thus suggesting that instrumental and terminal values alone are inadequate to foster stated buying behavior toward vegan food products. In addition, the influence of instrumental value in affecting nature connectedness, and love for nature was found to be slightly higher than that of terminal value (see Table 5). A plausible cause for this finding lies in the collaborative nature of the instrumental value that aligns with the love for nature's paradigm, which equally goes beyond the scope of functional value characteristics, that is, self-centered versus society-centered interests (Gouveia et al., 2014; Kautish et al., 2019).

Second, addressing RQ2, regarding the indirect influences, a mediating effect of love for nature in the association between instrumental and terminal values and nature connectedness is explained by

stated buying behavior (see R^2 values). Thus, deepened instrumental and terminal values and nature connectedness will contribute to stated buying behavior if the love for nature exists, for example, passion for nature (Sharma et al., 2022), intimacy for nature (Cho et al., 2015), and commitment to nature (Baca-Motes et al., 2013). Consequently, vegan food product consumption warrants a love for nature to optimally capitalize on instrumental and terminal values and nature connectedness, thereby the present study offers an imperative contribution to sustainable marketing practice. Therefore, marketers could use nature-based appeals in their promotions (such as advertising campaigns) to induce buying behavior. The indirect effects of instrumental and terminal values highlight the significance of educating consumers to create social awareness about vegan food consumption (Aitken et al., 2020).

7 | IMPLICATIONS

7.1 | Theoretical implications

The present research builds on and extends prior scholarly work in the growing area of value-oriented sustainable production and consumption context, which the United Nations' Sustainable Development Goals have acknowledged as an imperative Research Priority (Tanumihardjo et al., 2020). Specifically, the research findings corroborate the role of instrumental and terminal values in the realization of nature connectedness, love for nature (Dong et al., 2020; Kautish et al., 2020) and stated buying behavior for vegan food products (Dagevos & van Ophem, 2013; Truong, Conroy, & Lang, 2021), extending the incremental contribution in tandem with previous research in the related food contexts.

The important contribution of the study lies in the integration of instrumental and terminal values, nature connectedness, love for nature, and stated buying behavior in a unique value-belief-norm driven framework, which provides novel theoretical insights in consonance with *Biophilia Hypothesis*. While customer instrumental and terminal values are commonly indicated as concepts of sustainable consumption significance in a variety of domains (Kautish et al., 2020; Kautish & Sharma, 2021), the results indicate that these value connotations cannot be of much importance without the coherent existence of human emotions, for example, passion, intimacy, and commitment toward nature in the umbrella form of a love for nature for vegan food products. Based on the above findings, the development of the love for nature, therefore, triggers an individual effort directed toward instrumental and terminal values to explain sustainable consumption practices, for example, vegan food product purchases.

Second and relatedly, the research analyses enhance prevailing literature-based findings. For instance, a few scholars as Cavanaugh et al. (2015), Dong et al. (2020), Kautish et al. (2021), and Omoto and Packard (2016) identify nature connectedness and love for nature as essential instrumental and terminal values-driven outcomes, empirical analysis and verification of these underlying connections have lagged, as corroborated in the present research. Moreover, understanding of the causal relationships of these pro-environmental variables with vegan food products has remained vague (Judge & Wilson, 2019), hence, further authenticating our conceptual and statistical analyses.

The study findings indicate that human value dichotomy—instrumental and terminal values, have got the strength to develop nature connectedness, which exerts a consequent stated buying behavior-enhancing effect, but only if the love for nature also exists among consumers. The research also shows that the creation of ex-ante (vs. ex-post) collaboration-based belief is pivotal in raising nature connectedness and love for nature. Correspondingly, the study suggests the key role of individual dissimilarities in values determining comparative persuasiveness of biospheric, economic, and combined appeals as marketing campaigns such as incentivizing the efforts, celebrity/peer endorsements, tailor-made promotion, or public relations activity.

A significant contribution of the current research can be drawn in that it examined the stated buying behavior rather than only intentions (behavioral or purchase). Despite the critical role of consumers' food habits—what they have been really buying and how they consume in daily life—when it comes to sustainable consumption behavior. Most of the previous research has considered only the intent landscape, either behavioral or purchase. By considering stated buying behavior with nature connectedness and love for nature in the context of vegan food consumption, this study covers a wider gamut of sustainable consumers' actual purchase behavior.

7.2 | Managerial implications

This research also advances quite a few practical implications for vegan food product managers and vegan brands. First, the significance of the research findings is underscored given consumers' growing sustainability consciousness and purchase/consumption of vegan food (Kautish et al., 2020). To instill healthy and sustainable food purchases, the corporations may focus on celebrity-driven marketing communication and campaigns developing customers' instrumental/terminal value disposition. For example, recently, a global campaign to try vegan for 31 days and promote vegan culture #Veganuary2022 has been officially launched in India (ET, 2021). Thus, promotional efforts may help enliven customer value priorities and perception toward a vegan lifestyle to improve health and address climate-related problems by reducing carbon footprint.

Marketing professionals who seek to successfully market vegan food and encourage consumers to make more sustainable product choices must note that the instrumental and terminal values influence these two-nature-oriented social constructs with dissimilar levels of strength, the nature-oriented social constructs should certainly be inferred separately. They should approach the terminal and/or instrumental facets distinctively by focusing on the nature-oriented influences that more strongly influence individual product decisions. For example, designing physical store amenities or online retail atmospherics that display positive reviews from those who have consumed vegan food using a highly perceptible public experiential display will

not be as effective for instrumental facets but will indeed help terminal value driven to become more contented about adopting vegan food options over a conventional counterpart. Probably this approach may not be as useful as in the case of all vegan food products—where not many vegan food substitutes are available—but for normal food products. Evangelizing and supporting the use of vegan food on social media platforms can also be a decisive tool for marketing practical advantages. Leveraging the power of social media can be largely persuasive in encouraging instrumental value facets while making day-to-day food purchases. Vegan food producers, marketers, and retailers can exploit social media to promote and provide information on a continuous basis about the health and environment-related benefits of consuming vegan food products (Clark & Bogdan, 2019). Both terminal and instrumental value-oriented consumers are more anxious about social cues and at times seeking others' reviews on food product ingredients (e.g., meat or non-meat) will enhance the likelihood of susceptible consumers' purchases (Circus & Robison, 2019).

In addition, the celebrity sponsorship, endorsement, or social movement figures for certain vegan food products might also aid reinforce terminal value-oriented consumers' intentions to purchase, especially if social peers and animal welfare activists support such drives. More so, celebrity sponsorship can also be beneficial in the long-term to practitioners aiming to maintain top-of-the-mind recall especially if the celebrity endorsing the vegan food has a comparable value disposition or social norms in the eyes of consumers. Because terminal value-oriented consumers' purchase seems to be predisposed more by personal norms, looking at a celebrity they can individually recognize or relate within esteems to alike more and social obligations might help terminal value-oriented consumers.

8 | CONCLUSION

Despite the research merits, the study has several limitations regarding rendering and generalizing the findings that offer future research directions. First, given the diverse set of consumers practicing the vegan lifestyles encompassing non-vegans one would be able to categorize the probable similarities or dissimilarities in the responses of those who are vegetarians, vegans, and non-vegans. There could also be various behavioral factors of importance or beliefs such as social, psychological, cultural, or religious that can normalize a vegan food diet. In addition, the generalizability is limited owing to closely similar yet different vegan and vegetarian markets. Second, the cross-sectional design restricts causal attributions, and it limits an in-depth knowledge of the nature-linked motivations of vegan food adoption. This contrast with longitudinal research designs where data could be gathered in a time-lagged manner. Correspondingly, a qualitative or mixed-method approach may suggest improved chronological enlightenment of a complex research inquiry.

Third, in continuation, even if these limitations may lessen the generalizability, it does not affect the illustration that certain terminal or instrumental value-oriented facets affect nature connectedness, love for nature, and in turn vegan food consumption. Fourth, given our vegan food emphasis, future scholars may wish to extend the study design to other contexts (i.e., organic food, vegetarian food products) or compare the findings across food categories. Fifth, future researchers may wish to embrace related or unrelated marketing factors in the conceptual frameworks (i.e., branding, opinion leaders, societal or media influencers). The association between the terminal and instrumental values can be scrutinized (i.e., by clarifying brand influence as an antecedent/consequence or vice-versa) as empirical research in this domain remains scant (Kautish, Khare, & Sharma, 2023). Sixth, it would be thought-provoking to determine whether diverse results occur across consumers or (i.e., domestic vs. global) vegan food segments based on demographics, societies, psychographics, and cultures (de Boer & Aiking, 2018). Finally, the current research framework is deficient in incorporating specific moderating variables, which could therefore be addressed in future research.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

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

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