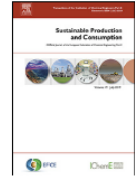




Contents lists available at ScienceDirect

Sustainable Production and Consumption

journal homepage: www.elsevier.com/locate/spc



The relationships between core values, food-specific future time perspective, and sustainable food consumption

Svein Ottar Olsen^{a,†,*}, Ho Huy Tuu^{b,†}

**Corresponding author*

^a *School of Business and Economics, UiT The Arctic University of Norway,*

N-9037 Tromsø, Norway. E-mail: svein.o.olsen@uit.no

^b *Economics Faculty, Nha Trang University, 02, Nguyen Dinh Chieu, Nha Trang, Vietnam. E-mail:*

tuuhh@ntu.edu.vn

[†]Both authors have contributed equally to this paper.

Declarations of interest: none

Funding: This work was supported by the Vietnam National Foundation for Science and Technology Development (NAFOSTED) under Grant No. 502.02-2018.311.

Article type: Research paper

Abstract

This study investigates the combined effect of individuals' concern or consideration of future consequences of their food habits (CFC: future time perspective) and two conflicting core values (self-transcendence versus self-enhancement) on sustainable food consumption among Vietnamese consumers. We tested the direct effects of CFC–future (long-term time perspective) and CFC–immediate (short-term time perspective), along with the two core values. We also explored the mediation mechanisms of future time perspective and the incremental effect of core values on sustainable food consumption. Survey data from 847 consumers and structural equation modelling were used. Our study reveals four main findings. The results provide empirical evidence that supports the two-factor structure of future time perspective, with significant positive effects on sustainable food consumption. Secondly, a strong positive relationship between self-transcendence and CFC–future (long-term) and between self-enhancement and CFC–immediate (short-term) are supported. Thus, core values play conflicting roles (social dilemma) in explaining if and how individuals have short-term (“living for today”) of long-term interests (“living for tomorrow”) in their food preferences and consumption. Third, both long-term and short-term future perspective act as mediators for the indirect effects of both core values on sustainable food consumption. Finally, future time perspective created a largely incremental effect on sustainable food consumption beyond the effect of the core values.

Keywords: Sustainable food consumption, Future time perspective, Core value, Conflict theory.

1. Introduction

Sustainability, sustainable development or sustainable consumption are defined in several different ways over the years (e.g., Glavic and Lukman, 2007). However, most of the definitions agree that sustainability and sustainable development as a process of evolution seeks to meet the needs of the present without compromising the ability of the future generations to meet their own needs (Brundtland Commission, 1987); "... personal and social imperative to take responsibility for the future outcomes of present actions, or in other words, to have a future orientation" (Carmi and Arnon, 2014, p. 2305). In its simplest form, sustainability from a consumer behaviour perspective refers to individual values, attitudes, and behaviour toward the enhancement and preservation of the natural and social environment. Thus, sustainable consumption entails both temporal conflict (i.e., immediate versus long-term/future consequences) and social conflict (i.e., individual versus collective consequences) (Joireman et al., 2001; Khachatryan et al., 2013; Milfont et al., 2012). However, how and why personal values and future time perspective independently, associatively, or interactively relate to sustainable issues is still not fully understood (Hansen et al., 2018).

Core values are general goals that people strive for in life (Schwartz, 1992). They are relatively stable over time and situations and affect a wide range of beliefs, attitudes, and behaviours. The main purpose of this study is to explore the relationships between core values, future time perspective, and sustainable food consumption (SFC) from a dual and conflict perspective (Van Lange et al., 2013). Namely, that people feel conflicted when it comes to choosing between their individual or egoistic values and their social or collectivistic values along one dimension, and between living for today versus considering future consequences (temporal conflict) on the other (de Groot and Steg, 2008; Stern, 2000). The relationships between consideration of future consequences (CFC) and environmental or sustainable attitudes, intentions, or behaviours have previously been studied from a conflicting or social dilemma perspective (Joireman et al., 2001). For example, Khachatryan et al. (2013) established a consumer preference for biofuels within the context of a

three-dimensional social dilemma framework recognising a social conflict (individual versus collective), temporal conflict (immediate versus future interests), and a biospheric conflict (human versus biospheric interests). The current study will extend this and later studies (e.g., Joireman and Liu, 2014) about the relationships between values, time perspective and individual behaviour; as a dual process of social dilemma between two core-values (self-transcendence versus self-enhancement), through a dual domain-specific conceptualization of future time perspective (future versus present/immediate), and in the empirical context of sustainable food consumption in Vietnam.

First, this study contributes to social dilemma perspective by integrating it with Joireman and colleagues' (Joireman et al., 2008; Joireman et al., 2012) dual distinction of temporal conflict; the conflict between the CFC–future and CFC–immediate. Our study uses a more abstract and general conceptualisation of Schwartz's (1992) human core values—the conflict between the self-transcendence value versus the self-enhancement value. In a recent review and meta-analysis, Kooij et al. (2018) identify the lack of an integrative approach for a more in-depth understanding of future time perspective and the nature of relationships among broad trait-based individual differences (antecedents) and consequences of future time perspectives across specific behavioural domains. There are more studies suggesting that domain-specific values such as altruistic, biospheric, egoistic and hedonistic are related to specific sustainable attitudes, intentions or behaviour than the more general core values (de Boer et al., 2007; de Groot and Steg, 2008; Steg et al., 2014). However, if and how core values are related, both directly and indirectly, to sustainable food consumption are underexplored in the literature, and can support the generalization of Schwartz's (1992) theory of a core value–behaviour relationship.

Time perspective is defined and measured from various viewpoints, as a personality trait (Stolarski et al., 2015), as an attitude toward time (Shipp et al., 2009) or as beliefs related to specific goals and behaviour (van Beek et al., 2013). Time perspective is in this study defined as an attitude; as a malleable, cognitive, motivational construct (Kooij et al., 2018; Murphy et al., 2019) of beliefs

that are oriented toward domain-specific consequences suggesting that individuals can be time-oriented in some spheres of life, but not in others (McKay et al., 2017; Murphy et al., 2019). For example, Joireman and Liu (2014) define values as environmentally specific and consider future consequences as a general trait (Joireman et al., 2012). Thus, they suggest that environmental values mediate the relationship between CFC and environmental attitudes/intentions. Our study contributes to the literature by using the more general trait of values (Schwartz, 1992) and argues that self-transcendence versus self-enhancement may influence domain-specific CFC (van Beek et al., 2013) and sustainable food consumption behavior through different and conflicting motivational and causal mechanisms including the incremental effect of CFC on sustainable food consumption. Testing conflicting alternative relationships between core values and (domain-specific) time perspectives have, to our knowledge, not been addressed in previous studies.

A deeper and broader understanding of the value, time-attitude, behavioural relationship is important for both theoretical and practical purposes (Dreezens et al., 2005; Thomson et al., 2017). Food is an important commodity in the area of environmental and sustainable consumption and behaviour (Annunziata et al., 2019; Asvatourian et al., 2018; Cerri et al., 2019; de Boer et al., 2007; Vermer and Verbeke, 2006; Verain et al., 2015). There is increasing awareness of the importance of current health education programs and government regulations to assist the public in adopting healthier diets and to supply healthy and environmentally friendly foods. Therefore, both health and sustainability should be considered when planning and implementing policies and in developing effective intervention programs because, without such a perspective, negative health, social, and environmental issues are likely to increase. This study uses a general framework for mediation (Edwards and Lambert, 2007) that justified for latent variables to test the proposed model in a Vietnamese context. Most studies of the relationships between values and environmental or sustainable behaviour are done in Western countries (Chan, 2019; Katz-Gerro et al., 2017).

2. Theoretical framework

Because of their general and abstract characteristics, the direct relationships between core values and specific behaviour are low or sometimes non-significant (Klößner, 2013). Thus, most studies assume that the relationships between values and specific (e.g., environmental or sustainable) behaviour are mediated by more specific beliefs, attitudes, affects, norms, morals, intentions, self-identity or habits, to mention a few (Ates, 2020; Kang and Moreno, 2020; Milfont and Gouveia, 2006; Milfont and Schultz, 2018; Steg and Vlek, 2009; Stern, 2000). The value–attitudes–behaviour framework is also frequently used in the context of sustainable food consumption (Aertsens et al., 2009; de Boer et al., 2007; Honkanen et al., 2006; Thøgersen et al., 2016; Vermer and Verbeke, 2006). In addition, values need to be relevant to the situational context, and their effect on environmental and sustainable behaviour varies across cultures (Chan, 2019; Katz-Gerro et al., 2017).

Attitude theories suggest that personal values influence behaviour through attitudinal or cognitive-oriented constructs (Fishbein and Ajzen, 2010). Because the value–beliefs–attitude/norm–intention–behaviour hierarchy is well documented in the environmental and sustainable literature (e.g., Jacobs et al., 2018; Milfont and Schultz, 2018; Steg and Vlek, 2009), this study uses future time perspective as an attitudinal mediator between core values and sustainable consumption. Our study is similar to, for example, the Inclusion Model of Environmental Concern which focuses on the dual and direct process between connected to/separated from nature → biospheric/egoistic concerns → pro-environmental behaviour (Milfont and Schultz, 2019). Our study also extends the work of Arnocky, Milfont and Nicol (2014) which tested the conflicted dilemma between values (altruistic/egoistic), CFC (future/immediate) and sustainable behaviour relationships (directly and indirectly) without including attitude other related constructs in their theoretical framework. Thus, our study proposes a parsimonious model emphasizing duality and conflicts in values and future time perspective in an integrated relationship with sustainable food consumption.

Besides testing for the direct effects of CFC–future and CFC–immediate orientations, we also explored the conflicting mediation mechanisms of CFC and the incremental effect of CFC on sustainable food consumption. This study is, to our knowledge, the first report of an investigation of if and how domain-specific CFC is related to sustainable food consumption. Furthermore, it is interesting to examine if CFC provides incremental effects on sustainable food consumption above and beyond that provided by the two core values. In that respect, our study provides new knowledge in an integrative approach examining the relationship between values, future time perspective and outcome in the general psychology about the role of time perspective (Kooij et al., 2018). Figure 1 displays the conceptual framework for how core values and domain-specific CFC influence sustainable food consumption (SFC), and the hierarchal structural relationship. The following sections discuss the main theoretical constructs and expected relationships.

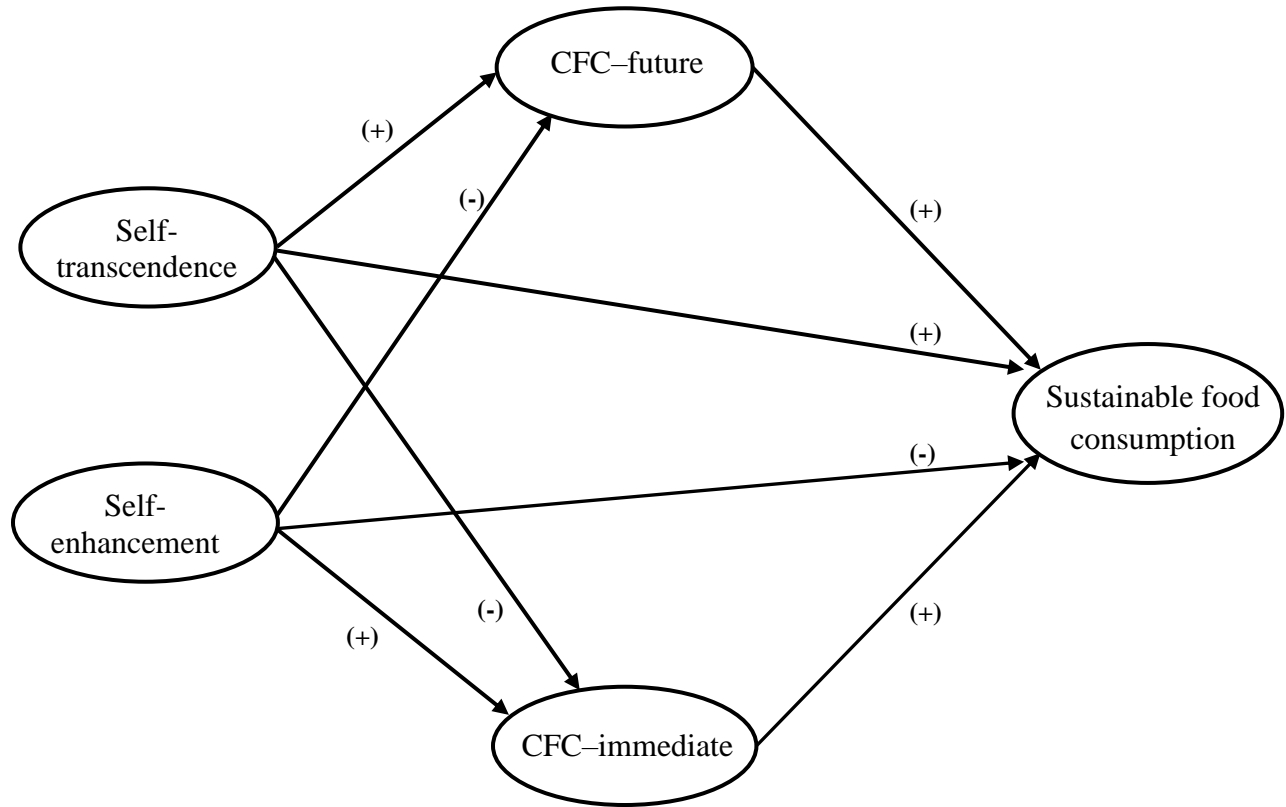


Figure 1. Conflicting values and time perspective model for explaining sustainable food consumption (CFC: Consideration of future consequences).

2.1. Domain-specific future time perspective and sustainable food consumption

Time perspective usually represents an individual’s cognition, affect (attitude), and behaviour toward the past, present, and future time frames (Kooij et al., 2018; Shipp et al., 2009). Pro-environmental behaviour and sustainability encourage individuals to have a future orientation, so research in this area (Khachatryan et al., 2013; Milfont et al., 2012) increasingly uses Strathman, Gleicher, Boninger, and Edwards’ (1994) CFC-framework for measuring future time perspective. Those authors describe CFC as the interpersonal struggle between present behaviour with one set of immediate outcomes and one set of future behaviour. The temporal conflict between short- versus

long-term interests or the trade-off between one's self-interest for living in the present versus in the future, and the individual versus collective social conflict, is also referred to as the extended definition of social dilemmas (Khachatryan et al., 2013). Thus, the CFC approach seems to be highly relevant for explaining environmental and sustainable behaviour (Arnocky et al., 2014) and understanding social dilemmas and conflicts between individual and collective interests (Joireman et al., 2001, Milfont and Gouveia, 2006).

Regarding the construct and operationalization of CFC, different perspectives exist regarding whether the construct consists of one, two, or multiple factors of CFCs (e.g., Zhang et al., 2015). This study accepts the two-factor structure of an individual time perspective (Arnocky et al., 2014; Joireman et al., 2008, 2012). Such an approach implies that individuals may dominate in one time orientation, but the consideration of future and immediate consequences are not polar and individuals may consider their attitudes, intentions, or behaviours with future or immediate consequences separately or simultaneously (Joireman et al., 2012), or there may be a balance between conflicting motivational forces (Stolarski et al., 2015). However, in responding to a call for research on the unique contributions of CFC–future and CFC–immediate orientations (Joireman and King, 2016), we extend previous studies of personal values and the two-factor structure of CFC (Arnocky et al., 2014) by introducing a domain-specific present and future time perspective. Recent studies suggest that CFC can be regarded as domain-specific because individuals can be time-oriented in some spheres of life, but not in others (McKay et al., 2017). This approach also corresponds to Kooij et al.'s (2018) view that future time perspective is flexible and context-dependent, and supports research suggesting that the predictive validity of the construct is measured best at the behaviour-specific level (Dassen et al., 2015; McKay et al., 2017). For example, van Beek et al. (2013) found that CFC–food, but not CFC–exercise, predicted eating behaviour.

Following this approach, we investigate whether sustainable food consumption is predicted by CFC–future and CFC–immediate orientations. Research shows that significant links exist between

CFC and healthy and organic food choices and various health behaviours (Dassen et al., 2015; Olsen and Tuu, 2017; van Beek et al., 2013). It is given that consumers can conduct sustainable food consumption behaviour not only for expected immediate benefits (e.g., safety, good for health, or pleasure) but also for more positive future consequences (e.g., living in a less-polluted or a cleaner environment). Thus, we expect that both CFC–future and CFC–immediate orientations have a positive association with sustainable food consumption.

2.2. The structure and conflict of core values: Self-transcendence versus self-enhancement

Research in the area of environmental psychology examining the effects of values on environmental or sustainable attitudes, intentions, preferences, choices, or other behavioural indicators often draw on Schwartz's (1992) theory of the structure of basic human values. Among the most abstract levels, the Schwartz theory proposes four dimensions of core values: self-enhancement (self-interests) versus self-transcendence (interests of others) as well as conservatism and openness. Generally, those two core or aggregated dimensions or their facets (e.g., altruistic/biospheric versus hedonistic/egoistic) have received most empirical support and relevance in studies of the relationship between human values and environmental or sustainable behaviour (Jacobs et al., 2018; Katz-Gerro et al., 2017). Another argument for focusing on those core values in this study is that individuals with a priority of self-transcendent values are more likely to engage in pro-environmental and sustainable behaviour, whereas individuals with preferences towards self-enhancement values report more negative environmental attitudes, intention or behaviour (Steg and Vlek, 2009; Steg et al., 2014), supporting our focus on conflicts and duality in individuals' value structure (van Lange et al., 2013).

Self-transcendence covers the meaning of pro-social value orientation in individual attitudes, preferences, and behaviour, focusing on optimizing the outcome of others and their environments.

On a less abstract level within the framework of Schwartz (1992), it covers the combination of universalism and benevolence. Universalism is defined as understanding, appreciation, tolerance, and protection of the welfare of all people and nature, while benevolence is defined as the preservation and enhancement of the welfare of people with whom one is in frequent personal contact (Davidov et al., 2008). In the area of environmental values, domain-specific self-transcendence values have been defined to consist of altruistic (care about people and society) and biospheric (care about nature) values (de Groot and Steg, 2008).

Self-enhancement covers the meaning of pro-self-value orientation in individual attitudes, preferences, and behaviour. In other words, it is focused on optimizing the outcome for oneself. Within the basic theoretical value framework (Schwartz, 1992), the self-enhancement construct comprises achievement and power. Achievement is defined as personal success through demonstrating competence according to social standards, while power refers to social status and prestige, control, or dominance over people and resources (Davidov et al., 2008, p. 424). In the area of environmental values, domain-specific self-enhancement is frequently termed an egoistic value associated with social power, wealth, authority, influence, and ambitions (de Groot and Steg, 2008).

Thus, we focus on the distinction and conflict between people who value helpfulness/care of other people, care for nature/environment, loyalty to friends and equality (self-transcendence: universalism and benevolence) versus being in charge of people and resources, having money, power, wealth, authority, and being influential and socially recognized (self-enhancements: power and achievement) (Davidov et al., 2008). Previous studies suggest that the relationship between self-transcendence (altruistic/biospheric or universalism/benevolence) and behaviour is stronger and more stable across different kinds of environmental behaviour compared to the relationship between self-enhancement (hedonistic/egoistic or achievement/power) and specific behaviour (Katz-Gerro et al., 2017; Steg and Vlek, 2009; Steg et al., 2014).

2.3. Core values and sustainable food consumption behaviour

Both self-transcendence and self-enhancement influence food choice, including that of sustainable food choice, in one or another way (Vermeir and Verbeke, 2006). Past research has tended to place greater importance on self-transcendence than on self-enhancement in regards to consumers' sustainable (organic) food choices (de Boer et al., 2007). The main reasons for consumers' sustainable dietary choices have been identified previously as animal ethics, world hunger, the ideology of non-violence, and a concern for the environment (Lindeman and Sirelius, 2001). Consumers who hold a strong self-transcendence orientation tend to avoid practices that harm society and act proactively for social benefit, so they may be more likely to hold positive beliefs about sustainable foods (Dreezens et al., 2005). Some aspects of self-transcendence have been found to be positive drivers for the choice of environmentally friendly farmed fish or organic foods (Honkanen and Olsen, 2009; Honkanen et al., 2006).

In contrast, only a weakly negative association has been found between self-enhancement and sustainable food consumption because consumers who value self-enhancement could care less about instigating a behaviour that is not associated with gaining self-enhancement (Vermeir and Verbeke, 2006). Therefore, self-enhancement and self-transcendence may associate with sustainable food consumption through different motivational forces. As Hansen et al. (2018) discussed, consumers that adhere more to self-enhancement values may be more likely to stimulate positively egoistic motives (e.g., economic consciousness), while consumers adhering more to self-transcendent values may be more likely to stimulate positively altruistic motives (e.g., environmental consciousness) toward sustainable food consumption. Because the two values are contradictory, we expect that self-transcendence and self-enhancement have a conflicting association with sustainable food consumption. Because the two values are contradictory, we expect that self-transcendence (positively) and self-enhancement (negatively) have a conflicting association with sustainable food consumption.

2.4. The mediator role of future time perspective

Individuals can engage in environmentally friendly behaviours under social dilemmas through a combination of core values and time perspective (Joireman et al., 2004; Milfont and Gouveia, 2006). In this sense, sustainable food consumption could be formed by not only independent influences of both values and time perspective, as discussed above, but also through complex mechanisms between the values and time perspective, such as through a mediator. The mediation mechanism could be formed based on the hierarchical value–belief–attitude–behaviour model presented by Stern et al. (1995), or the value-belief-norm framework (Stern, 2000). According to these models, core values are assumed to drive beliefs about the causes and consequences of one’s actions regarding an attitude object (e.g., SFC). The time perspective could be best conceptualised as an attitudinal motivational construct of subjective expectations and beliefs held by a person about his/her future (Kooij et al., 2018; Murphy et al., 2019). Accordingly, it is expected that a link among core values–domain-specific future time perspective–SFC could exist. Because of the opposite nature of both self-transcendence and self-enhancement, and CFC–future and CFC–immediate, the mediator role of CFC on the indirect links between those two core values and sustainable food consumption may be explained by two contradicting mechanisms, a social/collectivistic-orientation versus a self/individualistic-orientation.

For the social-orientation, it is possible to believe that individuals who adhere to self-transcendence may engage with various behaviours to obtain future consequences (e.g., a healthier body) as a trade-off with present consequences (e.g., money, pleasure, time sacrifice) toward sustainable consumption. In contrast, for those with a self-orientation, it is likely that these individuals, who adhere to self-enhancement ideals, may engage in sustainable consumption because the socialized and political nature of sustainable issues could harm their self-goals (e.g., power, being influential, being respected, or money). This means that they may care about sustainable consumption as a means (i.e., in short-term) for avoiding harm to their long-term self-orientation,

and as an anti-motivation that is not effective in producing desired outcomes (e.g., money, achievement, or power). Therefore, we expect that consumers with self-transcendence aims may engage more in CFC–future and pay less attention to CFC–immediate, while consumers with self-enhancement aims may engage more in CFC–immediate and pay less attention to CFC–future about engaging sustainable consumption.

In a recent review of future time perspective, Kooij et al. (2018: p. 868) ask for more knowledge about the integrative approach examining the relationship between traits, future time perspective and outcomes: “An integrative approach is therefore needed to provide a more in-depth understanding for FTP (future time perspective) and the nature of relationships among antecedents and consequences of FTP across behavioural domains”. To our knowledge, it is the first report to investigate if and how domain-specific CFC is related to sustainable food consumption (SFC). Furthermore, it is interesting to examine if CFC provides incremental effects on SFC above and beyond that provided by the two core values. This study expects that CFC makes a unique contribution to the prediction of SFC above and beyond the core values.

3. Methods

3.1. Subjects and samples

According to Vietnam Population Statistics 2018, Vietnam’s population is unevenly distributed among regions (Red River Delta – about 23%, North Central and Central Coast – about 21%, Central Highlands – about 6%, South East – about 16%, South West – about 18%, and others – about 16%). For a nationwide sample, we selected one or more representative cities for each region. We also counted a sample size for each city to have a ratio for each city more than 7.5% in the whole sample and a respondent ratio for each region close to Vietnam’s population distribution. A quota sample of 850 (three of them was eliminated for missing values) consumers was collected through convenience

sampling, using a self-administered survey questionnaire via e-mail or face-to-face interview. The sample includes two biggest cities (Ho Chi Minh city in the South East region, n = 130; Ha Noi in the Red River delta region, n = 130), a highland city (Da Lat in the Central Highlands region, n = 75), three coastal cities in the North Central and Central Coast region (Vinh, n = 75; Tuy Hoa, n = 75; Nha Trang, n = 75), and three cities in the South West region (Can Tho, n = 100; Ben Tre, n = 90; Rach Gia, n = 100) in Vietnam. The respondents were well-informed that the study concerned food products, and then were asked to participate in the survey as volunteers. The typical respondents were female (54.0%), living in urban environments (69.9%), married (73.4%) and educated for 12 years (89.5%). The average age of the respondents was 36 years, ranging from 16 to 75, and their average income per month was about 400 USD.

3.2. Construct measurements

The concept of sustainable food consumption is complex and multifaceted, described as sustainable diets that are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable as well as nutritionally adequate, safe and healthy, while optimizing natural and human resources (Burlingame and Dernini, 2012; FAO, 2010). However, most previous studies in this area often focus on the aspects of health and environmental issues and ignore other dimensions such as the social or cultural issues of sustainable food consumption which contribute to consumers' unwillingness to change their dietary habits (Macdiarmid et al., 2016). Besides, most Vietnamese consumers have everyday meals that include seafood, fish, red meat, chicken, duck meat, egg, rice, noodles, cakes, vegetables, yoghurt, fruits, and others. However, Vietnamese consumers often worry about pesticides in fruits and vegetables, antibiotics in meat or seafood, and fish farmed or exploited by environmentally unfriendly technologies (Fiquié and Moustier, 2009). Therefore, for capturing health and environmental issues relating to sustainable food consumption, the respondents were asked to indicate how often they

have bought and eaten eight items in the last year, measured on a 7-point scale, ranging from “1 = never” to “7 = very often.” The eight items were: (1) *organic fruits and vegetables*, (2) *organic meat*, (3) *organic seafood (shrimp, fish)*, (4) *eco-labelled food products*; and eating (5) *smaller portions of meat*, (6) *less sugar-sweetened foods*, (7) *less animal-based fatty foods*, and (8) *several meat-free days a month*. These items were used by previous studies to reflect a broad sustainable food consumption construct rather than a specific eating behaviour (e.g., Verain et al., 2015). Eating less meat (e.g., using a smaller portion size of meat), animal-based fatty foods and sugar-sweetened foods and more fish, vegetables and organic foods is considered one of the most vital solutions towards sustainable food consumption because this solution is important to improve health, environmental and animal welfare issues (Tilman and Clark, 2014; Verain et al., 2015). This study used a parcelling technique (Bandalos and Finney, 2001; Byrne, 2016) to improve the fit of the model by categorising the original items into three parcels.

This study used the CFC scale developed by Joireman et al. (2012), which includes a 7-item sub-scale for CFC–immediate and a 7-item sub-scale for CFC–future. However, because these CFC sub-scales are general, we added the justification of “Relating to consuming food” before the scale of CFCs to focus on the food domain to increase the predictive value of CFCs on eating behaviour (van Beek et al., 2013). In addition, for Vietnamese consumers, it was suggested that the CFC scale is unstable and that a shorter version of the CFC scale could be better (Olsen and Tuu, 2017). Therefore, we used fit indices and chi-squared (χ^2) difference tests (Voss et al., 2003) to reduce the number of items in order to avoid estimating too complex of a model of reflective constructs. The process was iterated by re-computing the item-to-total correlations, deleting the lowest item by using a two-factor confirmatory factor analysis (CFA) model (CFC–immediate and CFC–future), and conducting a difference test. The process was stopped when the χ^2 difference test was no longer significant. The scale then consisted of four items of CFC–immediate and four items of CFC–future. The refined versions of the CFC sub-scales are almost the same ones found by Olsen and Tuu

(2017), containing such items as “Relating to consuming food, my present behaviour is affected by the results that I will receive in the future” or “My food consumption behaviour depends on the results I get right now; I am not concerned about its long-term impact.” All items were rated on a 7-point Likert scale from 1 = “strongly disagree” to 7 = “strongly agree.”

For assessing self-enhancement and self-transcendence, we used the Schwartz Value Survey (SVS; Schwartz, 1994) that measure the ten core values of Schwartz’s (1992) theory of basic human values. Self-enhancement was assessed by two items of achievement (“*capable - showing my abilities;*” “*successful - being very successful*”) and two items of power (“*wealth - being rich and wealthy;*” “*social power - getting respect from and being influential to others*”). Self-transcendence was evaluated by two items of benevolence (“*helpful - helping the people around me;*” “*loyal - being loyal to my friends*”) and two items of universalism (“*unity with nature - believe that people should care for nature;*” “*equality - every person in the world should be treated equally*”). The respondents were required to rate the importance of those values as “a guiding principle in your life” on a 9-point scale, ranging from “-1 = opposed to the value” to “7 = of supreme importance,” and where “0 = not at all important,” as consistent with previous studies (e.g., Lindeman and Verkasalo, 2005). The items used in the questionnaire are also presented in Table 1.

3.3. Analytical procedures

To ensure the internal consistency and the convergent and discriminant validity of the constructs (Anderson and Gerbing, 1988), a CFA was performed using AMOS 24 (Arbuckle, 2015). Next, a structural equation model was used to estimate the theoretical model. The fit is reported by χ^2 , as well as three other fit indices: the root mean square error of approximation (*RMSEA*), goodness-of-fit index (*GFI*) and the comparative fit index (*CFI*). An *RMSEA* < 0.08 indicates an acceptable model fit, while an *RMSEA* < 0.05 indicates a good model fit. *GFI* and *CFI* should be > 0.90 (Browne and Cudeck, 1992). The three following equations describe the main structural coefficients

for the full model:

$$\text{SFC} = \beta_1 \text{CFC-F} + \beta_2 \text{CFC-I} + \beta_3 \text{STR} + \beta_4 \text{SEN} + \varepsilon_1 \quad (1)$$

$$\text{CFC-F} = \beta_5 \text{STR} + \beta_6 \text{SEN} + \varepsilon_2 \quad (2)$$

$$\text{CFC-I} = \beta_7 \text{STR} + \beta_8 \text{SEN} + \varepsilon_3 \quad (3)$$

where sustainable food consumption (SFC) is sustainable food consumption; CFC-F is the consideration of future consequences-future; CFC-I is the consideration of future consequences-immediate; SEN is self-enhancement, and STR is self-transcendence.

First, the significance of the coefficients of $\beta_1, \beta_2, \beta_3$, and β_4 indicates the direct effects of CFC-future, CFC-immediate, self-transcendence and self-enhancement regarding SFC, and of self-transcendence and self-enhancement regarding CFC-future and CFC-immediate. Second, to test the mediator effects, we used a general framework for mediation (Edwards and Lambert, 2007) justified for latent variables. This framework offers advantages over current approaches (e.g., Baron and Kenny, 1986), by yielding statistical tests of the estimates of the combined direct and indirect effects captured by the model. The indirect effect is based on the variance of the product of the regression coefficients. The significance of the coefficients of $\beta_9, \beta_{10}, \beta_{11}$, and β_1 indicates the indirect effects of self-transcendence and self-enhancement via CFC-future and CFC-immediate regarding SFC. In this procedure, the t -value is counted by the ratio between the standardized coefficient and its standard error which are given by the newest version of AMOS 24 (Arbuckle, 2015).

4. Results

4.1. Measurement model analysis

A CFA of the measurement model, including five constructs in the theoretical model, as in Figure 1, resulted in an acceptable fit with the data ($\chi^2 = 510.8$; $df = 141$, $p = 0.000$; $RMSEA = 0.056$; $GFI = 0.939$; $CFI = 0.952$; Browne and Cudeck, 1992). Appendix 1 and Table 1 present the results

of the CFA associate with the constructs and question wording of the items.

All factor loadings on the constructs were highly significant ($p < 0.001$: t -value > 20.0), with values ranging from 0.58 to 0.86, which shows the convergent validity of the constructs (Appendix 1). The composite reliabilities exceeded the minimum value of 0.75, and the variances extracted surpassed the recommended threshold of 0.50 (Anderson and Gerbing, 1988).

Table 1. Construct means, standard deviations, and correlations

Constructs	Number of items	Mean	Standard deviation	1	2	3	4	5
1. Self-transcendence	4	5.01	1.32	1.00	-0.21	0.54	-0.14	0.63
2. Self-enhancement	4	3.62	1.20	-0.14	1.00	-0.16	0.66	-0.17
3. CFC–future	4	4.74	1.18	0.54	-0.15	1.00	-0.13	0.67
4. CFC–immediate	4	3.83	1.17	-0.16	0.64	-0.14	1.00	0.21
5. SFC	8	4.83	1.01	0.65	-0.13	0.68	0.20	1.00

Notes. All correlations are significant at $p < 0.05$; The correlations with a common method variance factor are above the diagonal line; CFC: Consideration of future consequences; SFC: Sustainable food consumption.

Table 1 displays the intercorrelations between the constructs in the theoretical model. All correlations were significant ($p < 0.001$) and below 0.70. In addition, the squared-correlation between each pair of constructs was less than the average variance extracted from each pair of constructs, which constitutes discriminant validity (Fornell and Larcker, 1981). We also checked for potential common method bias by using a common method factor approach (Podsakoff et al., 2003). The fit of the CFA model with the common method factor was slightly improved ($\chi^2 = 443.8$; $df = 127$, $p = 0.000$; $RMSEA = 0.054$; $GFI = 0.948$; $CFI = 0.959$ compared with one of the basic measurement CFA model ($\chi^2 = 510.8$; $df = 141$, $p = 0.000$; $RMSEA = 0.056$; $GFI = 0.939$; $CFI = 0.952$). However, the factor loadings of the common method factor were all below 0.35, which did not generate a significant construct. In particular, the factor loadings within each construct and the correlations between the studied constructs almost unchanged (see Table 2). The results indicate that the common method bias is not problematic.

4.2. Testing relationships

The estimated results of the structural model in Figure 1 indicated a good fit with the data ($\chi^2 = 510.9$; $df = 142$, $p = 0.000$; $RMSEA = 0.055$; $GFI = 0.939$; $CFI = 0.953$; Browne and Cudeck, 1992). The analytical results in Table 2 supported our expectations about all direct effects. First, both CFC–future ($\beta_1 = 0.46$, $t = 9.20$, $p < 0.01$) and CFC–immediate ($\beta_2 = 0.17$, $t = 3.69$, $p < 0.05$) have significant impacts on sustainable food consumption (SFC). Second, both self-transcendence and self-enhancement have a significant effect ($\beta_3 = 0.41$, $t = 8.48$, $p < 0.01$ and $\beta_4 = -0.11$, $t = -2.57$, $p < 0.05$, respectively) on SFC. Interestingly, the results in Table 2 indicate that while self-enhancement has a positive effect on CFC–immediate ($\beta_8 = 0.63$; $t = 14.73$; $p < 0.01$) and a negative effect on CFC–future ($\beta_6 = -0.07$; $t = -1.96$; $p < 0.05$), self-transcendence has a positive effect on CFC–future ($\beta_5 = 0.53$; $t = 11.33$; $p < 0.01$) and a negative effect on CFC–immediate ($\beta_6 = -0.07$; $t = -1.98$; $p < 0.05$), as expected.

Table 2. Result of testing the proposed model

Structural paths	Coefficients	Std. estimate	t-value	Conclusion
CFC–F → SFC	β_1	0.46	9.20**	Supported
CFC–I → SFC	β_2	0.17	3.69**	Supported
SEN → SFC	β_4	-0.11	-2.57*	Supported
STR → SFC	β_3	0.41	8.48**	Supported
STR → CFC–F	β_5	0.53	11.33**	Supported
STR → CFC–I	β_6	-0.07	-1.96*	Supported
SEN → CFC–F	β_7	-0.07	-1.98*	Supported
SEN → CFC–I	β_8	0.63	14.73**	Supported
STR → CFC–F → SFC	$\beta_9 = \beta_5 \times \beta_1$	0.24	7.86**	Supported
SEN → CFC–F → SFC	$\beta_{10} = \beta_7 \times \beta_1$	-0.03	-1.58 ^{ns}	Not supported
STR → CFC–I → SFC	$\beta_{11} = \beta_6 \times \beta_2$	-0.01	-1.22 ^{ns}	Not supported
SEN → CFC–I → SFC	$\beta_{12} = \beta_8 \times \beta_2$	0.11	2.56*	Supported

Notes. * $p < 0.05$; ** $p < 0.01$; R^2 (SFC) = 59.0%; CFC–F: Consideration of future consequences–future; CFC–I: Consideration of future consequences–immediate; SFC: Sustainable food consumption; SEN: Self-enhancement; STR: Self-transcendence.

The results of the opposite direct effects of both self-enhancement and self-transcendence on CFC–future and CFC–immediate lead to contradictory indirect effects of self-enhancement and self-transcendence via CFC–future and CFC–immediate regarding SFC. While self-enhancement shows a positive indirect effect on SFC via CFC–immediate ($\beta_{12} = 0.11$; $t = 2.56$; $p < 0.05$), self-transcendence demonstrates a positive indirect effect on SFC via CFC–future ($\beta_9 = 0.24$; $t = 7.86$; $p < 0.01$). However, the indirect effect of self-enhancement on SFC via CFC–future ($\beta_{10} = -0.03$; $t = -1.58$; $p > 0.05$) and the indirect effect of self-transcendence on SFC via CFC–immediate ($\beta_{11} = -0.01$; $t = -1.22$; $p > 0.05$) are not significant. Therefore, the results also fulfilled our expectation that consumers with a self-transcendence orientation are concerned more about CFC–future, while consumers with a self-enhancement view focus more on CFC–immediate toward SFC.

To test the incremental effect of if and how CFC–immediate and CFC–future influence SFC above and beyond the two core values, self-transcendence and self-enhancement, relative weights analysis was used across three nested models (Johnson, 2000). In Model 1 (see Table 3), SFC is directly regressed onto self-transcendence and self-enhancement when the direct paths from CFC–future and CFC–immediate on SFC were set to zero. In Model 2, these two direct paths were set free. Lastly, Model 3 is the full model, as shown in Figure 1, which includes all direct and indirect effects. The results in Table 3 report statistically significant changes in R^2 between the three nested models. The statistically significant change in R^2 between Model 1 and Model 2 indicates the incremental direct effects of CFC–future and CFC–immediate exclusive of the two core values. Similarly, the statistically significant change in R^2 between Model 2 and Model 3 indicates the incremental indirect effects of two core values via CFC on SFC beyond all direct effects on SFC. The results supported our expectation that the direct effects of CFC–future and CFC–immediate increase the explained variance of SFC (26.10%, $p < 0.001$) beyond the two core values. Furthermore, the indirect effects of two core values via CFC on SFC also generate an increase (12.96%, $p < 0.001$) beyond all the direct effects of CFC and two core values.

Table 3. The incremental effects of consideration of future consequences (CFC) above core values

Statistical indices	Model 1 (Direct effect model with core values)	Model 2 (Direct effect model with core values and CFC)	Model 3 (Full model)
R^2	0.410	0.517	0.584
R^2 change	-	0.107	0.067
Effect size	-	26.10 %	12.96 %
χ^2 (<i>df</i>)	1190.8 (<i>148</i>)	1130.9 (<i>146</i>)	522.5 (<i>142</i>)
χ^2 difference (<i>df</i>)	-	59.9 (2)	608.84 (4)
<i>P</i>	-	< 0.001	< 0.001

5. Discussion

This study explored the combined and mediating mechanisms of self-transcendence versus self-enhancement, and domain-specific CFC–future versus CFC–immediate, regarding sustainable food consumption (SFC) among consumers. The results indicated satisfactory reliability and validity of the constructs and supported our expectations of conflicting motivational forces within a structural equation model. We found positive relationships between CFC–future and CFC–immediate on SFC, a strong positive relationship between self-transcendence and CFC–future and, also, between self-enhancement and CFC–immediate. The findings showing the effects of self-transcendence and self-enhancement on SFC directly and indirectly via domain-specific CFC–future and CFC–immediate are new and unique in the area of explaining and understanding SFC. Finally, CFC–future and CFC–immediate explained a large portion of the incremental variance in SFC above-and-beyond the effect of the two core values.

5.1. Results and implications

The empirical evidence showing significant associations between self-transcendence and self-enhancement on sustainable food consumption is consistent with most previous studies in the food field (e.g., de Boer et al., 2007; Dreezens et al., 2005; Vermeir and Verbeke, 2006). Considering that

only a few studies include both self-transcendence and self-enhancement regarding food attitude or choice (de Boer et al., 2007; Vermeir and Verbeke, 2006), the additional evidence about the simultaneous effects of these two core values within a structural equation model to explain sustainable food consumption is important for generating a comprehensive view of this issue.

In addition, the inclusion of the domain-specific orientations CFC–future and CFC–immediate, in addition to values of self-transcendence and self-enhancement, has generated a different and integrated approach compared with previous studies (Joireman et al., 2001; Milfont and Gouveia, 2006) for explaining sustainable food consumption. This study also responds to the call for research on the unique contributions of CFC–future and CFC–immediate orientations (Arnocky et al., 2014; Joireman and King, 2016; Joireman et al., 2008) and the exploration of their role in a specific food or behavioural health domain (van Beek et al., 2013; McKay et al., 2017; Murphy et al., 2019). The findings provide empirical evidence that supports the two-factor structure of CFC, with significant effects of CFC–future and CFC–immediate on sustainable food consumption. Both CFC–immediate and CFC–future facilitate sustainable food consumption, although sustainable food consumption is explained better by CFC–future than CFC–immediate. These findings support the view that time orientation varies within individuals, and that present-oriented individuals tend to focus on the immediate consequences of their diet, whereas future-oriented individuals are more concerned with the future consequences of their healthy eating behaviour (van Beek et al., 2013; Dassen et al., 2015; Olsen and Tuu, 2017). Thus, time perspective provides a likely explanation of how consumers make choices about sustainable foods.

Interestingly, the findings indicate that self-transcendence and self-enhancement have opposite relative effects on CFC–future and CFC–immediate orientations. Although consumers can feel a conflict between their individual vs social values, as well as a temporal conflict between present vs future consequences, from a dual perspective (Van Lange et al., 2013), the strong positive relationships between self-transcendence and CFC–future, and between self-enhancement and CFC–

immediate, are important for understanding how individuals engage in consuming sustainable foods. These findings, once again, support the two-factor structure of CFC and contribute to answering an under-explored question about whether expected consequences and goals are better predicted by CFC–future or CFC–immediate orientation (e.g., Arnocky et al., 2014; van Beek et al., 2013; Joireman and King, 2016; Joireman et al., 2012). Additionally, the empirical evidence that core values impact more on CFCs than they influence sustainable food consumption is new and important to gain a comprehensive understanding of the relationship between broad individual differences and domain-specific time perspective (Kooij et al., 2018; Murphy et al., 2019) and if and how it influences the specific outcome (SFC). It may be that individuals with interest in self-enhancement consider sustainable food issues as a short-term goal and that a positive association between self-enhancement and a CFC–immediate orientation seems to reflect the existence of a relationship between self-enhancement and short-term self-control (Joireman et al., 2001). It also seems that their concern surrounding sustainable food may be a situational, short-term strategy to balance social pressures and other goals, such as protecting individual image, authority, or power.

It is worth noticing that it appears from Table 3 that the positive indirect effect of self-enhancement is of the same size as the negative direct effect on sustainable food consumption, which means that the total effect of self-enhancement values on sustainable food consumption is actually zero. This finding is consistent with prior studies in both Western and Eastern countries (e.g., Dreezens et al., 2005; Thøgersen et al., 2016): when self-transcendence values such as universalism are controlled, no other core values increase the explained variance of organic food consumption. It is interesting to see that in short-term specific situations, individuals with self-enhancement seem to publicly show higher concerns than their ordinary interests for sustainable food consumption, but they seem always to individually set a high priority for self-enhancement goals (e.g., power) and are willing to sacrifice the sustainable food consumption goal as a trade-off.

In contrast, our findings reveal that self-transcendence has a strong positive association with

CFC–future orientation, in addition to a weak negative association with CFC–immediate. This outcome implies that the pursuit of a more sustainable diet, as a long-term goal, is important for individuals with self-transcendence. While, in the present time, they may face difficulty finding a better source of food, for these individuals, even avoiding the consumption of unsafe or environmentally unfriendly food would not be considered a failure, but rather a success. This reality may come from the research context of a developing country, like Vietnam, where for low-income households, the improvement of meal quality (e.g., tastiness, energy, nutrition, safety) is always a priority in most families, while the lack of sustainable food sources may cause consumers faced with difficulty to construct possible outcomes that meet both goals simultaneously.

Finally, this study examined if and how CFC–immediate and CFC–future explain variance in sustainable food consumption above-and-beyond the two core values, self-transcendence and self-enhancement. Future time perspective constructs, such as CFC, can be defined and measured as general personality traits, as well as general attitudes or beliefs associated with domain-specific behaviour (Murphy et al., 2019; Shipp et al., 2009). By additionally analysing relative weights analyses (Johnson, 2000) for three nested models, this study has demonstrated a valuable supplement to an integrative approach for understanding CFC’s role in a broader nomological network of core value constructs that explain environmental or sustainable behaviour (Kooij et al., 2018). Most previous studies include more domain-specific values, such as environmental values, concerns or social-oriented values (e.g., Joireman et al., 2001, 2008; Khachatryan et al., 2013; Milfont and Gouveia, 2006). Thus, the findings from this study are novel and important to integrate general core values with domain-specific time perspective to explain pro-environmental behaviours in the context of sustainable food consumption. It supports theories suggesting that CFC is a cognitive–motivational construct of beliefs that are oriented toward domain-specific consequences (Kooij et al., 2018; Murphy et al., 2019). It further supports attitude theories (Fishbein and Ajzen, 2010) suggesting that personal values influence behaviour through attitudinal or cognitive-oriented

constructs, and environmental theories proposing the causal relationship between values, beliefs/attitudes and pro-environmental action (e.g., Stern, 2000; Stern et al., 1995). These findings are important for future cross-sectional survey research in which propositions about causal relationships between constructs can be problematic and dependent on how general or specific constructs are defined and measured.

Some managerial implications should be noted. It is worth noting that the availability of unsafe and environmentally unfriendly food products is a social issue requiring public policies that may limit such food consumption and production. The findings show that both individuals with a self-transcendence orientation and those endorsing self-enhancement behaviours are likely to consume sustainable food by adopting different mechanisms—a social-orientation versus a self-orientation. However, convincing messages should focus on individuals with a self-enhancement perspective because they are less likely to move to sustainable consumption than individuals who are more focused on self-transcendence. It is possible to frame sustainable consumption messages in such a way that they do not conflict with self-enhancement goals. For example, messages such as ‘Like Al Gore, Why not? You will enhance your self-image if you are environmentally friendly’ may be effective at least for influential people or leaders who want to improve their prestige and image as an environmentalist or an environmentally friendly leader.

5.2. Limitations and future research

The present research is based on a non-representative sample of Vietnamese consumers, and so future studies should use more representative samples. This study focuses only on sustainable food consumption in general. Future studies should extend to investigate protocols of sustainable food behaviours and expand the model to different sustainable behaviours, such as organic food consumption, waste behaviour, or green energy use. If and how general or particular food choice influence the relationships in our conceptual model is another idea for future research. Different

formats of CFC (Murphy et al., 2019), constructs and scales for time perspective (Shipp et al., 2009), core values (Davidov et al., 2008; Schwartz, 1992; 1994), and environmental values (de Groot and Steg, 2008) exist in the literature. Therefore, future research should investigate other future time perspectives, scales or formats for CFC in explaining sustainable behaviours or more specific sustainable food consumption behaviour. Future studies could also test alternative ways to understand the process by which CFC can influence sustainable attitudes or behaviours, such as using regulatory focus theory (Higgins et al., 2001; Joireman et al., 2012), exploring the role of self-control (Joireman et al., 2008), or testing alternative core dimensions of Schwartz's (1994) structure of human values like conservatism versus openness to change. Finally, our measures are based on self-reports of different scales in which the carry-over effects and/or social desirability bias (Cerri et al., 2019) could affect the results of our research. This study also uses correlation methods based on cross-sectional data, so the nature of the relationships is problematic. Experimental or longitudinal designs could be used in order to address those issues in future studies.

6. Conclusion

Most definitions of sustainability agree that sustainability seeks to meet the needs of the present without compromising the ability of future generations to live in harmony with nature and their social environments. Future time perspective theory posits that individuals have personalities, values, attitudes or habits that influence their preferences and behaviour for particular time frames. Some people prefer living for today (present), while others prefer to think more about the future consequences of their present behaviour. Those preferences and behaviours are often in conflict. Present is also associated with preferences for spontaneous pleasure and hedonistic values. Previous research suggests that understanding consumer values is important in order to motivate consumers to undertake sustainable (food) consumption. Values are arranged in a hierarchical order according to

what is considered as more or less important in human lives, and some values like self-transcendence versus self-enhancement may conflict with each other. However, how and why personal values and future time perspective independently, associatively, or interactively relate to sustainable issues (e.g. sustainable food consumption) is still not fully understood.

The current study contributes to the general environmental psychology literature and to more specific literature on sustainable food consumption and in a non-Western environment (Vietnam). This study confirmed that consumers with a food-related (domain-specific) future time perspective are highly associated with sustainable food consumption compared to consumers living in a present time frame. Like some other previous studies, our study confirms that self-transcendence values are associated with sustainable consumption. However, this study is, to our knowledge, the first to confirm that self-transcendence is highly associated with a domain-specific future time perspective and also indirectly influences sustainable consumption through the time perspective. Finally, we believe this study also is the first to confirm a strong association between general self-enhancement and a domain-specific present time perspective. Hedonistic and egoistic values and present time attitudes work together and are important individual barriers for sustainable (food) consumption.

Our results encourage industries, governments and policymakers not only to activate environmental and social values (self-transcendence), but also to stimulate their future domain-specific time perspective / attitude. For example, is it possible to encourage consumption of healthy sustainable food with a perspective of positive consequences of individual future health benefits (egoistic values and attitude). Another example could be to stimulate consumers to buy high-quality sustainable food to increase their hedonic pleasure, feelings and satisfaction with their food experiences. Stimulating both the present feelings and responsibility for the future is one way to increase sustainable (food) consumption without the presence of conflict and social dilemmas or ambivalent feelings.

7. References

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Appendix 1. Constructs, question wording, factor loadings, composite reliability and variance extracted

Constructs	Factor loadings	t-value	CR	VE
<i>Self-transcendence (STR): A guiding principle in your life (importance)</i>			0.86	0.60
Helping the people around me	0.77	25.39		
Being loyal to my friends	0.84	28.38		
Believe that people should care for nature	0.82	27.83		
Every person in the world should be treated equally	0.65	20.09		
<i>Self-enhancement (SEN): A guiding principle in your life (importance)</i>			0.89	0.68
Gaining respect from and being influential to others	0.80	27.37		
Being rich and wealthy	0.83	28.46		
Showing my abilities	0.86	29.45		
Being very successful	0.80	26.44		
<i>CFC-Future (CFC-F): Relating to consuming food,.. (disagree–agree)</i>			0.82	0.53
My present behaviour is affected by the results that I receive in the future	0.70	21.61		
When deciding to consume food products, I often think about how it affects me in the future	0.81	25.92		
I prioritize using food products that will be better for myself in the future rather than obtaining immediate results	0.69	21.16		
I often think about the negative consequences of consuming food in the future, even though the negative outcome will not occur until after many years	0.71	22.22		
<i>CFC-Immediate (CFC-I): Relating to consuming food, ..(disagree–agree)</i>			0.84	0.56
To me, obtaining present values or goals is always important first and foremost, future consequences will be solved later	0.70	22.03		
My decision depends on the immediate purpose rather than my future goals	0.80	26.09		
My food consumption behaviour depends on the results I get now in the present; I am not concerned about its long-term impact	0.80	25.97		
I usually ignore warnings about the future consequences of my food behaviour because I think that the consequences are easily solved	0.70	21.91		
<i>Sustainable food consumption (SFC): Never (1) – very often (7)</i>			0.77	0.53
Parcel 1 (organic fruits/vegetables/meat/seafood)	0.58	17.06		
Parcel 2 (less sugar, eco-labelled food products)	0.73	22.49		
Parcel 3 (less animal, meat-free, smaller portions of meat)	0.86	27.61		

Notes. All factor loadings are significant at $p < 0.001$; fit indices: $\chi^2 = 510.8$; $df = 141$, $p = 0.000$; $RMSEA = 0.056$; $GFI = 0.939$; $CFI = 0.952$. CFC: Consideration of future consequences.