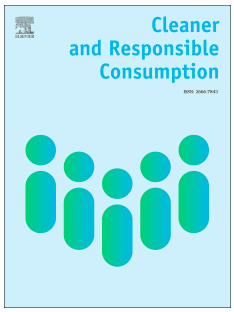

When Tradition meets Tomorrow: Personal Cultural Orientations, Normative Influence and Attitudes toward Sustainable Food Consumption

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When Tradition meets Tomorrow: Personal Cultural Orientations, Normative Influence and Attitudes toward Sustainable Food Consumption

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When Tradition meets Tomorrow: Personal Cultural Orientations, Normative Influence and Attitudes toward Sustainable Food Consumption

Abstract

Research on sustainable food consumption typically treats culture as a country-level context, overlooking how person-level cultural orientations translate into evaluations toward sustainable food consumption via concrete sociopsychological mechanisms. We address this gap by embedding two Personal Cultural Orientations, Tradition and Prudence, in a norm internalization pathway to explain their effects on attitudes toward sustainable food consumption. Building on an integrative conceptual model that draws on relevant insights from Schwartz Theory of Basic Human Values, the Value-Belief-Norm theory coupled with the Norm Activation Model, and aligning with the attitudinal component of the Theory of Planned Behavior, we analyzed data from an online representative consumer survey of 2,296 adults in five European countries (Portugal, Italy, Greece, Bulgaria, Hungary). Both Tradition and Prudence exerted significant positive indirect effects on attitudes toward sustainable food consumption through a sequential pathway from social to personal norms. Direct effects were non-significant or weak in most countries; Tradition exhibited indirect only mediation in all countries, whereas the Prudence effect was indirect in three countries and complementary in two. These findings clarify where culture does its work, by shaping perceived social approval that crystallizes into personal moral obligation. Theoretically, we integrate person-level culture with norm-based accounts of attitude formation and mitigate ecological fallacy. Practically, findings highlight leveraging cultural conditions for SFC, including aligning sustainable practices with tradition, designing campaigns that leverage community role models, and appeals to prudential orientations that move sustainable consumption toward wider societal uptake.

Keywords: Sustainable food consumption; Personal cultural orientation; Tradition; Prudence; Attitudes; Culture; Norm internalization

1. Introduction

Transitioning toward societal tipping points in Sustainable Food Consumption (henceforth: SFC) is foundational for climate mitigation, biodiversity protection, and population health (Polyportis et al., 2024). Syntheses on thousands of production systems unveil that dietary shifts, alongside improvements across the product life cycle, are indispensable; consumer plant-forward behavior patterns can substantially reduce environmental impacts while protecting health (Poore & Nemecek, 2018; Willett et al., 2019). The central challenge is how such shifts stabilize into ordinary practice within wider cleaner and responsible consumption agendas.

Yet, attitudes toward SFC do not occur in a vacuum; instead, they are shaped by what people believe that others do and approve of and by the moral obligations people feel. Long-standing frameworks treat perceived social expectations (i.e. social norms) and personal moral obligation (i.e. personal norms) as central drivers of pro-environmental judgments and choices (Cialdini et al., 1990; Klöckner, 2013; Stern, 2000). Reviews specific to eating behavior confirm that norms robustly influence what and how much people eat (Glenisson et al. 2025; Higgs, 2015; Stok et al., 2016). Recent work further shows that people often internalize social norms as intrinsically valued rules, transforming them into personal norms, inferring what is "right" from what is common (Davis et al., 2018).

Notwithstanding these merits, research has paid limited attention to the cultural roots of the abovementioned normative processes in SFC. Quantitative studies often proxy culture with national averages rather than measuring individual-level orientations. Aggregating by nation risks ecological fallacy and obscures within-country variability. Meta-analytic evidence indicates that a large share of variance in cultural values lies within countries and that individual-level cultural values are predictive of attitudes and behavior (Taras et al., 2010). In consumer research, Personal Cultural Orientations (henceforth: PCOs) offer a validated, person-level alternative with demonstrated reliability (Sharma, 2010). Following Hofstede's (2001) Long-Term Orientation (henceforth: LTO), Sharma (2010) operationalizes it at the person level. We focus on LTO because SFC is inherently intertemporal; it requires present restraint and planning for future benefits. Other PCOs are less relevant here as they are less proximal to norm internalization. Sharma (2010) distinguishes two PCOs of LTO: *Tradition* defined as continuity with the past, heritage, and respect for customary practices, and *Prudence*, defined as future-minded planning, thrift and self-restraint. Such decomposition allows analyses at the level where attitudes form and vary, mitigating ecological fallacy and enabling within-country inference (Sharma, 2010; Taras et al., 2010). However, how these PCOs feed into norm internalization, from perceived social approval to personal obligation, remains underexamined (Davis et al., 2018; Gavrilets & Richerson, 2017).

Prior findings on how Tradition affects SFC transitions are mixed. Several studies portray Tradition as a barrier when culinary customs center on meat-centric dishes and customary meal structures tied to identity and belonging, dampening openness to sustainable dietary choices even among environmentally concerned consumers (de Boer et al., 2017; Leroy & Praet, 2015; Stoll-Kleemann & Schmidt, 2017). Yet, research on the Mediterranean diet

shows how drawing on culinary heritage can enable sustainable patterns by aligning taste, identity, and social meaning with lower environmental impact (Burlingame & Dernini, 2011; Dernini & Berry, 2015). In short, it seems that Tradition is not directly "pro-" or "anti-" sustainability; its effects depend on local salience of culinary identities and practices, and how social and personal expectations crystallize and are communicated (Fischler, 1988; UNESCO, 2013). Hence, the task is to mobilize Tradition as a *carrier* of change so that sustainable options feel culturally legitimate rather than deviant, because acceptance hinges on congruence with internalized food norms; perceived deviance can trigger intuitive rejection and post-hoc rationalizations (Koch et al., 2021).

Prudence, related to future-minded planning and self-restraint, should predispose individuals toward favorable attitudes, yet its influence is unlikely to be direct. Prior evidence shows that future-oriented individuals (i.e., with high Consideration of Future Consequences) report stronger environmental concern (Joireman et al., 2001; Milfont et al., 2012). The "self-restraint" facet of Prudence aligns with trait self-control, a robust predictor of adaptive dietary choices and reduced indulgence (De Ridder et al., 2012). However, most studies assess general pro-environmental outcomes rather than SFC specifically and test direct or single-step effects. We argue that Prudence matters insofar as it facilitates the uptake of socially endorsed "better" practices, implying an indirect, norm-mediated effect on attitudes. To our knowledge this has not been tested cross-nationally at the person level; demonstrating it would identify normative-environment levers beyond appeals to individual self-restraint.

We attempt to address these *research gaps* and embed Tradition and Prudence inside a normative sequence, first shaping what people perceive others do and approve of in terms of SFC (i.e. descriptive and injunctive social norms). Those perceptions, in turn, foster a felt moral obligation (personal norms). Eventually, this serial normative process is expected to shape attitudes toward SFC, suggesting indirect effects of Prudence and Tradition. Such framing integrates the culture and norm internalization literature with attitude-formation research (Ajzen, 1991; Gavrilets & Richerson, 2017; Pristl et al., 2021; Sharma, 2010; Stok et al., 2016).

We test this in five Southern and Eastern European (henceforth: SEE-5) countries, namely Portugal, Italy, Greece, Bulgaria, and Hungary. In these countries, culinary heritage and food-based identity are highly institutionalized (e.g., the Mediterranean diet is inscribed by UNESCO as Intangible Cultural Heritage) and food practices function as potent identity markers (Burlingame & Dernini, 2011; Dernini & Berry, 2015; Fischler, 1988; UNESCO, 2013). More broadly, Northern and Western Europe lead on SDG performance (e.g., Finland, Denmark, Sweden top the 2025 EU SDG Index), whereas such Southern and Eastern European countries trail behind in sustainability scores (SDSN Europe, 2025). For reference, in the 2025 SDSN Europe rankings, the SEE-5 occupy mid to bottom table positions (Italy 15th, Portugal 23rd, Hungary 26th, Greece 29th, Bulgaria 32nd) spanning scores and gaps on SDGs relevant to food and consumption (e.g., SDGs 2, 12, 13). This contrast makes the SEE-5 a theoretically coherent setting to understand which cultural levers and normative sequences may aid (or hinder) SFC. Moreover, much empirical work on norms and SFC has been conducted in Northern and Western Europe, leaving regions such as the SEE-5 region comparatively under-

studied (Higgs, 2015; Stok et al., 2016; SDSN Europe, 2025). Accordingly, we formulate two following Research Questions (RQs):

RQ1. How does Tradition shape attitudes toward SFC through the serial sequence of perceived social and personal norms in the SEE-5?

RQ2. How does Prudence shape attitudes toward SFC through the serial sequence of perceived social and personal norms in the SEE-5?

This study's contributions are manifold. First, it measures Prudence and Tradition, as the Personal Cultural Orientations of LTO, addressing ecological fallacy and aligning with contemporary cross-cultural measurement (Sharma, 2010; Taras et al., 2010). Second, it embeds culture within a norm internalization pathway rather than treating "culture" and "norms" as parallel, unrelated predictors, integrating norm-based perspectives with attitude-formation accounts (Ajzen, 1991; Klöckner, 2013; Pristl et al., 2021; Stern, 2000). Third, it offers a theory-driven regional test in the SEE-5, where culinary heritage and identity are salient, yet sustainability progress is uneven relative to Northern and Western Europe (SDSN Europe, 2025). Fourth, it adds to previous findings on how normative appeals influence sustainable consumer behavior (White & Simpson, 2013). Fifth, the practical implications target culturally sensitive strategies, such as policy packages, communication frames, and community initiatives, that facilitate shifts toward SFC.

The paper is organized as follows. Section 2 discusses the theoretical underpinnings of the present research, develops the research hypotheses and presents the proposed conceptual model. Section 3 outlines the methods while Section 4 tests the hypotheses and presents the results. Section 5 discusses the theoretical and managerial implications, followed by limitations and future research. Section 6 concludes the article.

2. Literature review

2.1 Theoretical foundations

To explain how Tradition and Prudence influence attitudes toward SFC through a sequential normative pathway, we develop an integrated conceptual model that rests on relevant insights from three theoretical pillars: (a) Schwartz's Theory of Basic Human Values, coupled with insights from Sharma's work on PCOs, which translate Hofstede's LTO into person-level dispositions (i.e. Tradition and Prudence) that shape what people attend to and treat as appropriate (Schwartz, 1992; Sharma, 2010; Taras et al., 2010); (b) the Value–Belief–Norm framework and the Norm Activation Model, which specify how values and beliefs heighten awareness of consequences and responsibility, activating personal moral norms (Schwartz, 1977; Stern, 2000); and (c) the Theory of Planned Behavior, which locates how such moralized beliefs and perceived expectations enter evaluative judgment and inform attitudes (Ajzen, 1991).

Schwartz's Theory of Basic Human Values conceptualizes values as trans-situational goals that guide perception and action (Schwartz, 1992). Values are organized in a circumplex of compatible and opposing motivations; the Conservation pole, namely Tradition, Conformity, and Security, prioritizes continuity, social order, and restraint (Schwartz et al., 2012). This value architecture has strong cross-cultural validity while allowing person-level analysis. Sharma (2010) advances this person-level focus with PCOs, which operationalize culture as dispositional tendencies within individuals rather than as country averages. Of special relevance is Sharma's disaggregation of LTO into two facets, namely Tradition and Prudence. In this view, Tradition and Prudence are not country attributes but individual predispositions that can color what people notice, accept as appropriate, and prioritize when making everyday consumption judgments.

The Norm Activation Model (NAM) initially explains prosocial conduct as the result of personal norms (i.e. internalized feelings of moral obligation) activated when people (a) recognize the consequences of action/inaction (awareness of consequences) and (b) accept responsibility for those consequences (ascription of responsibility; Schwartz, 1977). The Value–Belief–Norm (VBN) theory extends NAM by specifying an upstream chain from values (e.g., universalism vs. self-enhancement) to general beliefs (e.g., ecological worldview), which then heighten problem awareness and responsibility, culminating in personal norms that motivate behavior (Stern, 2000). VBN and NAM provide a clear micro-mechanism linking stable predispositions to moralized "oughts," without presuming that behavior is driven solely by external sanctions. When combined with person-level culture, these models can offer a structured route by which PCOs (e.g., Tradition's deference to legitimate rules; Prudence's future-oriented self-regulation) can more readily translate into internal obligations to align consumption with perceived appropriate standards.

The Theory of Planned Behavior (TPB) puts forward that attitudes, norms, and perceived behavioral control determine behavioral intentions and, under suitable conditions, behavior (Ajzen, 1991). While TPB initially treated norms as perceived social pressure, subsequent work has shown that adding moral or personal norms improves prediction of pro-environmental decisions, indicating that internal "ought" considerations are not external to the evaluative process but often integrated with it (Harland et al., 1999). Extant norm research distinguishes descriptive (what most people do) and injunctive (what most people approve) components, clarifying the channels by which the social environment becomes psychologically meaningful (Cialdini et al., 1990). When personal norms are accessible, they supply moralized "ought" beliefs that are integrated into the attitudinal calculus (Ajzen, 1991; Fishbein & Ajzen, 2010; Harland et al., 1999).

Cumulatively, these perspectives yield a transparent division in the abovementioned pathway. Schwartz and Sharma's perspectives specify *who* is more disposed to treat shared expectations as credible guides (i.e. individuals high in Tradition and/or Prudence). VBN and NAM specify *how* such predispositions (i.e. social norms) become personal felt obligations (i.e. personal norms), while TPB clarifies *where* those obligations enter evaluative judgment, within attitudes. This integration does not presume that social rules are coercive; rather, it allows for

internalization and for culturally shaped selectivity in attending to, endorsing, and applying norms in SFC. Hence, our aim is to formalize and examine a focused person-level culture–to–attitude pathway that embeds Tradition and Prudence within norm internalization processes for SFC.

2.2 Tradition and Social norms

In Schwartz's Theory of Basic Human Values, Tradition sits within the Conservation cluster (with Conformity and Security) and reflects respect for customary practices, deference to legitimate authority, and the maintenance of social order (Schwartz, 1992; Schwartz et al., 2012). As a PCO, Tradition therefore predisposes individuals to attend to, and endorse, shared expectations about "how people like us do things" (Sharma, 2010).

Building on this value profile, we translate Tradition's orientation toward continuity into the normative process. In contemporary norm theory, social norms reflect the individual's beliefs about what relevant others do and approve, and they function as rules sustained by conditional preferences: people prefer to conform when they expect others typically conform and/or ought to conform, and regard the rule(s) as legitimate (Bicchieri, 2017; Keshavarz et al., 2025). Based on Schwartz's Theory of Basic Human Values, individuals high in Conservation, such as those who prioritize Tradition, are disposed to treat such expectations as appropriate, binding guidance because they value continuity, deference to legitimate authority, and social order (Schwartz, 1992; Schwartz et al., 2012). Taken together, a conservation-oriented value profile and a coordination view of norms imply that higher Tradition will be associated with perceiving a stronger and more legitimate normative climate in everyday food practices (Bicchieri, 2017; Schwartz et al., 2012).

The normative climate shaped by culinary traditions in SEE-5 codifies practices with recognized sustainability attributes, such as plant-forward meals, seasonality, frugality, locality, and commensality, framed as cultural goods rather than policy prescriptions. The Mediterranean diet of Greece, Italy and Portugal is inscribed by UNESCO as Intangible Cultural Heritage precisely because it transmits shared rules and skills for sourcing, preparing, and consuming food, and it has been advanced as a sustainable dietary model (Burlingame & Dernini, 2011; Dernini & Berry, 2015; UNESCO, 2013). Comparable tradition-encoded expectations characterize the non-Mediterranean SEE-5 settings. In Bulgaria, Eastern Orthodox fasting calendars normalize periodic abstention from animal products and reliance on legumes and vegetables, institutionalizing plant-based eating as a community practice (Lazarou & Matalas, 2010). Likewise, in Hungary, long-standing home-garden provisioning and the documented use of wild edible plants sustain seasonal, self-produced diets and local agrobiodiversity, functioning as shared expectations about proper provisioning and eating (Dénes et al., 2012). Similar "quiet sustainability" practices are widespread and socially embedded across the SEE-5.

Accordingly, our theorizing focuses on the perceived normative climate as the proximal locus of cultural uptake. Hence, in the SEE-5, heritage foodways provide visible, legitimate

cues about appropriate eating that individuals high in Tradition are especially likely to notice and endorse as social expectations; once salient, such expectations are well-placed to be internalized and to inform evaluations in downstream stages of the model (Bicchieri, 2017; Schwartz, 1992; Schwartz et al., 2012). In short, Tradition should heighten attention to what close others do and approve of, and treat these cues as legitimate, thereby strengthening perceived descriptive and injunctive norms in everyday food practices. We expect that:

H1a. Tradition is positively associated with Social Norms favoring SFC.

2.3 Prudence and Social norms

Prudence translates long-term orientation to the person level and provides a motivational lens for reading the social world (Sharma, 2010; Taras et al., 2010). In sustainability domains such as food, where outcomes are intertemporal, prudent individuals are more likely to rely on shared rules to coordinate behavior, making prevailing expectations about what others do and approve especially diagnostic.

Two mechanisms support this association. First, the psychological core of Prudence aligns with future orientation and self-regulation. Meta-analytic and model-based evidence links consideration of future consequences to stronger pro-environmental intentions and behaviors (Joireman et al., 2001; Milfont et al., 2012). As a PCO, Prudence appears to conceptually overlap with Conservation's emphasis on self-restraint and orderly conduct (akin to Conformity and Security; Schwartz, 1992). In parallel, trait self-control, a hallmark of prudential self-regulation, correlates with norm-consistent, socially adaptive choices across domains (De Ridder et al., 2012). These findings imply that prudent individuals judge community expectations about behavior such as SFC as credible and salient to augment community conservation (Schwartz, 1992; Schwartz et al., 2012).

Second, prudential motives foster normative coordination. Research treats social norms as conditional preferences sustained by empirical and normative expectations, under which people prefer to conform when they anticipate others' compliance and approval (Bicchieri, 2017). Formal models of cultural evolution show why internalized rule-following is adaptive for long-run cooperation, stabilizing expectations and lowering monitoring costs (Gavrilets & Richerson, 2017). In turn, social norms shape consumers' sustainability responses most strongly when perceived as diagnostic and self-relevant (Pristl et al., 2021).

Cumulatively, these research streams indicate that prudent individuals are more attuned to, and endorsing of, the social normative climate surrounding SFC. Hence, at the person-level, Prudence should be positively associated with social norms favoring sustainable food practices (Bicchieri, 2017; Sharma, 2010). Otherwise, Prudence should increase reliance on shared rules as credible signals for long-term appropriate conduct, amplifying perceptions of what close others do and what they deem appropriate. The following hypothesis is formulated:

H1b. Prudence is positively associated with Social Norms favoring SFC.

2.4 Social and personal norms

What people perceive others do and approve of provides a public setting that individuals frequently convert into private moral obligation (i.e. personal norms). Reviews of eating behavior show that exposure to descriptive and injunctive expectations (e.g., peers choosing plant-forward options, communities endorsing "eat less, waste less") can reliably shift individuals' own standards of appropriate intake (Higgs, 2015; Stok et al., 2016). VBN and NAM offer the micro-foundation for this social-to-personal linkage: perceived expectations raise awareness of consequences and ascriptions of responsibility, which in turn activate felt obligations (i.e. personal norms) to align one's conduct with what is seen as socially right (Schwartz, 1977; Stern, 2000).

Contemporary accounts of social norms further clarify why this association should be positive. Aligned with Cialdini et al. (1990), Bicchieri (2017) argues that social norms rest on descriptive (i.e. what most people do) and injunctive (i.e. what most people approve) expectations. Accordingly, we conceptualize social norms as expectations comprising these two elements. When these expectations are stable and legitimate, conditions often met in food cultures, individuals adopt intrinsic motivations to follow and enforce the norm (Davis et al., 2018). Such internalization is adaptive because it reduces deliberation and monitoring costs, making rule-following "instinctive" and persistent (Gavrilets & Richerson, 2017). Recently, studies in sustainable consumption confirmed that perceived social norms feed into personal norms, which then guide intentions and evaluations (Pristl et al., 2021). We hypothesize:

H2. Social Norms are positively associated with Personal Norms toward SFC.

2.5 Personal norms and attitudes toward SFC

Personal norms, or internalized expectations about how one ought to consume, provide an evaluative lens that tends to favor sustainable food options when those options align with one's sense of appropriate conduct. Within attitudinal models, attitudes are belief-based evaluations; when accessible beliefs include "ought" considerations, they are incorporated into the appraisal process (TPB, Ajzen, 1991). Also, TPB assumes an expectancy–value process in which attitudes derive from the beliefs that come to mind; when personal norms are accessible, their "ought" content joins these beliefs and tilts appraisals (Ajzen, 1991; Fishbein & Ajzen, 2010; Harland et al., 1999). Thus, stronger personal norms about eating sustainably are expected to be associated with more favorable attitudes.

This attitudinal moralization is expected to be salient in food contexts, where practices are norm-governed. Reviews show that internalized rules about appropriateness organize eating judgments and choices (Higgs, 2015; Stok et al., 2016). Aligned with TPB, personal moral

norms added explanatory power alongside attitudes and were positively related to pro-environmental evaluations and downstream intentions (Harland et al., 1999). Research on organic purchasing suggests that internalized obligations and favorable evaluations reinforce one another over time (Koklič et al., 2019). In broader sustainable consumption contexts, perceived normative climates often exert their influence through personal norms, which in turn relate positively to evaluative judgments and consumer responses (Pristl et al., 2021). Recent work on skepticism toward novel sustainable foods has found that negative reactions frequently reflect perceived deviation from internalized food norms (Koch et al., 2021), implying that alignment of the product with personal food norms facilitates more favorable evaluations. The following hypothesis is tested:

H3: Personal Norms are positively associated with attitudes toward SFC.

2.6 Indirect effects of Tradition and Prudence on Attitudes toward SFC

We synthesize a parsimonious integrated application of Schwartz's Theory of Basic Human Values together with Sharma's PCO approach, the VBN and NAM frameworks, and TPB. Tradition and Prudence heighten sensitivity to what one's community does and approves (Schwartz et al., 2012; Sharma, 2010). VBN and NAM frameworks specify how publicly observed expectations are taken up as private obligations through awareness of consequences and ascription of responsibility and thus the formation of personal norms (Schwartz, 1977; Stern, 2000). TPB then allows those moralized beliefs to enter the attitudinal calculus, so that internalized "ought" considerations shape evaluations of sustainable food options (Ajzen, 1991).

Applied to Tradition in the SEE-5 context, the emphasis on continuity and deference to legitimate customs makes shared expectations about appropriate eating more visible and credible. Where heritage practices foreground plant-forward, seasonal, and frugal patterns, these expectations are readily internalized as obligations, which in turn support more favorable evaluations of SFC. Thus, Tradition is expected to influence attitudes indirectly by first strengthening perceptions of social expectations and then consolidating them as personal norms (Ajzen, 1991; Schwartz, 1992; Sharma, 2010):

Applied to Prudence in the SEE-5 context, the focus on future-minded planning, thrift, and self-restraint increases the perceived diagnostic value of shared rules for achieving long-run, collective outcomes. Prudent individuals are therefore more likely to register and accept sustainability-relevant expectations in their milieu, then internalize them as felt obligations, and evaluate sustainable food choices more positively (Higgs, 2015; Sharma, 2010; Stok et al., 2016). We formulate the following hypotheses:

H4a. Tradition exerts a positive indirect effect on Attitudes toward SFC via Social and Personal Norms.

H4b. Prudence exerts a positive indirect effect on Attitudes toward SFC via Social and Personal Norms.

Figure 1 illustrates the conceptual model of the present research, depicting our examination on how Tradition and Prudence indirectly affect Attitudes toward SFC via the serial mediation of Social and Personal norms and incorporates the research hypotheses (H1a–H4b).

INSERT FIGURE 1 AROUND HERE

3. Methods

3.1 Sample and data collection procedures

We fielded an online representative survey in March 2025 through the established European market research firm Bilendi, subcontracted under the ongoing Horizon Europe project *Consumers' Understanding of Eating Sustainably* (CUES). Panel eligibility (residence in the target country, minimum age) and anti-duplication were enforced at the panel level before respondents could enter the main questionnaire. Within the survey, two attention-check items ("This is an attention check; please select 'strongly disagree' ") were embedded, each presented in different parts of the questionnaire. Beyond Bilendi's pre-screening, we reverified eligibility in the survey and removed cases where self-reported country did not match panel records, ensuring survey-level eligibility. Participants were compensated through Bilendi's standard panel incentive program, set and administered by the provider; incentives were not tied to attention-check performance.

To approximate nationally representative consumer samples within each of the five target countries, we used soft quotas on age and gender at sample build, aligning the realized distributions with official population margins. Country-specific sample sizes exceeded the Krejcie & Morgan (1970) threshold of n = 384, which is sufficient for a representative sample for populations ≥1,000,000 in behavioral and social sciences, yielding ~±5% precision at 95% confidence. Together, quota alignment and statistically adequate country sample sizes support country-level inference for the modeled relationships.

A structured questionnaire was used to examine the main study constructs. To ensure conceptual and linguistic equivalence across countries, a collaborative and interactive translation was followed (Douglas & Craig, 2007). The survey was initially translated by the research team and then confirmed by project partners fluent in both English and the target language, following recommended procedures (Harkness et al., 2010). This procedure minimizes risks of cultural bias, semantic drift, and construct inequivalence. At the beginning of the questionnaire, to reduce interpretive variability and align with cross-national survey best practices, participants were presented with a short neutral definition of sustainable food, reflecting environmental, social, economic, and nutritional dimensions commonly emphasized

in the literature (Marty et al., 2022; Willett et al., 2019, see Supplementary Material). The questionnaire then continued with measures of attitudes toward SFC, social and personal norms, Tradition and Prudence, followed by demographics.

In total, 2,820 adult panelists entered the study. Of these, 524 were excluded for one or more of the following reasons: (a) failing eligibility criteria, in specific survey-level eligibility mismatches between panel metadata and self-reports (country), and/or (b) failing both attention checks. The final analytic sample comprised 2,296 respondents, corresponding to an 81.4% usable-case rate from those initially contacted (Table 1). The research received institutional ethics approval (ETH2425-0222) and participants provided written informed consent prior to participation.

Table 1. Demographic characteristics of the samples by country.

Country	*N*	Age (*M, SD*)	Age range	Male n (%)	Female n (%)	Prefer not to say n (%)
Portugal	468	49.67 (14.48)	18–82	286 (61.1)	182 (38.9)	0
Italy	444	50.95 (14.57)	20–82	242 (54.5)	201 (45.3)	1 (0.2)
Greece	430	48.79 (12.52)	18–79	247 (57.4)	182 (42.3)	1 (0.2)
Bulgaria	454	45.24 (12.76)	18–80	250 (55.1)	204 (44.9)	0
Hungary	500	43.62 (14.52)	18–80	305 (61.0)	195 (39.0)	0

3.2 Measures

All constructs were adopted or adapted with minor adjustments from established scales in prior research. Constructs were reflective, since the indicators are manifestations of the underlying latent variables rather than distinct components forming the construct (Keshavarz et al., 2025). Attitudes toward SFC were assessed with three five-point semantic differential items adapted from White and Simpson (2013) and tailored to the SFC context. Personal norms were captured with three seven-point Likert items (1 = *strongly disagree*, 7 = *strongly agree*) adapted from Koklič et al. (2019). Social norms were measured with two seven-point (1 = *strongly disagree*, 7 = *strongly agree*) items from Verain et al. (2015), reflecting both descriptive and injunctive components and aligning with contemporary norms research (Fishbein & Ajzen, 2010). This operationalization builds on the seminal work of Cialdini et al. (1990) who distinguish between descriptive and injunctive social norms, the first being described as "[…] what most others do […]", while the latter outlines "[…] what most others approve or disapprove […]" (Cialdini et al., 1990, p. 1015). Tradition and Prudence were assessed with the corresponding four-item scales from Sharma (2010) (seven-point Likert items, 1 = *strongly disagree*, 7 = *strongly agree*). We also measured control variables age and gender (Doan et al., 2025). A detailed

mapping of each construct to its specific source and items is provided in Supplementary Material S1.

3.3 Common Method Bias

We implemented procedural and statistical remedies to mitigate and control potential informant bias (Hulland et al., 2018, Podsakoff et al., 2003). Procedurally, we pretested the instrument in Greece to refine wording and flow; assured respondents of confidentiality and anonymity; and physically separated construct blocks while varying scale anchors to discourage consistency motifs and evaluation apprehension (MacKenzie & Podsakoff, 2012). Statistically, we conducted Harman's single-factor test for Common Method Bias using an unrotated exploratory factor analysis via principal axis factoring on the 16 indicators. Sampling adequacy was satisfactory (KMO = .869), and Bartlett's test of sphericity was significant, $\chi^2(120) = 21{,}687.67$, $p < .001$, supporting factorability. The analysis yielded four factors with eigenvalues > 1; the first factor accounted for 32.06% of the variance, with the first four factors cumulatively explaining 62.98%. As a single factor did not emerge and the first factor did not dominate (> 50%), Common Method Bias is unlikely to be a prevailing threat in the data.

3.4 Data analysis plan and software

The measurement model (Tradition, Prudence, Social Norms, Personal Norms, Attitudes) was evaluated with confirmatory factor analysis (CFA) in IBM SPSS AMOS 29; fit indices and validity evidence are reported in Section 4.1. Mediation and indirect effects were tested with the PROCESS macro v4.3 in IBM SPSS Statistics 29. We set $\alpha = .05$ (two-tailed) and report standardized coefficients with 95% confidence intervals. Hypothesis tests proceeded by country as follows: H1a–H1b were examined via OLS regressions predicting Social Norms from Tradition and Prudence; H2 via OLS regression of Personal Norms on Social Norms; H3 via OLS regression of Attitudes on Personal Norms; H4a–H4b via PROCESS Model 6 (Hayes, 2018) testing serial mediation through Social Norms and Personal Norms, with 5,000 bias-corrected bootstrap samples and covariates (age, gender).

4. Results

4.1 Measurement model assessment

A CFA across the pooled sample of Portugal, Italy, Greece, Bulgaria, and Hungary was conducted in AMOS 29 to assess the measurement model, which included five latent constructs: Tradition, Prudence, Social Norms, Personal Norms, and Attitudes. Owing to local misfit in subsequent analyses, one Prudence indicator was eliminated. The final model demonstrated good fit to the data (Hu & Bentler, 1999): $\chi^2(78) = 443.61$, $p < .001$, $\chi^2/df = 5.69$, RMSEA = .045, 90% CI [.041, .049], CFI = .983, TLI = .976, GFI = .975, SRMR = .052. Given

the large sample, we do not over-interpret χ^2 (Hu & Bentler, 1999; Kline, 2016). All variables showed satisfactory internal consistency indicators (Supplementary Material S1).

Convergent validity was supported in the pooled data: AVE ≥ .50 (range = .63–.82) and composite reliability (CR) ≥ .70 (range = .82–.93) across constructs (Fornell & Larcker, 1981; Hair et al., 2019 –Table 2). Discriminant validity held by the Fornell–Larcker criterion (Fornell & Larcker, 1981).

Table 2. Construct Reliability and Validity for pooled sample.

Construct	AVE	CR	Tradition	Prudence	Social Norms	Personal Norms	Attitudes
1. Tradition	.67	.89	**.82**				
2. Prudence	.63	.84	.44	**.79**			
3. Social Norms	.70	.82	.28	.24	**.84**		
4. Personal Norms	.82	.93	.20	.18	.80	**.90**	
5. Attitudes	.69	.87	.08	.14	.42	.58	**.83**

Note. AVE = Average Variance Extracted; CR = Composite Reliability; √AVE = square root of AVE shown in bold on the diagonal. Correlations are presented below the diagonal. Discriminant validity supported with √AVE values exceeding inter-construct correlations according to the Fornell–Larcker criterion.

We conducted multi-group CFA, specifying the same factor structure with all parameters freely estimated across countries (Brown, 2015; Steenkamp & Baumgartner, 1998). Fit indices indicated acceptable fit by country (Supplementary Material S2). This establishes that participants across countries conceptualize the constructs similarly. As comparing cross group structural parameters is not our primary research focus, we limited invariance testing to the configural level to establish a common measurement pattern across countries. We freed two within-factor correlated uniquenesses among the Prudence items to account for minor wording overlap, a theory-consistent adjustment that improved local fit without altering the factor structure or cross-construct relations (Brown, 2015; Byrne, 2016; Kline, 2016). Discriminant validity per country held by the Fornell–Larcker criterion (Fornell & Larcker, 1981). Country-specific AVE/CR/√AVE and correlation matrices are provided in Supplementary Material S3.

4.2 Hypothesis testing

Given evidence of configural invariance in Section 4.1 but the possibility that structural relations vary across food cultures, and to avoid unnecessary cross-group equality assumptions, we estimate models separately by country. Hence, following the establishment of measurement validity, we tested the formulated hypotheses. First, multiple regression analyses tested the effect of Tradition (H1a) and Prudence (H1b) on Social Norms. VIFs were consistently low (1.13–1.32), indicating no multicollinearity concerns. **H1a** was supported in all five countries (β = .099–.218) . **H1b** was supported in Italy, Greece, Bulgaria, and Hungary and non-significant (p = .08) in Portugal (β = .136–.198). This attenuation in Portugal is plausibly consistent with the fact that shared food practices are already highly salient in Portugal, exemplified by Mediterranean and Atlantic food traditions, so additional prudential orientation contributes little incremental variance to perceived social expectations regarding sustainable eating (Rivas-Fernández et al., 2025; UNESCO, 2013); we return to this contextual interpretation in the Discussion and Implications section. Coefficients and exact p-values are in Supplementary Material S4.

Next, regressions predicting Personal Norms from Social Norms tested H2 in each country. Effects were large and positive for all countries (β = .565–.778), explaining 32%–61% of the variance (Supplementary Material S5). Thus, **H2** is supported in all countries. Similarly, regressions predicting Attitudes from Personal Norms were significant and positive in every country (β = .448–.686), explaining 20%–47% of the variance (Supplementary Material S6). **H3** is supported.

We tested whether Tradition (H4a) and Prudence (H4b) exert significant positive indirect effects on attitudes toward SFC via the serial mediating mechanism of Social and Personal Norms using PROCESS Model 6 (Hayes, 2018) with age and gender as covariates. We inferred mediation when the bias-corrected bootstrapped 95% CI for the serial indirect effect excluded zero and classified patterns per Zhao, Lynch, and Chen (2010). *Across all five countries, serial indirect effects were positive and significant for both predictors confirming **H4a** and **H4b*** (Table 3). For Tradition, c′ was non-significant in every country, indicating indirect-only mediation. For Prudence, c′ was non-significant in Portugal, Italy, and Greece (indirect-only), yet significant and positive in Bulgaria and Hungary, indicating complementary mediation.

Table 3. Serial indirect effects of Tradition and Prudence on Attitudes toward SFC via Social and Personal Norms.

Country	c′(Tradition) *β* (*p*)	Serial Indirect effect (Tradition) *β*, 95% CI	Total *c* (Tradition) *β* (*p*)	c′(Prudence) *β* (*p*)	Serial Indirect effect (Prudence) *β*, 95% CI	Total *c* (Prudence) *β* (*p*)
Portugal	−.046 (.272)	.060 [.029, .094]	.041 (.381)	.042 (.321)	.052 [.024, .081]	.128 (.007)
Italy	–.012 (.744)	.086 [.031, .143]	.133 (.005)	.042 (.246)	.135 [.079, .194]	.181 (<.001)
Greece	–.058 (.192)	.059 [.026, .101]	.035 (.473)	.040 (.371)	.070 [.036, .117]	.133 (.006)
Bulgaria	.019 (.674)	.091 [.056, .134]	0.157 (<.001)	.100 (.023)	.085 [.049, .125]	0.254 (<.001)
Hungary	.053 (.218)	.120 [.072, .174]	0.144 (.002)	.113 (.006)	.097 [.054, .147]	.213 (<.001)

Notes. PROCESS Model 6 tested the serial path separately for both Tradition and Prudence. "Indirect" is the serial indirect effect (bias-corrected bootstrap, 5,000 samples); CIs that exclude zero indicate mediation. Interpretation per Zhao et al. (2010): Tradition shows indirect-only mediation in all countries; Prudence shows indirect-only mediation in Portugal, Italy, and Greece, and complementary mediation in Bulgaria and Hungary.

5. Discussion and implications

5.1 Theoretical contributions

The theoretical contributions of the present research are manifold. First, the study specifies a value-to-obligation-to-evaluation pathway that integrates person-level culture with state-of-the-art norm theories. Modeling culture as PCOs avoids ecological fallacy and treats Tradition and Prudence as value-laden dispositions (Schwartz, 1992; Schwartz et al., 2012; Sharma, 2010). The evidence that these dispositions heighten sensitivity to social norms, which then consolidate into personal norms and then to attitudes, was observed in a broadly consistent manner across the five countries, indicating a stable internalization step in the value–norm–attitude sequence. This finding extends research on the activation logic of NAM and VBN, as awareness of consequences and ascribed responsibility convert public expectations into felt obligation (de Groot & Steg, 2009; Schwartz, 1977; Stern, 2000). This cross-national stability suggests a shared normative mechanism in food-related contexts within these European settings, even as upstream value effects vary in strength. Relative to prior established work on sustainable food consumption (e.g. Verain et al., 2015; Vermeir & Verbeke, 2006), often single-country, ecological in its treatment of culture, or not explicitly sequencing social norms and

personal norms, the present multi-country, person-level analysis isolates this internalization step and examines its stability.

Second, the results re-theorize Tradition as a norm enabler rather than a direct driver or barrier. Prior findings on Tradition and sustainability are mixed; our findings indicate that Tradition's core (i.e., deference to legitimate custom and social order) operates primarily by intensifying attention to "what people like us do" and "what people approve", not by directly pushing evaluation (Schwartz, 1992; Schwartz et al., 2012). Where the prevailing food culture contains sustainability-consistent cues such as those within SEE-5 (e.g. frugality or seasonality), Tradition strengthens perceived expectations that, once internalized, align with favorable evaluations. Conceptually, this reframes Tradition as context-dependent: it magnifies the local normative climate, clarifying why its association with sustainability can vary across settings. Also, the finding is consistent with, and extends, recent qualitative work underscoring how cultural identity and heritage shape public understandings of food sustainability (Polyportis et al., 2025; Voinea et al. 2020).

Third, the findings differentiate Prudence from Tradition and locate its theoretical leverage in future-minded self-regulation. Consistent with work on consideration of future consequences and self-control, Prudence is tied to stronger pro-environmental cognitions and norm-consistent choices (De Ridder et al., 2012; Joireman et al., 2001; Milfont et al., 2012). Our pattern, indirect-only in some countries but complementary mediation in others, suggests that, beyond facilitating internalization, Prudence may also supply a direct evaluative channel that favors attitudes even when norms are held constant. Theoretically, this positions Prudence as goal-regulatory responsiveness to shared rules (Sharma, 2010; Schwartz et al., 2012). At the same time, the non-significant effect of Prudence on social norms in Portugal points to nationally specific normative baselines: when shared food practices are already highly salient, additional prudential orientation may add little incremental weight to perceived social expectations (Rivas-Fernández et al., 2025; UNESCO, 2013).

Fourth, the study clarifies the place of personal norms in attitude formation and the sequencing of social and personal norms. The recorded pattern supports an "internalization-first" principle in norm-salient consumption: perceived expectations shape evaluations chiefly via personal moral obligation. It is noted that our findings align with the attitudinal component of TPB in particular. The results therefore strengthen the conceptual bridge between NAM/VBN with personal norms as motivational core, and the attitudinal aspect of TPB, and align with syntheses showing central roles for normative or moral constructs in pro-environmental responses (Ajzen & Fishbein, 2005; Higgs, 2015; Stern, 2000). Taken together, the cross-country similarities alongside differences in upstream value-to-norm links are consistent with shared European food-related normative orientations coupled with nationally specific cultural cues that moderate value activation. Taken together, these contributions consolidate Tradition and Prudence, norm internalization, and attitudes toward SFC into an integrated conceptual model of person-level culture and attitudes toward SFC, thereby moving beyond the juxtaposition of separate theoretical accounts.

5.2 Practical implications

From a practical perspective, norm-based strategies can be made more effective when they are tuned to person-level cultural orientations and anchored in recognizable heritage practices that signal social legitimacy. For audiences scoring higher in Tradition, persuasive messages and policy interventions should focus on locally legitimate exemplars ("what people like us do") and tie sustainable practices to community identity markers (e.g., Mediterranean recipes, fasting periods). When communicating social expectations, pairing descriptive cues with injunctive approval can help avoid boomerang effects and strengthen uptake (Schultz et al., 2007). Field evidence shows that norm messages are most persuasive when they reference proximal in-group norms rather than generic environmental appeals; this logic can be adapted in the microenvironment, for instance in campus canteens, municipal cafeterias, and retailer signage (Goldstein et al., 2008). Given the cross-national stability of the pathway via Social to Personal Norms, interventions that make local social expectations visible and legitimate are likely to generalize well across these settings, with message framing calibrated to local heritage cues.

For audiences higher in Prudence, persuasive messages and interventions should emphasize long-term commitment and low-friction steps that make self-regulation easier (e.g., defaults, pre-commitments, waste-tracking feedback). Policy and procurement design can complement communication by reshaping choice sets so that the normative climate is visible in the environment itself, e.g., increasing the share of plant-based options on menus and at service points so that individuals with higher Prudence can more easily align plans and routines with what is publicly cued. This aligns with choice architecture, where availability and salience are altered to steer choices without restricting options (e.g. Thaler & Sunstein, 2008). Also, to ensure equitable uptake, interventions should consider affordability and access (e.g., price promotions, culturally familiar recipes) so that shifts do not widen nutritional or economic gaps. In countries where prudential orientation shows weaker links to perceived norms, interventions may benefit from foregrounding salient community exemplars and everyday practices to reduce reliance on individual self-regulation for normative uptake.

6. Conclusion

This study highlights how person-level culture enables SFC. By locating the influence of Tradition and Prudence in the way people see what their community does and approves, and how these expectations become personally endorsed, the study adds a clear process story to the literature. It shifts attention from country labels to person-level orientations, and from generic appeals to the concrete cues that make sustainable choices feel normal, expected, and one's own. Across countries, the pathway from social norms to personal norms was consistently observed, indicating a stable internalization step in these settings.

For practice and policy, this means building on what communities already value, making sustainable options visible and easy, and inviting people to turn shared expectations into personal commitment. A practical implication is a "common core, tailored edge" approach: practitioners and policymakers should use a common core of visible, proximal, and locally legitimate norm cues across countries, while tailoring emphasis to local value–norm links.

Where Tradition is salient, they should foreground culturally recognizable exemplars and explicit community approval; where Prudence shows a stronger association with perceived norms (Italy, Greece, Bulgaria, Hungary), policymakers should consider pairing normative cues with light self-regulatory supports such as defaults, commitment prompts, and feedback. In Portugal, where the Prudence to social norms link was weaker, policymakers should prioritize increasing the proximity and salience of community exemplars rather than relying on prudential framing alone. Applied at scale, such strategies can help align identity, food habits and social approval, supporting a future where healthier, lower-impact diets are not only possible, but feel like the natural choice.

The study has limitations. We modeled perceived norms and combined descriptive and injunctive elements at the construct level; future work can manipulate these components experimentally and track norm internalization over time. Tradition and Prudence capture only part of cultural orientations, and other traits may shape how people respond to normative cues. For example, a stronger need for uniqueness may weaken conformity to perceived approval (Tian et al., 2001). Also, our outcomes are attitudinal rather than behavioral. Linking the highlighted pathway to purchase choices could strengthen external validity and address the attitude–behavior gap (Polyportis et al., 2024; Vermeir & Verbeke, 2006). Moreover, the non-significant association between Prudence and social norms in Portugal suggests nationally specific normative baselines, yet we cannot confidently explain this pattern. Targeted comparative studies are needed to test whether high baseline salience of sustainable food norms attenuates the incremental impact of prudential orientations.

Finally, generalizability is bounded by context. The SEE-5 countries offer a coherent setting for heritage-linked foodways, yet norm content varies within and across countries. Replication in other regions would clarify boundary conditions. Moreover, future studies should examine how organizational and policy settings, such as public procurement practices, retail assortments, and media narratives, shape or moderate the pathways identified here, ideally through field experiments and longitudinal panels that track change.

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Data availability

Data available on request from the corresponding author.

Declaration of competing interest

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

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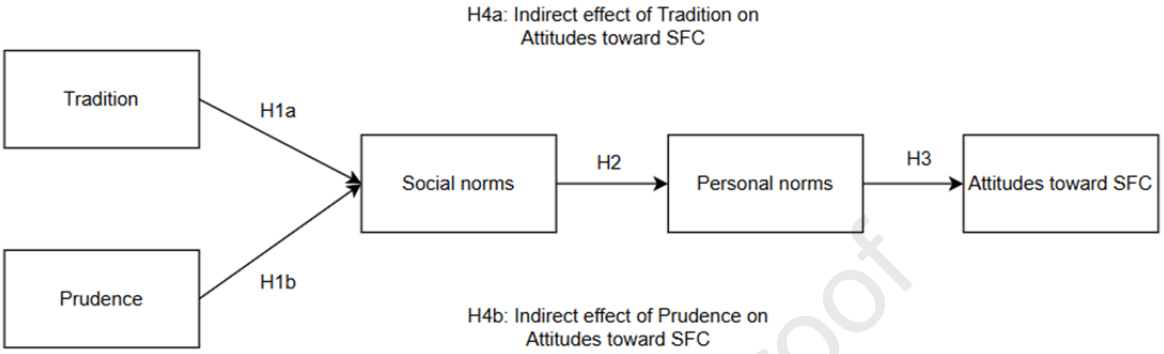
Figure 1. Conceptual model of the present research. Source: authors' own work.



Highlights

- Limited evidence on how personal culture shapes attitudes toward sustainable food consumption
- Representative survey of 2,296 adults across five European countries
- Tradition influences attitudes indirectly via social then personal norms
- Prudence exerts indirect effects on attitudes via the same sequential mechanism
- Alignment of sustainable practices with heritage and prudential appeals

Declaration of interests

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

☐ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: