

OVERVIEW



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Lifestyle, an integrative concept: Cross-disciplinary insights for low-carbon research

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Abstract

Lifestyle change is a fundamental component of transformative pathways to net-zero emissions. Despite the pervasive use of ‘lifestyle’ as a concept, there is lack of convergence on what constitutes lifestyle due to contrasting perspectives and approaches within and across disciplines. While there is a long tradition of lifestyle research in public health and in marketing, this does not currently inform low-carbon lifestyle research. We review a wide range of empirical and theoretical lifestyle studies using a directed thematic approach. Focusing on current knowledge within low-carbon lifestyles research, we draw insights from two contrasting research perspectives (health, marketing) to support and advance low-carbon research. We argue that ‘lifestyle’ is a unifying meta-concept comprised of three common integrating elements: behaviours, cognitions, and context. We find variation across research fields reflecting differing emphasis and differentiate integrative from domain-specific frameworks. Fragmented approaches in low-carbon research compartmentalise concepts within domains such that ‘lifestyle’ is aligned more closely in meaning to ‘behaviour’, accentuating inconsistencies. Lifestyle heterogeneity is characterised by clusters of cognitive and behavioural factors linked to broad social and material contexts. We identify drivers of lifestyle change, and argue lifestyle is not purely a matter of choice but shaped by contextual factors which lock-in unsustainable behaviours or facilitate sustainable behaviours. There are important implications for research and intervention. Lifestyle complexities demand a wider analytical lens incorporating cross-disciplinary datasets and integrative frameworks. Broadening cognitive and contextual dimensions would deepen understanding of lifestyle change. Comprehensive low-carbon lifestyle interventions should combine multiple strategies, at-risk groups, and opportunistic circumstance.

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Climate and Environment > Net Zero Planning and Decarbonization
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behavior, concept, cross-disciplinary, lifestyle change, low carbon

1 | INTRODUCTION

Human-induced climate change is increasing the frequency, duration, and intensity of extreme weather events and driving widespread and severe damage to natural and human systems (IPCC, 2022a). The Intergovernmental Panel on Climate Change (IPCC) warns of unequivocal scientific evidence that without deep and rapid reductions in greenhouse gas emissions, “we will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all” (IPCC, 2022b). This grave conclusion demands a radical response—a substantial shift in individual and societal ways of thinking and acting, and an enabling contextual landscape to support a positive transition to low-carbon lifestyles.

Lifestyle change is a fundamental component of transformative pathways to net-zero emissions (Costa et al., 2021), and therefore a key area of research. Shifts in lifestyle are dominant drivers of change in consumption patterns and energy demand (Lorenzen, 2012; Vita et al., 2019). Studies which fail to adequately capture lifestyle change may underestimate changes in carbon emissions (Zhang et al., 2020). The need to relinquish carbon-intensive lifestyles spans domains, countries, and broader regions (van den Berg et al., 2019). However, despite the pervasive use of lifestyle as a concept more generally, there is lack of convergence on what constitutes lifestyle (Supplementary Information A), and there are contrasting perspectives on the approach to lifestyle research (Section 2.2). In low-carbon research there is a clear need for lifestyle concepts to be clearly defined and harmonized to avoid common misunderstandings (van den Berg et al., 2019).

Research on low-carbon lifestyles and lifestyle change is multi-layered and complex (Kuanr et al., 2020) and spans a range of disciplines. Adopting an interdisciplinary approach can bridge critical gaps between disparate subjects (Hicks et al., 2010) and advance fundamental understanding or solve problems whose solutions are beyond the scope of a single field of research practice (Porter & Rafols, 2009). For example, sociological, psychological, and anthropological reflections are important in understanding lifestyle choices and behaviors (Creutzig et al., 2018). Such transcendent cross-disciplinary approaches lend themselves to more integrative assessments and evaluation of environmental policy instruments (Niles & Lubell, 2012). van den Berg et al. (2019) suggest that promising solutions to the representation of lifestyle changes could be identified through a comprehensive, comparative review of research across different disciplines.

This article is based on a broad and large-scale directed review of lifestyles grounded in key terms and phrases drawn from the low-carbon perspective and conducted by the authors within the NAVIGATE project (Agnew et al., 2021). Alongside low-carbon lifestyles research, this study identified (i) public health and (ii) consumer behavior and marketing as leading fields of lifestyles research with extensive literature on lifestyles concepts and applications. These two disciplines provide contrasting public and private perspectives on lifestyles and offer potential synergy with low-carbon lifestyles research. The interdisciplinary approach involves understanding linkages between different specialities to create a more holistic view of a complex issue (Wagner et al., 2011). In public health, there is synergy between healthy active lifestyles and sustainable lifestyles stressing for example, active mobility and plant-based diets. In marketing, the emphasis on segmenting consumer lifestyles, consumer life cycles, and market-based mechanisms for socially responsible change has corresponding relevance for low-carbon lifestyle analysis and intervention. An overview of general lifestyle concepts provides an important foundation for considering how lifestyles are represented and applied in low carbon research and identifying existing challenges. The aim is to draw insights across these two contrasting perspectives to support and advance research on low-carbon lifestyles and lifestyle change.

From each perspective, four specific research questions are considered which form discrete lines of interdisciplinary enquiry:

- *What constitutes lifestyle?* Synthesizing insights across established research fields requires an integration of concepts, techniques and in some cases data and findings (Porter et al., 2007; Wagner et al., 2011). This cross-disciplinary review considers how lifestyle is defined, the constructs or elements that characterize lifestyle, and how these are interrelated.

- *How are lifestyle concepts applied in research?* Social research approaches can be descriptive, analytical, and evaluative or interpretive (Gilbert, 2008). This study evaluates the application of lifestyle and lifestyle concepts, and explores the analytical frameworks used in lifestyle research.
- *What approaches are used to measure lifestyles and lifestyle heterogeneity?* Lifestyle analysis is multi-faceted, challenging, and requires interdisciplinary research to fully appreciate the interplay between values, attitudes, experiences, and behaviors (Lubowiecki-Vikuk et al., 2021). Different techniques for measuring lifestyle and characterizing lifestyle groups are reviewed across three leading fields of lifestyle research.
- *How can lifestyle change be promoted through public policy intervention?* A theoretical basis is required to understand lifestyle change, the drivers, the tendency for lifestyle practices to cluster (Gray et al., 2020), and the barriers to low-carbon lifestyle (Lubowiecki-Vikuk et al., 2021). Exploring differing perspectives on lifestyle change could help identify richer and more nuanced intervention strategies (van den Berg et al., 2019). This study examines the roles of lifestyle change, the mechanisms of change, and the approaches to intervention.

This paper is structured as follows. Section 2 introduces key lifestyle concepts before examining in more detail the current state of knowledge in low-carbon research (Section 3) and identifying existing challenges. Section 4 thematically explores how lifestyles research is approached in other disciplines to identify emerging synergies or insights valuable to low-carbon lifestyles research (Section 5).

2 | GENERAL LIFESTYLE CONCEPTS

This section introduces fundamental lifestyle concepts, their meaning, and the differing approaches (patterned, cognitive, and reflexive) to understanding what constitutes lifestyle.

2.1 | What does lifestyle mean?

“Lifestyle” can be seen as a coherent pattern of behaviors and cognitions consistent with specific contextual factors. The lifestyle meta-concept identifies three common interacting elements (Figure 1; Table 1). (1) Behaviors are observable and include actions, activities, technology adoption, and consumption. (2) Cognitions are non-observable and include worldviews, concerns, beliefs, perceptions, and self-identity. (3) Context can be social (e.g., culture, social connectedness) or material (e.g., infrastructure, income, geography). Contextual factors influence whether certain behaviors are possible and how certain cognitions can be acted upon. Therefore, context shapes the complex interplay between behaviors and cognitions that constitute lifestyle. This is important as lifestyle is not simply a matter of choice but is influenced by wide-ranging socioeconomic and cultural conditions (Faiola et al., 2019).

2.2 | What different approaches are there to lifestyle research?

Three common approaches emphasize (i) habitual patterns of behavior, (ii) intentions and goals, or (iii) self-identity and social positioning. Each recognizes the interrelationships between behaviors, cognitions, and contexts, but with differing emphases. A *patterned* perspective emphasizes routine, habitual patterns of behavior or consumption activity (Darnton et al., 2011; Schipper et al., 1989) and draws on Social Practice Theory and behavior science (Capstick et al., 2014; Shove & Spurling, 2013). These behavioral patterns are context-specific, for example, observable in the home, at work, or on the move (Barr & Gilg, 2006). Put simply, lifestyle describes “how people spend their money and their time” (Mowen & Minor, 1998) or “how individuals live their lives” (Office for National Statistics, 2017). A *cognitive* perspective emphasizes how intentions and other cognitions direct behaviors toward overarching goals (Jensen, 2009). Lifestyles are therefore purposeful as well as context responsive and are linked to broader cognitive constructs such as values or worldviews (Hedlund-de Witt, 2012). A *reflexive* perspective on lifestyles emphasizes how individuals organize and express self-identity through their behavior (Axsen & Kurani, 2012). This perspective is associated with the work of the sociologist, Anthony Giddens, who defined lifestyles as “routines that include the presentation of self, consumption, interaction and setting” (Giddens, 1991). It blends the patterned perspective's emphasis on routine behaviors with the cognitive perspective's emphasis on both inward and outward-facing goals building on a long tradition of lifestyles as a

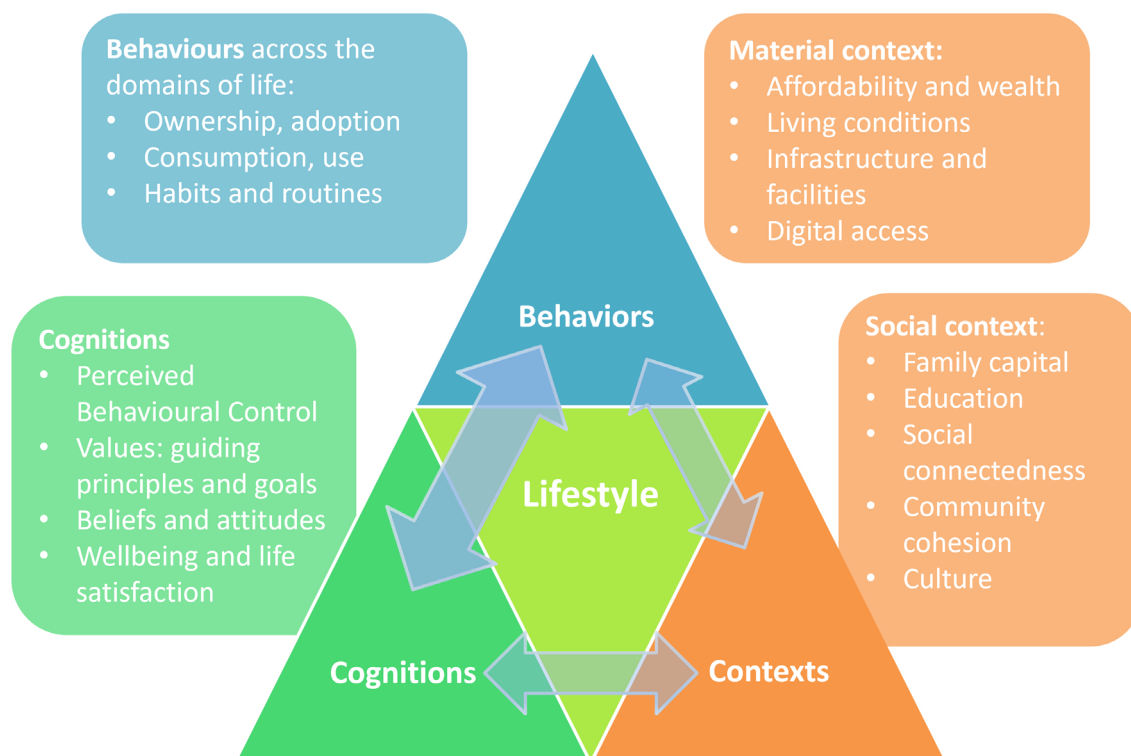


FIGURE 1 A conceptual framework for lifestyles comprised of three common integrating elements (cognitions, behaviors, contexts).

means of differentiating social position and status through outward signaling of identity. The dynamic and plural nature of lifestyles is reflected in the lack of convergence around a singular meaning or definition (Supplementary Information A).

2.3 | How are lifestyle concepts applied?

Lifestyle concepts are applied descriptively, analytically, and instrumentally. *Descriptively*, lifestyle concepts are used to identify common groups of interrelated behaviors, and to characterize heterogeneity in a population. Linking lifestyle heterogeneity to contextual variation helps identify important factors shaping lifestyles. For example, systemic regional differences in lifestyle associated with diet and cultural identity (Dernini et al., 2017). *Analytically*, lifestyle concepts are used to explain or predict the consequences of lifestyles on a narrow outcome of interest such as the risk of dementia (Lourida et al., 2019), food preferences (Nie & Zepeda, 2011), or propensity to buy an electric vehicle (Axsen & Kurani, 2012). *Instrumentally*, lifestyle concepts are used to analyze how undesirable patterns of behaviors can be changed, and how differentiated interventions can effectively target specific lifestyle groups. Instrumental applications can be strongly normative (i.e., based on prior assumptions about what is better) when tied to public policy objectives such as reducing morbidity or atmospheric pollution. Any given study may combine all three applications of lifestyle concepts. For example, a study of the potential for low-carbon lifestyle change (e.g., Le Gallic et al., 2018) may first characterize lifestyle heterogeneity at the population level (descriptive), estimate carbon footprints for different lifestyle groups (analytical), and then devise differentiated policy strategies for reducing carbon footprints in the high emitting groups (instrumental).

3 | LOW-CARBON LIFESTYLES PERSPECTIVE

The identified lines of research enquiry are explored in more depth from a low-carbon lifestyles perspective, first to examine the current state of research (covering lifestyle concepts, applications, analytical approaches, and

TABLE 1 Glossary of key terms.

Name of term	Name of sub-term	Description
Lifestyle	-	Lifestyle is a unifying meta-concept comprised of three common integrating elements: cognitions, behavior, and context.
Lifestyle elements	Behaviors	Behaviors are observable and include discrete actions, activities, technology adoption, and consumption.
	Cognitions	Cognitions are non-observable and include worldviews, concerns, beliefs, perceptions, motivations, and self-identity.
	Context	Context can be social (e.g., culture, social connectedness) or material (e.g., infrastructure, income). Contextual factors constrain or enable certain behaviors and guide whether cognitions can be acted upon.
Lifestyle domain	-	Domains of everyday life include home, work and education, food, mobility, and leisure.
Lifestyle perspectives	Patterned	A patterned perspective emphasizes habitual patterns of behavior and tend to be context specific.
	Cognitive	A cognitive perspective emphasizes intentions and purpose-driven behaviors directed toward over-arching goals.
	Reflexive	A reflexive perspective emphasizes how routines and behaviors signal self-identify and social positioning.
Application of lifestyle concepts	Descriptive	Descriptive applications identify common groups of interrelated behaviors and characterize heterogeneity in a population.
	Analytical	Analytical applications use lifestyle concepts to explain or predict the consequences of lifestyle for a specific outcome of interest.
	Instrumental	Instrumental applications use lifestyle concepts to analyze how undesirable patterns of behavior can be altered, and how specific lifestyle groups can be targeted through differentiated intervention.
Low-carbon lifestyles	-	A lifestyle that is variously concerned with mitigating adverse environmental impacts and encompasses pro-environmental, sustainable, and “green” viewpoints.
Lifestyle change	-	Adjusting lifestyle practices involves a reassessment of values, attitudes, and goals, within contextual constraints.

interventions), and second to identify existing challenges and additional needs. In the following section, lifestyles research is explored from the perspective of other disciplines to glean useful information and insights for research focused on net zero futures.

3.1 | Characterizations of low-carbon lifestyles

“Green lifestyle change is a gradual, deliberate process that is a response to environmental harms. Thinking of going green as adopting a lifestyle creates a relatively coherent story and collective vision of the future.” (Lorenzen, 2012)

Research on pro-environmental, sustainable, “green,” or low-carbon lifestyles is variously concerned with the adverse environmental impacts of lifestyles, how and why people may seek to reduce them, and the wide-ranging motivations for lifestyle change. This overview uses the term “low-carbon lifestyles” as shorthand for these different emphases, which reflect patterns of behaviors, intentional action, and the shaping influences of the wider social and physical environment. An important but often tacit distinction in low-carbon lifestyles research is between “domain-specific” lifestyles and “generalized” lifestyles across domains. Do we have a single lifestyle? Or a lifestyle specific to food, leisure, travel, or homes? Low-carbon lifestyles research assumes both. One consequence of adopting a fragmented approach is that “lifestyles” in low-carbon research becomes closer in meaning to “behavior” (Box 1).

BOX 1 What is the difference between lifestyle and behavior?

“Lifestyles” and “behaviors” are commonly interchanged in literature. This is incorrect. Although lifestyles are observable through behaviors, lifestyles are not synonymous with behavior. Behaviors are *discrete actions* associated with specific personal and contextual influences. Lifestyles consist of *collective actions* linked with some degree of consistency to broader cognitions and contexts (Lawson & Todd, 2002). Whereas behaviors are *specific* within a domain of everyday life (e.g., commuting behavior, food purchasing behavior), lifestyles are a *meta-concept* which tends to be applied across domains of everyday life. However, an opposing argument suggests that lifestyle is not consistent across domains, and “descriptions of lifestyles should be restricted to specific life domains” (Thøgersen, 2017a, 2017b).

3.1.1 | Generalized lifestyles

Multi-domain lifestyle frameworks (Supplementary Information B) which consider single (or generalized lifestyles), provide a way of organizing, planning, and evaluating intervention strategies (Defra., 2008, 2011), and can inform social marketing and educational campaigns to encourage more sustainable lifestyles (Darnton et al., 2011). This conceptualization of lifestyle also lends itself to analytical impact assessments that include lifestyle-based modeling of carbon emissions (Bin & Dowlatabadi, 2005) or ecological footprints (Moore, 2015). Generalized lifestyle frameworks are also used to assess relationships between sustainable practices and wellbeing (Binder & Blankenberg, 2017), beliefs and attitudes (Tudor et al., 2016), as well as perceptions and acceptability of environmental policy instruments (Valeri et al., 2016).

3.1.2 | Domain and context specific lifestyles

In context and domain-specialized frameworks, lifestyle factors explain much of the variation in clearly defined areas of resource-intensive activity (Sanquist et al., 2012). Example domains include domestic energy use (George-Ufot et al., 2017), dwelling location and type (Frenkel et al., 2013), mobility and travel (Lanzendorf, 2002), leisure and tourism (Barr et al., 2011), and food consumption (Thøgersen, 2017b). Low-carbon lifestyles are tested as generalizable explanations for technology adoption decisions in different domains, such as solar panels and electric vehicles (Axsen et al., 2012). Comparative studies assess variation in behaviors and cognitions across different settings: for example, rural or urban (Chen et al., 2019), transitional journey sites from home to holiday destination (Barr et al., 2011), and socio-economic settings, such as transition or post conflict economies (Katz-Gerro et al., 2017). Although context is a key driver of lifestyle heterogeneity, within these settings individuals respond differently according to their worldviews, values, and attitudes.

For these thematic low-carbon lifestyle frameworks, the contextual drivers, cognitions, and behaviors of interest necessarily vary by domain and are narrowly focused. In food-related lifestyles research, for example, intentional actions (changes to eating habits and food choices) are related to a particular set of values, motivations (Grunert, 1993), opportunities, and habits (Verplanken & Roy, 2016). Lifestyles shift as the cognitive goals of satisfying basic needs are replaced by goals of higher standards of living (Katz-Gerro et al., 2017). While at a global level, dietary choices and consumer purchases are driven almost entirely by cultural and socio-economic contextual characteristics (Moore, 2015). Homes-related lifestyle research is often narrowly concerned with the direct and indirect uses of energy associated with housing or energy-related perceptions and beliefs (e.g., Barr & Gilg, 2006; Bin & Dowlatabadi, 2005). Mobility-related low-carbon lifestyles are commonly concerned with mode choices and EV purchasing. Contextual drivers (such as access to facilities and infrastructure) are more influential than in other domains (Etminani-Ghasrodshti et al., 2018), although some transport studies have a more cognitive emphasis (van Acker et al., 2016), and view lifestyle reflexively, as informing and conveying self-identity (Axsen et al., 2018).

3.2 | Approaches to low-carbon lifestyle research

Low-carbon research aligns with the patterned, cognitive, and reflexive views of lifestyle previously outlined (Section 2.3). The *patterned* view of low-carbon lifestyles is structured around behavioral matrices in specific domains.

This approach is used to identify lifestyle types (e.g., Le Gallic et al., 2018) and their interaction with situational factors such as local infrastructure (Markvica et al., 2020) and urban–rural differences (Ding et al., 2017). The *cognitive* perspective places more emphasis on values such as altruism and awareness of environmental problems to motivate and direct behaviors. This approach views low-carbon lifestyles as purposeful but grounded in consumption situations (Thøgersen, 2018), socio-economic factors (Valeri et al., 2016), and physical and social structures (Axson, 2017). A *reflexive* approach to low-carbon lifestyles emphasizes the ways in which pro-environmental behaviors are used to differentiate social status, and express and reinforce self-identity (Axson et al., 2016) and subjective wellbeing (Binder & Blankenberg, 2017). Viewed as an aspirational self-concept, lifestyles are used for example to identify pro-environmentalists or technological enthusiasts, promoting “home-front transitioners” as agents of change in developing self-sufficient lifestyles (Hagbert & Bradley, 2017), or as pioneers’ adopting electric vehicles (Axson et al., 2018).

3.3 | Measuring low-carbon lifestyle heterogeneity

Lifestyle groups in low-carbon studies are differentiated using a variety of characterizations and analytical techniques. Quantitative methods collect lifestyle data through secondary sources or surveys. For example, nationally representative household surveys are utilized to identify lifestyle patterns (e.g., Binder & Blankenberg, 2017; Le Gallic et al., 2018; Sanquist et al., 2012). Approaches for identifying and measuring lifestyles include cluster analysis (e.g., Axson et al., 2015), latent class analysis (e.g., Valeri et al., 2016), evidence-based expert opinion (e.g., Defra, 2011), and scenarios based on a set of coherent hypotheses (Millot et al., 2018). Lifestyles are also framed through more rudimentary categorization based on a single lifestyle construct (Hayles & Dean, 2015), self-identified lifestyles (Binder & Blankenberg, 2017), and those defined by motivational homogeneity, partitioning for example, members or non-members of environmental groups (Vita et al., 2020).

Qualitative approaches gather information through in-depth interviews or focus groups to develop evidence-based lifestyle typologies or narrative themes (Axson, 2017) appropriate to sustainable or “voluntary simplicity” lifestyles (Marchand & Walker, 2008). Motivational narratives are developed for context-specific lifestyles, such as social housing tenants (Hayles & Dean, 2015), or engagement in community sustainability projects (Middlemiss, 2011). Hagbert and Bradley (2017) identified an emerging theme of “home as a node of everyday life.” This reflexive approach viewed residents as agents of change and explored alternative conceptualizations of low-carbon living. Qualitatively exploring values and motivations as routes to engagement in low-carbon lifestyles can also be combined with quantitative surveys in a mixed methods approach (Howell, 2013).

In low-carbon research, lifestyle groups are characterized in five broad ways, according to: 1 pro-environmental engagement, 2 basic orientation, 3 perceptions of self and world, 4 consistency across domains, and 5 contextual drivers (Table 2). Lifestyle groups differentiated by *level of engagement* represent a scale of action from most to least committed (Binder & Blankenberg, 2017). Heterogeneity in engagement typologies is associated with contextual and cognitive factors such as social cohesion (Barr & Gilg, 2006), perceived lack of time (Tudor et al., 2016), and motivation (Middlemiss, 2011). These highlight the gap between intent and action, and inconsistencies across sites of action (Barr et al., 2011) (Box 2).

Lifestyle groups defined by *basic orientation* are interest focused, for example, toward environment and technology (Axson et al., 2016), communication and information (Markvica et al., 2020), family or career (Thøgersen, 2017a, 2017b), and leisure activities (Etminani-Ghasrodashtiet al., 2018). They tend to be domain-specific and reflect differing motivations, attitudes toward self-image, or contextual responsibilities.

Perceptions of self and world are cognitions which direct actions in a coherent sense across domains and can form the basis of distinct lifestyle groups. Inward-looking cognitions include self-satisfaction and wellbeing (Howell, 2013), whereas outward-looking cognitions include attitudes toward community resilience and environmental damage (Hagbert & Bradley, 2017). Using the dimension of active-passive responsibility for example, Hayles and Dean (2015) distinguish “active” (“willingness to take individual responsibility”) from “passive” (“environmental action is others’ responsibility”) lifestyle groups.

Internal consistency across behaviors, cognitions and contexts forms the basis of multi-domain lifestyle groups. These characterizations of lifestyle use observational evidence (Katz-Gerro et al., 2017) or a coherent set of prior expectations (Le Gallic et al., 2018). Cognitions represent an assimilation of preferences and attitudes across multiple settings (Millot et al., 2018), or differentiate the collective responses to a situation or crisis (Katz-Gerro et al., 2017).

TABLE 2 Characterizations of low-carbon lifestyles and analytical approaches.

Methods	Approach, lifestyle items	Dimensions	Characteristics of lifestyle heterogeneity
1 Level of engagement^a			
<ul style="list-style-type: none"> Cluster analysis. Qualitative engagement typologies. Participant identified lifestyle. Simple categorization. 	<ul style="list-style-type: none"> <i>Patterned</i>: environmental actions. <i>Cognitive</i>: intentional action in specific contexts. <i>Reflexive</i>: behaviors linked to life satisfaction and wellbeing. 	<ul style="list-style-type: none"> Commitment Engagement Motivation 	<ul style="list-style-type: none"> Values and attitudes: e.g., perceived lack of time, life-satisfaction. Context: social cohesiveness, demographic, socio-economic.
2 Basic orientation^b			
<ul style="list-style-type: none"> Cluster analysis. Latent class analysis. Factor analysis. Composite scores. Narrative themes. 	<ul style="list-style-type: none"> <i>Patterned</i>: social status, basic orientation, interests e.g., technology. <i>Cognitive</i>: motivated activities, routines, openness, concern. <i>Reflexive</i>: liminality, environmental concern. 	<ul style="list-style-type: none"> Communication/information Environmental Technological Family orientation Cost sensitivity 	<ul style="list-style-type: none"> “Highly informed,” “digital illiterates.” Motivations: self-identify, symbolism, liminality, environmental concern. Context: socio-demographic, country, built environment, functional cost.
3 Perceptions of self and world^c			
<ul style="list-style-type: none"> Latent class analysis. Stakeholder opinion. Simple categorization: e.g., group membership. Narrative themes e.g., “home front transitioners”. 	<ul style="list-style-type: none"> <i>Patterned</i>: environmental actions. <i>Cognitive</i>: motivated behaviors, perceptions of climate change, responsibility; policy preferences linked to awareness/intent. <i>Reflexive</i>: alternative identity of “going beyond eco-efficiency”. 	<ul style="list-style-type: none"> Active-passive responsibility. Policy instruments: cost, polluters pay. Private-public benefit: e.g., personal integrity vs. social justice. Self-motivation e.g., “positive greens”. 	<ul style="list-style-type: none"> Beliefs: altruism, biospherism. Environmental awareness/intent. Context: affordability, culture, resource access, structural constraints and opportunities.
4 Internal consistency^d			
<ul style="list-style-type: none"> Cluster analysis. Scenarios based on a set of coherent hypotheses. 	<ul style="list-style-type: none"> <i>Cognitive</i>: crisis response, passive, endurance, self-provision strategies. 	<ul style="list-style-type: none"> Production-consumption. Proactive-reactive. Contrasting scenarios: “digital individual,” “collective local”. 	<ul style="list-style-type: none"> Preferences and attitudes to work, cohabitation, social relations, mobility. Context: driven by socio-economic factors in economic crisis.
5 Context-driven lifestyles^e			
<ul style="list-style-type: none"> Survey Expert opinion Qualitative descriptions. Simple categorization: e.g., urban-rural. 	<ul style="list-style-type: none"> <i>Patterned</i>: energy use, household consumption patterns. 	<ul style="list-style-type: none"> Consumption benchmarks, e.g., “one-two-three-planet consumption”. Affluence: increasing opportunity and aspiration. Urban-rural. 	<ul style="list-style-type: none"> Key contextual drivers: corruption and literacy, levels of development, infrastructure, urban-rural differences, culture, socio-economic characteristics.

^aBarr & Gilg, 2006; Barr et al., 2011; Binder & Blankenberg, 2017; Tudor et al., 2016; Ding et al., 2017; Middlemiss, 2011;^bEtmiani-Ghasrodashti et al., 2018; Markvica et al., 2020; Thøgersen, 2017a, 2017b, 2018; Aksen et al., 2015, 2016, 2018;^cValeri et al., 2016; Defra, 2011; Howell, 2013; Hayles & Dean, 2015; Hagbert & Bradley, 2017; Vita et al., 2020; Marchand & Walker, 2008;^dLe Gallic et al., 2018; Katz-Gerro et al., 2017; Millot et al., 2018;^eMoore, 2015; Chen et al., 2019; George-Ufot et al., 2017; Hubacek et al., 2007

Context-driven characterizations of lifestyle, emphasize actions or consumption patterns embedded in social and physical environments (Hubacek et al., 2007; Moore, 2015). Case studies in emerging economies tend to place less emphasis on intentions, and more emphasis on socio-cultural or institutional factors which shape lifestyle, such as rural-to-urban migration (Chen et al., 2019), or literacy, theft, and corruption (George-Ufot et al., 2017).

BOX 2 Inconsistencies in low-carbon lifestyles

There are three potential sources of inconsistency in low-carbon lifestyles. First, the “knowledge-action” gap exemplifies the observation that environmental awareness does not necessarily lead to action (Darnton et al., 2011). Further, Longo et al. (2019) suggest that too much knowledge can become a source of dilemma that produces tensions and paralysis. Second, the “value-action” gap extends this notion to inconsistencies between values, goals, intent, and sustainable actions (Middlemiss, 2011). Binder and Blankenberg (2017) distinguish between perceived lifestyle (e.g., green self-image) and actual lifestyle (e.g., observed pro-environmental behavior). Third, lifestyle practices such as recycling may be inconsistent across settings, for example, at home and on holiday (Barr et al., 2011). From a reflexive view, consistency of low-carbon behaviors across contexts is related to environmental self-identity: “I am therefore I do” (Whitmarsh & O'Neill, 2010). However, contextual constraints such as inadequate “green infrastructure” in workplaces or holiday destinations drive inconsistency across settings (Whitmarsh et al., 2018).

3.4 | Lifestyle change for a low-carbon future

From a low-carbon perspective, lifestyle change involves a shift in everyday activities to reduce consumption (van Sluisveld et al., 2016) or adopt more sustainable practices (UNEP, 2011). This transition tends to be framed through a cognitive view of lifestyles which implies individual responsibility (Lorenzen, 2012), but can also be viewed reflexively, if changes in behavior fit self-identity aspirations or allow individuals to differentiate themselves from others (Haq et al., 2008). Low-carbon lifestyle change can also be driven by enabling (e.g., supportive grassroots initiatives) or constraining (e.g., resource inadequacies) contextual factors. The balance between lifestyle drivers is heterogeneous across lifestyle groups. For example, a lower resource use may arise not from environmental consciousness, but out of financial need, or social justice. Contextual factors associated with institutions and infrastructures can lock-in unsustainable behaviors and habits (Vita et al., 2019).

Lifestyle change interventions (Supplementary Information C) range from short-term targeted campaigns to educate and inform (Axon, 2017) to more radical changes in infrastructure, regulatory measures, and social structures (Le Gallic et al., 2018). Intervention approaches can be “traditional” or “alternative” (Verplanken & Roy, 2016). Traditional approaches frame lifestyles change as a process through which individuals become increasingly willing to act. Interventions seek to motivate self-determined action and responsibility toward the environment (Jensen, 2009) by shifting values and attitudes (Capstick et al., 2014). However, traditional approaches are often focused on behavioral change rather than the much broader integrative notion of lifestyle change (Capstick et al., 2014). Examples include behavior-change campaigns to reduce energy and water use (Hayles & Dean, 2015).

Alternative approaches include “habit discontinuities,” “choice architecture,” and “systemic” interventions. “Habit discontinuity” refers to shifting unconscious routines when they are disrupted by contextual changes such as house moves. “Choice architecture” refers to interventions that nudge people into a particular course of action by managing the information and influences in their choice environment (Verplanken & Roy, 2016). “Systemic interventions” emphasize wider socio-cultural contexts (Capstick et al., 2014), recognizing that intentions are strengthened by influential others (Jensen, 2009) and community action (Middlemiss, 2011). An example is the creation of “information bridges” between low-carbon lifestyle opinion leaders and groups of individuals (Verplanken & Roy, 2016). Alternative approaches imply a degree of autonomy from individual action, particularly if “agency” or responsibility is enshrined in government, industry, or infrastructure (Hayles & Dean, 2015).

3.5 | Challenges in low-carbon lifestyles research

There is no single accepted definition of a “low-carbon lifestyle.” Instead, conceptualizations of “green,” “pro-environmental,” and “sustainable” lifestyles show wide diversity and general lack of convergence. Some definitions emphasize purpose and intent, “making changes to one's lifestyle in order to reduce one's carbon footprint through intentionally adopting new technologies and/or changing behavior” (Howell, 2013). Other definitions emphasize

impacts or outcomes, such as “patterns of action and choices that are shaped by a group of factors capable of minimizing the wastage of natural resources, providing a better quality of life and do not jeopardize the needs of future generations” (George-Ufot et al., 2017). There is also no consensus about whether we have a single generalized lifestyle or whether lifestyles are specific to context and domain. This fragmented view has allowed lifestyle to erroneously become synonymous with behavior (Box 1) rather than a meta-concept integrating collective actions with broad-ranging cognitions and contexts.

There is also a tendency to narrowly focus on selected aspects of lifestyle, behaviors, settings, or motivations. While this is useful for understanding key drivers of lifestyle heterogeneity in specific situations, defined for example by “basic orientation”, it is less useful at appreciating the wider complexity of interacting and multiscale influences on lifestyle and lifestyle change. Lifestyles are a fusion of habitual patterned routines, purposeful directed behaviors, and aspiring self-concepts, molded by a montage of physical, socio-economic and cultural settings.

The low-carbon perspective observes many inconsistencies in the behaviors, cognitions and contexts which constitute lifestyles (Box 2). Inconsistencies have been identified between knowledge and action; between values and action; and across actions in different domains. These inconsistencies represent substantial challenges to understanding lifestyle change mechanisms and promoting transitions toward net zero.

Low-carbon lifestyle research has a variety of research needs transcending traditional disciplinary boundaries, and overlapping with environmental, geographical, sociological, and psychological fields of research. It may therefore be prudent to view lifestyle through a more interdisciplinary lens, that considers a wider variety of conceptualizations, analytical frameworks, tools, and sources of data. The following section draws on two additional perspectives on lifestyle to identify insights for low-carbon research.

4 | CROSS-DISCIPLINARY LIFESTYLE PERSPECTIVES

Perspectives on lifestyles are reviewed from two substantial and contrasting fields of research (1) public health and (2) marketing and consumer behavior. Considerations of potential value to low-carbon research are explored thematically. Sub-sections are organized around the cross-cutting research topics: key lifestyle concepts and applications, the analytical approaches to measuring lifestyles and lifestyle heterogeneity, and lifestyle change and intervention. This overview culminates in a cross-disciplinary comparison, building a basis for integrating insights from disparate fields of research that could contribute to low-carbon lifestyles research.

4.1 | Public health perspective

“Lifestyle is a way of living based on identifiable patterns of behavior which are determined by the interplay between an individual's personal characteristics, social interactions, and socioeconomic and environmental living conditions.” (World Health Organization, 1998, p. 16)

4.1.1 | Lifestyles: A set of modifiable risk factors with health outcomes

While lifestyle is a commonly used concept in public health literature it is rarely and explicitly defined. This World Health Organization definition acknowledges the three common lifestyle elements (behaviors, cognitions, and context) but public health studies generally focus on interactions between individual characteristics and behaviors linked to health outcomes. These are often interpreted as lifestyle-related or modifiable risk factors (Pekkanen & Pearce, 2001). Such risk-focused conceptualizations (Atzendorf et al., 2018) tend to be developed around specific situations and habitual unhealthy practices such as a sedentary lifestyle, poor diet, and substance abuse (Graham & White, 2016) associated with increased risk of chronic disease (e.g., Gray et al., 2020). Conversely, healthy lifestyles promoting regular physical exercise, calorie-controlled diets, avoidance of smoking and excess alcohol (Loef & Walach, 2012), are associated with improved disease outcomes (e.g., Adjelković et al., 2018). Underlying these behavior-defined lifestyles, is an implicit acknowledgement of the importance of cognitions and environmental factors (Boccia et al., 2019). Conceptual frameworks such as the “Health Promoting Lifestyle Profile” (HPLP) (Walker & Hill-Polerecky, 1996) and the “total health framework” (Bodai et al., 2018) include dimensions related to emotional resilience, health responsibility, and

interpersonal relations (Kuan et al., 2019). These cognitive processes direct health-related behaviors which in turn are influenced by broad societal factors such as deprivation (Foster et al., 2018) and polygenic variation (Lourida et al., 2019).

4.1.2 | Public health application of lifestyle concepts

In common with the low-carbon perspective, the concept of lifestyle is used descriptively, analytically, and instrumentally in public health research (Supplementary Information D). First, lifestyle concepts are applied *descriptively* to characterize lifestyle groups and heterogeneity across a set of lifestyle factors (Lourida et al., 2019). Second, lifestyle is used *analytically* as a marker of a specific health outcome such as cardiovascular disease or type 2 diabetes (Bodai et al., 2018). Descriptive and analytical applications tend to emphasize a “patterned approach” (Atzendorf et al., 2018; Foster et al., 2018), although some studies adopt a more “cognitive approach” (Boccia et al., 2019). Third, lifestyle is applied *instrumentally* as an intervention tool for managing chronic disease (Adjelković et al., 2018), or for promoting weight loss (Jamal et al., 2016; Middleton et al., 2013). Within “lifestyle medicine” there is growing evidence that healthy lifestyle choices can avert some chronic conditions (Faiola et al., 2019). These lifestyle management tools exemplify a “reflexive approach” in which motivational training, personalized goal setting, and developing inner resilience are the precursor to behavior modification.

4.1.3 | Measuring lifestyle heterogeneity in public health

Measurement frameworks in public health (Supplementary Information E) are structured around (i) specific health outcomes, (ii) common measurement tools, and (iii) integrative frameworks. In frameworks associated with particular health outcomes, lifestyle groups represent levels of healthiness (Foster et al., 2018) or heterogeneous combinations of risk factors (Loef & Walach, 2012). Common methods for identifying lifestyle groups include latent class analysis (Atzendorf et al., 2018), factor analysis (Kuan et al., 2019), and cluster analysis (Pícha & Navrátil, 2019). Instrumental framings, such as the HPLP measurement tool (Kuan et al., 2019), identify lifestyle groups for targeting health campaigns and measuring the effectiveness of intervention strategies. A third framing views lifestyle as a “bridging” concept between health and environmental sustainability, and a key driver of change (Graham & White, 2016). Such integrative frameworks presuppose that the challenges to human health and environmental health are intertwined. Lifestyle choices such as active mobility and a plant-based diet have mutual potential to improve environmental and public health resilience (Quam et al., 2017). Example frameworks include the Lifestyle of Health and Sustainability (LOHAS) which draws on perspectives from marketing, public health, and sustainability (Pícha & Navrátil, 2019), and the “Med Diet 4.0” framework which also incorporates a socio-cultural dimension (Dernini et al., 2017).

4.1.4 | Lifestyle changes to improve health

A prerequisite for developing public health intervention strategies (Supplementary Information F) is to understand the reasons for unhealthy lifestyle practices (Gray et al., 2020). The generic process is transferable across other lifestyle change interventions but has greater precedence in public health due to the perceived personal and public “cost.” Adjusting lifestyle practices to improve health involves a reassessment of values, attitudes, and goals, within the constraints of personal circumstances (Bodai et al., 2018). The motivation and ability to implement and sustain healthy lifestyle change is associated with cognitive processes, such as a sense of individual responsibility (Gray et al., 2020), empowerment (Faiola et al., 2019), and self-efficacy (Adjelković et al., 2018; Jamal et al., 2016). Cognitive and contextual barriers impede the process of lifestyle change. Cognitive barriers are associated with a lack of appreciation about health risks, complacency, and low self-esteem (Jamal et al., 2016). Contextual barriers are wide-ranging. For example, weight-loss intentions are thwarted by unaffordable healthy food choices and overexposure to unhealthy food advertising (Faiola et al., 2019). Physical activity goals are hampered by sedentary jobs, and limited access to exercise facilities (Middleton et al., 2013), while cultural and ethnic influences can further restrict lifestyle choices (ONS, 2017).

An initiation phase of health intervention (Adjelković et al., 2018) identifies short-term achievable goals and appropriate strategies (Middleton et al., 2013). Short-term strategies include counseling or coaching, public health campaigns,

and group intervention programs which harness the strength of connectedness and moral support (Jamal et al., 2016). Lifestyle recommendations are tailored for specific groups or personal circumstances (Quam et al., 2017). For example, personalized lifestyle medicine (Bodai et al., 2018; Gray et al., 2020; Minich & Bland, 2013) recognizes the complex interaction between lifestyle factors and individual characteristics such as genetic variants. Foremost among strategies for maintaining healthy lifestyles in the longer term are those related to self-regulatory skills (e.g., using technology apps), and building inner resilience to overcoming obstacles (Kuan et al., 2019). Contextual strategies include widening the social support network, for example, through buddy systems (Faiola et al., 2019; Middleton et al., 2013), the provision of supportive infrastructure (e.g., access to exercise facilities), and policies to address social inequalities linked to unhealthy lifestyles (Foster et al., 2018).

4.2 | Marketing perspective

“People are diverse, but their values, dreams, and attitudes place them in distinct lifestyle groups” (Mitchell, 1984)

4.2.1 | Lifestyles: “a way of life” that leads to choices

Marketing is a relatively new science, emerging during the 1950s as part of a growing consumer culture in the USA (Kotler & Armstrong, 2020). Lifestyle marketing is an established process that positions products or services offered in the market to targeted lifestyle groups (Sathish & Rajamohan, 2012). In marketing, lifestyle is simply defined as a “way of everyday life” that leads to “choices between goods and services,” and “expenditure” (Füller & Matzler, 2008; Srihadi et al., 2016). Cognitive and reflexive approaches in marketing frame consumers as complex decision makers whose choices reflect their values, intentions, and opinions (Kahle & Valette-Florence, 2012). These choices are shaped by organizational forces including social structures, ideology, socio-cultural differentiation, self-expression, and personal ideology (Cengiz & Torlak, 2021; Kuanr et al., 2020).

4.2.2 | Lifestyle marketing applications

Marketing is fundamentally a science of persuasion (Packard, 1957). Marketing practitioners use lifestyle concepts descriptively to characterize lifestyle segments, and analytically and reflexively to position products and services in a way that appeals to like-minded consumers (Kotler & Armstrong, 2020). An influential early proprietary lifestyle classification system, the Values and Lifestyle Survey (VALS), was developed in the 1970s by social scientist Mitchell (1984). It drew on early motivation theory (Maslow's hierarchy of needs, 1954) and the concept of social character (Riesman et al., 1950) to identify nine distinctive lifestyles. There are now many proprietary lifestyle classifications including the Sinus-Milieus, Euro-Socio Style, Roper Consumer Styles, and Mosaic lifestyle classifications (da Silva Wagner & Bug, 2015).

4.2.3 | Lifestyle segmentation in marketing

Measuring lifestyles from a marketing perspective (Supplementary Information G) consists of two key approaches: the AIO (Activities-Interests-Opinions) framework (Lazer, 1963), and the value systems approach. In the AIO framework, activities consist of manifest actions in work, leisure, community, and shopping contexts. Interests relate to objects, events or topics and include family, home, and achievement. Opinions include a range of beliefs relating to self, products, society, culture, and the future. Typical statements could include, “I drive my car daily” (activity), “I am not very interested in electric cars” (interest), and “climate change is not important” (opinion). The broad framing renders it generalizable across domains or countries. For example, AIO has been used to identify distinctive lifestyle clusters related to tourism in Jakarta (Srihadi et al., 2016), food in the USA (Hur et al., 2010), and consumption in India (Jain, 2019). In each of these studies, lifestyle groups are identified using cluster analysis of a multi-item survey. In contrast to the AIO approach, the value systems approach uses a set of predetermined value statements (adapted from the

Rokeach Value Survey; Rokeach, 1973) which distinguish between two dimensions—the inner and the outer self. Values are defined as guiding principles in people's lives' (Vyncke, 2002). VALS (Mitchell, 1984) and the List of Values (LOV; Kahle et al., 1986) are aligned with this approach. VALS has been used for example, to characterize lifestyle types that are dominant in “Gen Y,” a generation cohort found to be generally supportive of socially responsible companies (Valentine & Powers, 2013) and respond well to energy-efficient innovations and “green” lifestyles (Williams et al., 2010).

Hybrid approaches across these frameworks are not uncommon. For example, Vyncke (2002) developed the V-L-A lifestyle typology. This takes a value systems approach (V) adding further constructs related to life visions (L), aesthetic styles (A), media preferences, product attributes and demographics. A range of other frameworks align variously with the AIO and value system approaches. The food-related lifestyle framework views lifestyle as a mixture of habits, conventional ways of doing things, and reasoned behavior (Nie & Zepeda, 2011) and is based on the simple attitude, behavior, context (ABC) model (Guagnano et al., 1995). The voluntary simplicity lifestyle scale was developed by Leonard-Barton (1981). It relates to an anti-materialistic lifestyle ideology defined as lifestyle choice that involves “minimizing consumption” and “divorcing oneself from material possessions” (Cengiz & Torlak, 2021). Empirical studies have tested and identified variants of this scale to measure low-consumptive lifestyles (e.g., Rich et al., 2020).

Some studies identifying lifestyle clusters in marketing are fully transparent and offer key insights into measurement frameworks, analytical approaches, and detailed findings (e.g., Nie & Zepeda, 2011). Studies which use proprietary frameworks (Supplementary Information H) provide a potentially important contribution through their focus on socio-cultural lifestyle dimensions which include constructs such as inequality and “milieu”—“*sub-cultural units within a society which group together people with a similar view of life and way of life*” (Neubert, 2019). However, proprietary frameworks are criticized for their lack of transparency, and in applying diverse definitions and models they tend to identify different sets of lifestyle groups.

4.2.4 | Monitoring shifts in consumer lifestyles

Marketing research monitors changes in social attitudes, values, and the wider market dynamics driving consumer behavior (McGregor, 2000). Lifestyle change is observed through shifts in consumption patterns, related to broad changes in cognitive and contextual drivers. Contextual changes include structural flexibility in people's working and private lives, erosion of family structure, digitalization of day-to-day living, and polarization of wealth (Edelenbosch et al., 2022). Cognitive changes involve attitudes, values, beliefs or ideology which challenge the dominant consumer culture (Kuanr et al., 2020). For example, “voluntary simplicity” defines consumers who align their lifestyles to an anti-materialistic philosophy (Cengiz & Torlak, 2021). “Green” consumers are viewed as environmentally responsible consumers who do not jeopardize the future wellbeing of this planet (Paavola, 2001). Consumer choices reflect deeply held values, cultural norms, and beliefs. Marketing lifestyles characterize individuals but are also socially motivated. Starr (2009) argues that people adopt lifestyles common to their social group and then modify them in standard ways as they age or follow lifecycle norms. Stages in the consumer lifecycle may be more or less receptive to low-carbon ways of thinking and acting. Social marketing (Kotler & Zaltman, 1971) applies marketing techniques to a social idea or benefit (such as healthy or sustainable lifestyles). Interventions can occur at the individual level but are more likely to be successful where the motivation for change arises from the community, or where promising social groups act as role models or opinion leaders (Jensen, 2009). Seegebarth et al. (2016) suggests this approach can help redirect the consumer from “socially responsible” product choices to challenge the necessity of consumption itself.

4.3 | Cross-disciplinary comparison of lifestyle research

Disparate fields of research share key conceptual strands of lifestyle. This review distinguishes three common integrating lifestyle elements—behaviors, cognitions, and context. Lifestyles are characterized by complex interactions between behaviors and cognitions. These are shaped by contextual drivers which can be social (e.g., cultural norms, interpersonal relationships) or material (e.g., assets, infrastructure). Lifestyles are observable through patterns of behavior across multiple domains of everyday life and measured at the individual and household level. Lifestyles are highly heterogeneous within any given population. Segmentation and grouping techniques are commonly used to identify lifestyle clusters, often using nationally representative surveys. These are analyzed to consider how differentiated

TABLE 3 Comparison of lifestyle concepts and approaches.

Research themes	Low carbon perspective	Public health perspective	Marketing perspective
What constitutes lifestyle?	<i>Diverse definitions.</i> Tendency to fragment lifestyle concepts. Behavioral domain-specific frameworks are narrowly focused on limited sets of conditions. “Lifestyle” becomes closer in meaning to “behavior;” inconsistencies in lifestyles are accentuated.	<i>Rarely defined explicitly.</i> Risk-focused conceptualization—developed around sets of modifiable behaviors linked to health outcomes. Implicit is the importance of cognitions, e.g., emotional resilience, broader societal and environmental influences.	<i>Simple definitions</i> —involve ways of living that guide consumer purchases. Consumers are framed as complex decision makers—choices are cognitively driven but shaped by market forces and socio-economic structures. Assume consistency in lifestyle.
How are lifestyle concepts applied?	<i>Descriptively:</i> to characterize lifestyle groups e.g., by practices, ideology, interests. <i>Analytically:</i> lifestyle concepts are used to explain energy, travel, and food-related outcomes. <i>Instrumentally:</i> to develop lifestyle-differentiated strategies for mitigating carbon emissions.	<i>Descriptively:</i> to characterize healthy/unhealthy lifestyles. <i>Analytically:</i> lifestyle is used as a marker for a specific disease, health outcome. <i>Instrumentally:</i> as an intervention tool for preventing or managing disease.	<i>Descriptively:</i> characterize lifestyle market segments. <i>Analytically:</i> to understand the relationship between lifestyle types and products/services. <i>Instrumentally:</i> use lifestyle classification systems to position products to appeal to like-minded consumers.
What approaches are used to measure lifestyle heterogeneity?	Characterizations emphasize different aspects of lifestyle. 1. “ <i>Level of engagement</i> ” linked to motivation highlight inconsistencies. 2. “ <i>Basic orientation</i> ”—narrowly defined and domain specific. 3. “ <i>Perceptions of self and world</i> ”—coherent lifestyle narrative across domains. 4. “ <i>Internal consistency</i> ” cognitively differentiated across multiple domains. 5. “ <i>Context-driven</i> ” emphasize a patterned approach.	Analytical frameworks vary by health application: 1. <i>Specific disease outcomes:</i> analytical approach to identify lifestyle-related risk factors. 2. <i>Common measurement tools:</i> an instrumental approach for targeting lifestyle groups and assessing intervention effectiveness. 3. <i>Integrative frameworks</i> —view lifestyle as a bridging concept between health and sustainability.	Segmenting consumers into lifestyle types: 1. AIO – activities, interests, opinions. Broad framing, generalizable across domains/countries. 2. Value Systems: predetermined value statements that distinguish between the “inner” and “outer self”. 3. Hybrid framings, such as V-L-A (Values, Life visions, Aesthetic styles). 4. Ideological framings: identify e.g., Voluntary Simplicity or Socially Responsible lifestyles.
How can lifestyle change be promoted through public policy intervention? <i>Understanding drivers and mechanisms of change.</i>	Framings <i>Cognitive:</i> individual responsibility. <i>Reflexive:</i> to fit self-identify aspirations. Drivers: <i>Enablers:</i> grassroots initiatives, environment/social consciousness, supportive infrastructure	Framings <i>Cognitive:</i> individual responsibility, reassessment of values/attitudes. <i>Reflexive:</i> goal setting, developing inner resilience Drivers: <i>Enablers:</i> self-management apps, support groups, healthy choice infrastructure.	Framings <i>Cognitive:</i> Responsible consumption—reflect deeply held values. <i>Reflexive:</i> aligning lifestyles with an ideology that challenges the dominant culture. Drivers: <i>Enablers:</i> structural flexibility; market forces; role models.

TABLE 3 (Continued)

Research themes	Low carbon perspective	Public health perspective	Marketing perspective
	<i>Constraints:</i> financial need, lack of resources, infrastructure inadequacies.	<i>Constraints:</i> complacency, low self-esteem; unaware of health risks; unaffordable healthy options; sedentary jobs; lack access to facilities.	<i>Constraints:</i> ingrained social and cultural norms; polarization of wealth.
	Interventions: Short-term targeted campaigns; long-term changes in infrastructure, social structures, regulatory measures.	Interventions: Personalized or targeted to at-risk lifestyle groups with social support strategies	Interventions: Socially responsible marketing; generational marketing to target more receptive lifestyle cohorts or opinion leaders.

intervention could benefit individuals and society. In practice, the ability to change lifestyle is constrained or enabled by available resources, socio-cultural norms, and access to enabling infrastructure. Across disciplines, empirical work on lifestyles is concentrated in the Global North. Available studies in emerging economies place more emphasis on demographic and institutional drivers rather than cognitive lifestyle elements such as values and goals.

Despite similarities in the cross-disciplinary conceptualization of lifestyles there remain important differences in emphasis, assumptions, and terminology (Table 3). Public health and marketing research tend to find or assume consistency in lifestyles, while focusing on a limited set of activities (e.g., in health, diet, alcohol consumption, exercise, and smoking). In contrast, narrowly-defined context or domain-specific frameworks in low-carbon research highlight possible inconsistencies across domains or between cognitions and behaviors (e.g., value-action gap). This differs from public health and marketing as it fragments integrative lifestyle concepts into specific behavioral settings. There are also differences in terminology and communication. Public health and low-carbon research construct normative assumptions about “more” or “less” desirable lifestyles defined against public policy objectives. Public health research uses the language of “risk factors” associated with “worse” health outcomes. Marketing research adopts more neutral terminology recognizing either personal or social outcomes and makes nonpartisan assumptions about the social desirability of different lifestyles.

Cross-disciplinary divergence is further evidenced in the application of lifestyle concepts and the approach to measuring lifestyle heterogeneity. Public health and marketing research use lifestyle as a unifying, integrative concept across the domains of everyday life, whereas low-carbon research tends to apply concepts to specific behavioral domains, as in “energy-related lifestyle” or “travel-related lifestyle.” In contrast, cognitively or reflexively differentiated characterizations demonstrate greater coherency and consistency across multiple domains. These differences in approach are reflected in framing and understanding the drivers of lifestyle change. In marketing, there are characteristically more studies that adopt a reflexive approach influenced by social sciences’ critical introspection. Marketing research emphasize identity and social positioning, whereas public health and low-carbon research place greater emphasis on motivated reasoning for lifestyle change, highlighting the importance of values, problem awareness, and self-efficacy. Research in public health and marketing promote lifestyle change toward “better” private outcomes (personal health, material wellbeing), whereas low-carbon research promote lifestyle change toward “better” societal outcomes (which may involve a loss of personal wellbeing). Integrative frameworks advancing healthy and sustainable lifestyles present a potential means of eroding this distinction.

5 | INSIGHTS FOR LOW-CARBON RESEARCH

Building on the cross-disciplinary review, messages are collated across differing areas of lifestyle research to draw insights to meet the challenges of low-carbon lifestyle research. These are developed around the key themes: conceptualization and frameworks, analytical approaches for identifying lifestyle heterogeneity, and lifestyle change intervention.

5.1 | Conceptual insights

Challenged by disjointed views of lifestyle and context-grounded activities, wider cross-disciplinary interpretations of lifestyles provide useful conceptual insights for low-carbon research. For example, the risk-centered conceptualization of lifestyles in public health incorporate broader cognitions such as purpose in life, emotional resilience, and social connectedness, in addition to knowledge and risk awareness (Bodai et al., 2018). Widening the conceptual focus to incorporate personal development and environmental relationships, draws important commonality between health and low-carbon lifestyles and enriches both perspectives (Graham & White, 2016). Integrative frameworks, such as LOHAS, recognize that health and environmental sustainability are strongly intertwined, and bolster public support for climate policies (Dasandi et al., 2022). Low-carbon lifestyles research could profitably consider a wider palette of cognitions and related behaviors to deepen understanding of lifestyle that contributes to shared perspectives.

In public health, there is a tendency for lifestyle practices associated with poor health outcomes to cluster (Atzendorf et al., 2018; Gray et al., 2020). This propensity reflects the collective influence of shared cognitive (e.g., low self-efficacy) and contextual (e.g., socioeconomic deprivation) drivers, in shaping behaviors. In low-carbon lifestyle research, it is uncertain whether “good” or “bad” environmental practices cluster. Consistency between behaviors under similar cognitive and contextual conditions could be explored more systematically. A further consideration is the potential utility of repurposing terms and concepts from other lifestyle perspectives. For example, public health research emphasizes “wellbeing” outcomes of healthy lifestyles (Boccia et al., 2019). “Wellbeing” can also serve as a useful concept in low-carbon lifestyle research (Vita et al., 2020), linking to living standards and welfare, but also to identity and self-consistency. Foundational wellbeing concepts make salient that low-carbon lifestyle change is not driven purely by motivated reasoning about the collective desirability of emission reductions, but also by the positioning of low-carbon lifestyles within people's understanding of what constitutes a “good” or desirable life.

5.2 | Analytical insights

Low-carbon lifestyle research could benefit from a wider analytical lens that captures broad assemblages of lifestyle variables, explores links with established datasets, and applies commonly used analytical frameworks to identify lifestyle heterogeneity. Public health and marketing research draw upon wide-ranging behavioral, psychological, sociodemographic, and clinical data, to characterize lifestyle heterogeneity. Low-carbon lifestyle research can lack the necessary cognitive and contextual information to understand lifestyle as an integrative concept distinct from behavior. Given strong interrelationships between environmental sustainability and health, resources with a long track record in monitoring health-related lifestyles could also prove useful for low-carbon research. As an example, the UK Biobank holds in-depth data on half a million people for monitoring health and wellbeing over time. It has been extensively mined to identify lifestyles associated with poor health outcomes (e.g., Foster et al., 2018; Lourida et al., 2019) and could be extended to “poor” environmental outcomes. Similarly, national statistical agencies hold panel data for tracking lifestyle change with respect to health (e.g., ONS, 2017) which lend themselves to comparative analysis in a low-carbon context.

A challenge common across lifestyle research is linking national-level behavioral heterogeneity to cognitions. Additional opportunities to connect datasets to relevant cognitions should be explored. For example, the World Values Survey (Haerpfer et al., 2022) measures values and beliefs across more than 100 countries. Aligned with the value systems approach used in marketing, this provides a readily available resource for tracking cognitive dimensions to lifestyles in space and time. Appropriating cognitive frameworks (commonly applied in marketing) to low-carbon research emphasizes that what people do, and how concerned they are about climate change, characterizes lifestyle in a general sense across domains. A simple approach, for example, could consider two dimensions (activity, concern) and map lifestyle typologies in each quadrant of a two-by-two matrix. Following precedent in marketing, this could be implemented using a cross-national multi-item survey, with cluster analysis to identify unique lifestyle groups. The complexities of lifestyle practices guided by deeper value systems and shaped by circumstance can never be fully captured by quantitative survey research but should accompany more qualitative evidence gathered through focus groups or in-depth interview (e.g., Howell, 2013; Shirani et al., 2015).

5.3 | Intervention insights

Design and evaluation of low-carbon interventions should more clearly recognize the limits to intention-driven lifestyle change. Intent and impact link before and after situations but may conceal inconsistencies, and motivation should not be used to infer action and vice versa (Longo et al., 2019). For example, a climate scientist with strong environmental intentions may yet accumulate a large carbon footprint from frequent long-distance flights to participate in climate negotiations and conferences. Similarly, a small carbon footprint household may stem from fuel poverty necessity. Tensions between lifestyle elements and outcomes of interest reinforce that lifestyle is contextual and reflexively constructed. There is no single unifying explanation for low-impact lifestyle change (Hagbert & Bradley, 2017). Perspectives are characterized by outcomes of private or societal interest from which “best practices” can be drawn. Public health research for example, recognizes that broad societal drivers like deprivation operate alongside cognitions to constrain and shape lifestyles (Foster et al., 2018).

There is potential value in applying terminology and tools from other research perspectives to emphasize the private and public desirability of low-carbon lifestyle change. This approach could express frequent flyer membership and urban SUV ownership as “risk factors” associated with high-carbon lifestyles. Such vocabulary validates the legitimacy of public policy intervention to reduce the collective risk of climate change by promoting lifestyle change. Analytical tools for tracking lifestyle change could be evaluated for low-carbon application. For example, standardized scales for measuring voluntary simplicity in marketing (Leonard-Barton, 1981) align well with a renewed interest in “sufficiency” within sustainable consumption research. Generational stratification is a tried and tested approach in marketing which has application to low-carbon lifestyle intervention. Lifestyle types are differentiated according to the relationship between generational cohorts and environmental orientation (Nadanyiova et al., 2020). This has implications for public policy intervention, as strategies can be generationally targeted as part of socially responsible communication to influence attitudes and behaviors toward low-carbon consumption (Kamenidou et al., 2019). Enabling motivational apps are increasingly used to support self-regulation in health management (Faiola et al., 2019). Similar approaches could evaluate the effectiveness of carbon-footprint tracking apps for low-carbon lifestyle typologies.

Intervention strategies that target specific desirable practices, at-risk groups, and opportunistic circumstance may be most effective. Public health interventions target explicit behaviors such as regular physical exercise or calorie-controlled nutritious diets, while focusing on a broad set of related cognitive and contextual factors (Supplementary Information F). In contrast, traditional low-carbon approaches tend to dilute clear causal relationships between relevant drivers and desired behavioral outcomes instead of embracing a wider integrative notion of lifestyle change.

Lifestyle change approaches in public health stress the importance of self-efficacy and awareness of individual obstacles. Correspondingly, intervention programs tend to be strongly inter-personal and involve dedicated health-care interaction (Adželković et al., 2018). An analogous approach to low-carbon lifestyle change would work directly with “at-risk” groups of high-emitters (e.g., frequent flyers), although cooperation may be limited if the personal benefits of change remain uncertain or even negative. Strategies that focus on specific circumstances, life stages or influencers are tactics employed in public health (Dernini et al., 2017) and marketing (Starr, 2009). For example, targeting young people in social settings helps embed healthy practices in early life. Similar strategies to identify key social levers such as youth agency and celebrity endorsement (Pickering et al., 2021) could steer low-carbon lifestyle intervention. Research could assess more integrated approaches, combining multi-dimensional strategies tailored to specific circumstances, and approaches to educate and communicate climate change risk alongside incentives to encourage low-impact behaviors.

5.4 | Limitations and directions for future research

5.4.1 | Limitations

This overview does not attempt a holistic treatment of, and systematic review of “lifestyles.” Instead, it aligns with a semi-systematic approach designed for synthesizing literature from diverse disciplines (Snyder, 2019) using a thematic framework. The focus is on three disciplinary perspectives: low carbon (a shorthand covering sustainable, “green,” pro-environmental, anti-consumption), public health, and marketing lifestyles. A comprehensive literature search revealed that these are the most prolific fields of lifestyles research. There are other areas of research which may contribute further to this debate. For example, leisure and tourism lifestyles intersect with low-carbon lifestyles in sustainable choices

for holiday destination, modes of transportation, tourist and leisure activities (Henderson & Bialeschki, 2005; Stebbins, 2017). As previously noted, there is synergy between healthy active lifestyles and active mobility (walking, cycling) in low-carbon lifestyles. This overview is biased toward the Global North, reflecting a lower level of “accessible” lifestyle literature from the Global South, particularly in English language publications.

5.4.2 | Directions for future research

This cross-disciplinary review identifies promising areas of development for low-carbon lifestyles research.

1. Conceptually, low-carbon research could fruitfully benefit from a more comprehensive perspective that considers interrelationships between behaviors and an expanded set of cognitive and contextual factors. Current fragmented approaches, with a narrow focus on specific situations or a limited set of lifestyle elements have blurred the distinction between behaviors as discrete actions, and lifestyle as a unifying meta-concept. Widening the research lens to consider cross-disciplinary or integrative interpretations of lifestyle may improve understanding of identified inconsistencies.
2. In the application of lifestyle concepts, descriptive approaches that more clearly link lifestyle heterogeneity to the broader contextual landscape would help identify the most important factors shaping lifestyles within and between countries. The question of whether “at-risk” practices show consistent patterns under similar conditions should be explored systematically.
3. From a low-carbon perspective, lifestyle analysis is complex and requires a multi-dimensional and cross-disciplinary approach that integrates methods, tools, and analytical frameworks. Integrative frameworks could build on the synergy between research fields such as public health and the environment, link established (open) datasets, and consider common foundational lifestyle concepts that counter interconnected public challenges.
4. The acceptance of normative assumptions constructed about “more desirable” lifestyles is challenging when private benefit remains ambiguous. Low-carbon research could explore the appropriation of terminology and concepts used in other disciplines. For example, “wellbeing” can be viewed as a bridging concept that integrates welfare, identity, and self-consistency, linking the collective and individual desirability of a low-carbon lifestyle, and legitimizing public policy interventions. Decarbonizing lifestyles may involve an element of personal sacrifice but could be counter-balanced by emphasizing rewards to personal wellbeing.
5. Interventions should be designed to act on cognitive, behavioral, and contextual influences in an integrated fashion that recognizes the limits to intention-driven lifestyle change. Their effectiveness should be evaluated against public policy objectives for climate change mitigation. The most promising approaches are multi-dimensional, tailored to at-risk groups or opportunistic circumstance, promote societal and individual benefits, act on social levers to empower individuals, and create enabling and equitable physical and social structures to support net-zero lifestyles.

6 | CONCLUSIONS

A wide variety of empirical and theoretical lifestyle studies are reviewed across disparate research fields to provide meaningful insights for low-carbon lifestyles research. The review is structured around four research questions: What constitutes lifestyle? How are lifestyle concepts applied in research? What approaches are used to measure lifestyles and lifestyle heterogeneity? How can lifestyle change be promoted through public policy intervention? Despite differing research perspectives, common themes and key messages emerge. Lifestyle can be viewed as a unifying meta-concept comprised of three common integrating elements: behaviors, cognitions, and context. Across disciplines the concept of lifestyle is applied descriptively, analytically, and instrumentally to meet distinct research needs and with varying assumptions and emphasis. Lifestyle analysis is multi-dimensional and complex and demands an integration of data and tools across several disciplines. Analytical frameworks reflect differing emphasis on lifestyle elements and their relationships. While lifestyles are observable in patterns of behavior, inconsistencies between intent and action reinforce that lifestyles are contextual and reflexively constructed, and highly heterogeneous within and between countries. Lifestyle change arises from a dynamic and complex interaction between cognitions, behavior, and context. While intentions and impact link before and after situations, cognitively-driven outcomes are molded by a broad-set of contextual factors. The cross-disciplinary perspective has much to offer research on lifestyle change for a low-carbon future.

There is growing awareness that low-carbon initiatives and marketing can bring mutual benefits. Further, the promotion of low-carbon lifestyle as more about personal wellbeing and life satisfaction, and less about self-denial and forfeiture could have important leverage in the net-zero agenda. Lifestyles are an amalgam of patterned or habitual behaviors, purposeful actions, and aspirational self-concepts, responding to and shaped by a mosaic of physical, socio-economic, and cultural settings. A deeper appreciation of the wide-ranging and integrating influences on lifestyles may hold the key for low-carbon research to capitalize on these cross-cutting themes and insights.

AUTHOR CONTRIBUTIONS

Maureen D. Agnew: Data curation (equal); formal analysis (supporting); investigation (equal); methodology (supporting); writing – original draft (equal); writing – review and editing (equal). **Hazel Pettifor:** Data curation (supporting); formal analysis (equal); investigation (equal); methodology (equal); project administration (equal); supervision (equal); writing – original draft (equal); writing – review and editing (equal). **Charlie Wilson:** Conceptualization (lead); data curation (equal); formal analysis (supporting); funding acquisition (lead); investigation (lead); methodology (lead); project administration (lead); supervision (lead); writing – original draft (equal); writing – review and editing (supporting).

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Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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FURTHER READING

Brunso, K., Scholderer, J., & Grunert, K. G. (2004). Closing the gap between values and behavior—A means–end theory of lifestyle. *Journal of Business Research*, 57(6), 665–670. [https://doi.org/10.1016/S0148-2963\(02\)00310-7](https://doi.org/10.1016/S0148-2963(02)00310-7)

Jansen, S. J. (2011). Lifestyle method. In S. J. Jansen, H. C. Coolen, & R. W. Goetgeluk (Eds.), *The measurement and analysis of housing preference and choice* (pp. 177–202). Springer Nature. <https://doi.org/10.1007/978-90-481-8894-9>

Viana, M. L. (2016). Individuals' changes in their lifestyle to build a sustainable environment. *Environmental Skeptics and Critics*, 5(4), 79–85.

REFERENCES

Adjelković, M., Mitrović, M., Nikolić, I., Jovanović, D. B., Zelen, I., Zarić, M., Canović, P., Kovacević, A., & Janković, S. (2018). Older hypertensive patients' adherence to healthy lifestyle behaviors. *Serbian Journal of Experimental and Clinical Research*, 19(1), 51–56. <https://doi.org/10.1515/sjecr-2016-0083>

Agnew, M., Pettifor, H., & Wilson, C. (2021). *Lifestyles in public health, marketing and pro-environmental research*. Report on methodologies for taking lifestyle changes into account in IAMs. Retrieved from: https://www.navigate-h2020.eu/wp-content/uploads/2021/08/NAVIGATE-Deliverable-3.4_incl-appendices.pdf

- Atzendorf, J., Apfelbacher, C., de Matos, E. G., Kraus, L., & Piontek, D. (2018). Patterns of multiple lifestyle risk factors and their link to mental health in the German adult population: A cross-sectional study. *BMJ Open*, 8(12), e022184. <https://doi.org/10.1136/bmjopen-2018-022184>
- Axon, S. (2017). "Keeping the ball rolling": Addressing the enablers of, and barriers to, sustainable lifestyles. *Journal of Environmental Psychology*, 52, 11–25. <https://doi.org/10.1016/j.jenvp.2017.05.002>
- Axsen, J., Bailey, J., & Castro, M. A. (2015). Preference and lifestyle heterogeneity among potential plug-in electric vehicle buyers. *Energy Economics*, 50, 190–201. <https://doi.org/10.1016/j.eneco.2015.05.003>
- Axsen, J., Cairns, J., Dusyk, N., & Goldberg, S. (2018). What drives the pioneers? Applying lifestyle theory to early electric vehicle buyers in Canada. *Energy Research & Social Science*, 44, 17–30. <https://doi.org/10.1016/j.erss.2018.04.015>
- Axsen, J., Goldberg, S., & Bailey, J. (2016). How might potential future plug-in electric vehicle buyers differ from current "Pioneer" owners? *Transportation Research Part D: Transport and Environment*, 47, 357–370. <https://doi.org/10.1016/j.trd.2016.05.015>
- Axsen, J., & Kurani, K. S. (2012). Interpersonal influence within car buyers' social networks: Applying five perspectives to plug-in hybrid vehicle drivers. *Environment and Planning A*, 44(5), 1047–1065. <https://doi.org/10.1068/a43221x>
- Axsen, J., TyreeHageman, J., & Lentz, A. (2012). Lifestyle practices and pro-environmental technology. *Ecological Economics*, 82, 64–74. <https://doi.org/10.1016/j.ecolecon.2012.07.013>
- Barr, S., & Gilg, A. (2006). Sustainable lifestyles: Framing environmental action in and around the home. *Geoforum*, 37(6), 906–920. <https://doi.org/10.1016/j.geoforum.2006.05.002>
- Barr, S., Shaw, G., & Coles, T. (2011). Sustainable lifestyles: Sites, practices, and policy. *Environment and Planning A*, 43(12), 3011–3029. <https://doi.org/10.1068/a43529>
- Bin, S., & Dowlatabadi, H. (2005). Consumer lifestyle approach to US energy use and the related CO₂ emissions. *Energy Policy*, 33(2), 197–208. [https://doi.org/10.1016/S0301-4215\(03\)00210-6](https://doi.org/10.1016/S0301-4215(03)00210-6)
- Binder, M., & Blankenberg, A. K. (2017). Green lifestyles and subjective well-being: More about self-image than actual behavior? *Journal of Economic Behavior and Organization*, 137, 304–323. <https://doi.org/10.1016/j.jebo.2017.03.009>
- Boccia, G., Aliberti, S. M., Cavallo, P., Capunzo, M., Brongo, S., Giralaldi, L., & Santoro, E. (2019). Relationship between health, lifestyle, psychosocial factors and academic performance: A cross-sectional study at the University of Salerno. *Epidemiology Biostatistics and Public Health*, 16(2), 1–6. <https://doi.org/10.2427/12938>
- Bodai, B. I., Nakata, T. E., Wong, W. T., Clark, D. R., Lawenda, S., Tsou, C., Liu, R., Shiue, L., Cooper, N., Rehbein, M., Ha, B. P., McKeirnan, A., Misquitta, R., Vij, P., Klonecke, A., Mejia, C. S., Dionysian, E., Hashmi, S., Greger, M., ... Campbell, T. M. (2018). Lifestyle medicine: A brief review of its dramatic impact on health and survival. *The Permanente Journal*, 22(1), 17–25. <https://doi.org/10.7812/TPP/17-025>
- Capstick, S., Lorenzoni, I., Corner, A., & Whitmarsh, L. (2014). Prospects for radical emissions reduction through behavior and lifestyle change. *Carbon Management*, 5(4), 429–445. <https://doi.org/10.1080/17583004.2015.1020011>
- Cengiz, H., & Torlak, Ö. (2021). Investigating the demographics and behavioural characteristics associated with voluntary simplicity lifestyles in a developed and a developing country: A comparison between US and Turkish simplifiers. *Global Business Review*, 22(1), 119–131. <https://doi.org/10.1177/0972150918807084>
- Chen, C., Liu, G., Meng, F., Hao, Y., Zhang, Y., & Casazza, M. (2019). Energy consumption and carbon footprint accounting of urban and rural residents in Beijing through consumer lifestyle approach. *Ecological Indicators*, 98, 575–586. <https://doi.org/10.1016/j.ecolind.2018.11.049>
- Costa, L., Moreau, V., Thurm, B., Yu, W., Clora, F., Baudry, G., Warmuth, H., Hezel, B., Seydewitz, T., Ranković, A., Kelly, G., & Kropp, J. P. (2021). The decarbonisation of Europe powered by lifestyle changes. *Environmental Research Letters*, 16(4), 044057. <https://doi.org/10.1088/1748-9326/abe890>
- Creutzig, F., Roy, J., Lamb, W. F., Azevedo, I. M., Bruine de Bruin, W., Dalkmann, H., Edelenbosch, O. Y., Geels, F. W., Grubler, A., Hepburn, C., Hertwich, E. G., Khosla, R., Mattauch, L., Minx, J. C., Ramakrishnan, A., Rao, N. D., Steinberger, J. K., Tavoni, M., Ürges-Vorsatz, D., & Weber, E. U. (2018). Towards demand-side solutions for mitigating climate change. *Nature Climate Change*, 8(4), 260–263. <https://doi.org/10.1038/s41558-018-0121-1>
- da Silva Wagner, T., & Bug, P. (2015). *Actual consumer lifestyle segmentations-a European perspective*. Reutlingen University Retrieved from: <https://publikationen.reutlingen-university.de/frontdoor/deliver/index/docId/1369/file/1369.pdf>
- Darnton, A., Verplanken, B., White, P., & Whitmarsh, L. (2011). *Habits, routines and sustainable lifestyles: A summary report to the Department for Environment, Food and Rural Affairs*. AD Research & Analysis Retrieved from: <https://www.adranda.co.uk/single-post/2016/02/02/habits-routines-and-sustainable-lifestyles-summary-report>
- Dasandi, N., Graham, H., Hudson, D., Jankin, S., van Heerde-Hudson, J., & Watts, N. (2022). Positive, global, and health or environment framing bolsters public support for climate policies. *Communications Earth & Environment*, 3(1), 1–9. <https://doi.org/10.1038/s43247-022-00571-x>
- Defra. (2008). *A framework for pro-environmental Behaviours*. Department of the Environment Food and Rural Affairs (DEFRA) Retrieved from: https://webarchive.nationalarchives.gov.uk/ukgwa/20130123185759mp_/http://archive.defra.gov.uk/evidence/social/behaviour/documents/behaviours-jan08-report.pdf
- Defra. (2011). *The sustainable lifestyles framework*. Department of the Environment Food and Rural Affairs (DEFRA) Retrieved from: https://webarchive.nationalarchives.gov.uk/ukgwa/20130123185759mp_/http://archive.defra.gov.uk/environment/economy/documents/sustainable-life-framework.pdf
- Dernini, S., Berry, E. M., Serra-Majem, L., la Vecchia, C., Capone, R., Medina, F. X., Aranceta-Bartrina, J., Belahsen, R., Burlingame, B., Calabrese, G., Corella, D., Donini, L. M., Lairon, D., Meybeck, A., Pekcan, A. G., Piscopo, S., Yngve, A., & Trichopoulou, A. (2017). Med

- diet 4.0: The Mediterranean diet with four sustainable benefits. *Public Health Nutrition*, 20(7), 1322–1330. <https://doi.org/10.1017/S1368980016003177>
- Ding, Q., Cai, W., Wang, C., & Sanwal, M. (2017). The relationships between household consumption activities and energy consumption in China—An input-output analysis from the lifestyle perspective. *Applied Energy*, 207, 520–532. <https://doi.org/10.1016/j.apenergy.2017.06.003>
- Edelenbosch, O. Y., Miu, L., Sachs, J., Hawkes, A., & Tavoni, M. (2022). Translating observed household energy behavior to agent-based technology choices in an integrated modeling framework. *Iscience*, 25(3), 103905. <https://doi.org/10.1016/j.isci.2022.103905>
- Etminani-Ghasrodashti, R., Paydar, M., & Ardeshiri, A. (2018). Recreational cycling in a coastal city: Investigating lifestyle, attitudes and built environment in cycling behavior. *Sustainable Cities and Society*, 39, 241–251. <https://doi.org/10.1016/j.scs.2018.02.037>
- Faiola, A., Papautsky, E. L., & Isola, M. (2019). Empowering the aging with mobile health: A mHealth framework for supporting sustainable healthy lifestyle behavior. *Current Problems in Cardiology*, 44(8), 232–266. <https://doi.org/10.1016/j.cpcardiol.2018.06.003>
- Foster, H. M., Celis-Morales, C. A., Nicholl, B. I., Petermann-Rocha, F., Pell, J. P., Gill, J. M., O'Donnell, C. A., & Mair, F. S. (2018). The effect of socioeconomic deprivation on the association between an extended measurement of unhealthy lifestyle factors and health outcomes: A prospective analysis of the UK biobank cohort. *The Lancet Public Health*, 3(12), e576–e585. [https://doi.org/10.1016/S2468-2667\(18\)30200-7](https://doi.org/10.1016/S2468-2667(18)30200-7)
- Frenkel, A., Bendit, E., & Kaplan, S. (2013). The linkage between the lifestyle of knowledge-workers and their intra-metropolitan residential choice: A clustering approach based on self-organizing maps. *Computers, Environment and Urban Systems*, 39, 151–161. <https://doi.org/10.1016/j.compenvurbsys.2012.09.001>
- Füller, J., & Matzler, K. (2008). Customer delight and market segmentation: An application of the three-factor theory of customer satisfaction on life style groups. *Tourism Management*, 29(1), 116–126. <https://doi.org/10.1016/j.tourman.2007.03.021>
- George-Ufot, G., Qu, Y., & Orji, I. J. (2017). Sustainable lifestyle factors influencing industries' electric consumption patterns using fuzzy logic and DEMATEL: The Nigerian perspective. *Journal of Cleaner Production*, 162, 624–634. <https://doi.org/10.1016/j.jclepro.2017.05.188>
- Giddens, A. (1991). *Modernity and self-identity: Self and Society in the Late Modern age*. Stanford University Press.
- Gilbert, N. (2008). *Researching social life* (3rd ed.). Sage Publications.
- Graham, H., & White, P. C. L. (2016). Social determinants and lifestyles: Integrating environmental and public health perspectives. *Public Health*, 141, 270–278. <https://doi.org/10.1016/j.puhe.2016.09.019>
- Gray, I. D., Kross, A. R., Renfrew, M. E., & Wood, P. (2020). Precision medicine in lifestyle medicine: The way of the future? *American Journal of Lifestyle Medicine*, 14(2), 169–186. <https://doi.org/10.1177/1559827619834527>
- Grunert, K. G. (1993). Towards a concept of food-related life style. *Appetite*, 21(2), 151–155. [https://doi.org/10.1016/0195-6663\(93\)90007-7](https://doi.org/10.1016/0195-6663(93)90007-7)
- Guagnano, G. A., Stern, P. C., & Dietz, T. (1995). Influences on attitude-behavior relationships: A natural experiment with curbside recycling. *Environment and Behavior*, 27(5), 699–718. <https://doi.org/10.1177/0013916595275005>
- Haerpfer, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., & Diez-Medrano, J. (2022). In M. Lagos, P. Norris, E. Ponarin, & B. Puranen (Eds.), *World values survey: Round seven-country-pooled datafile version 5.0*. JD Systems Institute & WWSA Secretariat. <https://doi.org/10.14281/18241.20>
- Hagbert, P., & Bradley, K. (2017). Transitions on the home front: A story of sustainable living beyond eco-efficiency. *Energy Research & Social Science*, 31, 240–248. <https://doi.org/10.1016/j.erss.2017.05.002>
- Haq, G., Whitelegg, J., Cinderby, S., & Owen, A. (2008). The use of personalised social marketing to foster voluntary behavioural change for sustainable travel and lifestyles. *Local Environment*, 13(7), 549–569. <https://doi.org/10.1080/13549830802260092>
- Hayles, C. S., & Dean, M. (2015). Social housing tenants, climate change and sustainable living: A study of awareness, behaviours and willingness to adapt. *Sustainable Cities and Society*, 17, 35–45. <https://doi.org/10.1016/j.scs.2015.03.007>
- Hedlund-de Witt, A. (2012). Exploring worldviews and their relationships to sustainable lifestyles: Towards a new conceptual and methodological approach. *Ecological Economics*, 84, 74–83. <https://doi.org/10.1016/j.ecolecon.2012.09.009>
- Henderson, K. A., & Bialeschki, M. D. (2005). Leisure and active lifestyles: Research reflections. *Leisure Sciences*, 27(5), 355–365. <https://doi.org/10.1080/01490400500225559>
- Hicks, C. C., Fitzsimmons, C., & Polunin, N. V. (2010). Interdisciplinarity in the environmental sciences: Barriers and frontiers. *Environmental Conservation*, 37(4), 464–477. <https://doi.org/10.1017/S0376892910000822>
- Howell, R. A. (2013). It's not (just) “the environment, stupid!” values, motivations, and routes to engagement of people adopting lower-carbon lifestyles. *Global Environmental Change*, 23(1), 281–290. <https://doi.org/10.1016/j.gloenvcha.2012.10.015>
- Hubacek, K., Guan, D., & Barua, A. (2007). Changing lifestyles and consumption patterns in developing countries: A scenario analysis for China and India. *Futures*, 39(9), 1084–1096. <https://doi.org/10.1016/j.futures.2007.03.010>
- Hur, W. M., Kim, H. K., & Park, J. (2010). Food-and situation-specific lifestyle segmentation of kitchen appliance market. *British Food Journal*, 112(3), 294–305. <https://doi.org/10.1108/00070701011029165>
- IPCC (2022a). WGII technical summary. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate change 2022: Impacts, adaptation and vulnerability contribution of working group II to the sixth assessment report of the intergovernmental panel on climate change (IPCC)* (pp. 37–118). Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg2/chapter/summary-for-policymakers/>
- IPCC (2022b). Climate change 2022: Impacts, adaptation and vulnerability. contribution of working group II to the sixth assessment report of the intergovernmental panel on climate change (IPCC). In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck,

- A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *WGII summary for policymakers* (pp. 3–33). Cambridge University Press. <https://doi.org/10.1017/9781009325844.001>
- Jain, R. (2019). Analysis of Indian consumers' behaviour using lifestyle segmentation. *Journal of Business Thought*, 10, 57–65. <https://doi.org/10.18311/jbt/2019/23573>
- Jamal, S. N., Moy, F. M., Azmi Mohamed, M. N., & Mukhtar, F. (2016). Effectiveness of a Group Support Lifestyle Modification (GSLiM) programme among obese adults in workplace: A randomised controlled trial. *PLoS One*, 11(8), e0160343. <https://doi.org/10.1371/journal.pone.0160343>
- Jensen, M. (2009). Lifestyle: Suggesting mechanisms and a definition from a cognitive science perspective. *Environment, Development and Sustainability*, 11(1), 215–228. <https://doi.org/10.1007/s10668-007-9105-4>
- Kahle, L. R., Beatty, S. E., & Homer, P. (1986). Alternative measurement approaches to consumer values: The list of values (LOV) and values and life style (VALS). *Journal of Consumer Research*, 13(3), 405–409. <https://doi.org/10.1086/209079>
- Kahle, L. R., & Valette-Florence, P. (2012). *Marketplace lifestyles in an age of social media: Theory and methods*. Routledge. <https://doi.org/10.4324/9781315702520>
- Kamenidou, I. C., Mamalis, S. A., Pavlidis, S., & Bara, E. Z. G. (2019). Segmenting the generation Z cohort university students based on sustainable food consumption behavior: A preliminary study. *Sustainability*, 11(3), 837. <https://doi.org/10.3390/su11030837>
- Katz-Gerro, T., Cvetičanin, P., & Leguina, A. (2017). Consumption and social change: Sustainable lifestyles in times of economic crisis. In M. Cohen, H. S. Brown, & P. J. Vergragt (Eds.), *Social change and the coming of post-consumer society* (pp. 95–124). Routledge. <https://doi.org/10.4324/9781315630168>
- Kotler, P., & Armstrong, G. (2020). *Principles of marketing*. Pearson Education.
- Kotler, P., & Zaltman, G. (1971). Social marketing: An approach to planned social change. *Journal of Marketing*, 35(3), 3–12. <https://doi.org/10.1177/002224297103500302>
- Kuan, G., Kueh, Y. C., Abdullah, N., & Tai, E. L. M. (2019). Psychometric properties of the health-promoting lifestyle profile II: Cross-cultural validation of the Malay language version. *BMC Public Health*, 19(1), 1–10. <https://doi.org/10.1186/s12889-019-7109-2>
- Kuanr, A., Pradhan, D., & Chaudhuri, H. R. (2020). I (do not) consume; therefore, I am: Investigating materialism and voluntary simplicity through a moderated mediation model. *Psychology & Marketing*, 37(2), 260–277. <https://doi.org/10.1002/mar.21305>
- Lanzendorf, M. (2002). Mobility styles and travel behavior: Application of a lifestyle approach to leisure travel. *Transportation Research Record*, 1807(1), 163–173. <https://doi.org/10.3141/1807-20>
- Lawson, R., & Todd, S. (2002). Consumer lifestyles: A social stratification perspective. *Marketing Theory*, 2(3), 295–307. <https://doi.org/10.1177/1470593102002003278>
- Lazer, W. (1963). Lifestyle concepts and marketing. In S. A. Greyser (Ed.), *Toward scientific marketing* (pp. 243–252). American Marketing Association.
- Le Gallic, T., Assoumou, E., & Maïzi, N. (2018). Investigating long-term lifestyle changes: A methodological proposal based on a statistical model. *Sustainable Development*, 26(2), 159–171. <https://doi.org/10.1002/sd.1727>
- Leonard-Barton, D. (1981). Voluntary simplicity lifestyles and energy conservation. *Journal of Consumer Research*, 8(3), 243–252. <https://doi.org/10.1086/208861>
- Loef, M., & Walach, H. (2012). The combined effects of healthy lifestyle behaviors on all cause mortality: A systematic review and meta-analysis. *Preventive Medicine*, 5(3), 163–170. <https://doi.org/10.1016/j.ypmed.2012.06.017>
- Longo, C., Shankar, A., & Nuttall, P. (2019). “It's not easy living a sustainable lifestyle”: How greater knowledge leads to dilemmas, tensions and paralysis. *Journal of Business Ethics*, 154(3), 759–779. <https://doi.org/10.1007/s10551-016-3422-1>
- Lorenzen, J. A. (2012). Going green: The process of lifestyle change. *Sociological Forum*, 27(1), 94–116. <https://doi.org/10.1111/j.1573-7861.2011.01303.x>
- Lourida, I., Hannon, E., Littlejohns, T. J., Langa, K. M., Hyppönen, E., Kuźma, E., & Llewellyn, D. J. (2019). Association of lifestyle and genetic risk with incidence of dementia. *Journal of the American Medical Association*, 322(5), 430–437. <https://doi.org/10.1001/jama.2019.9879>
- Lubowiecki-Vikuk, A., Dąbrowska, A., & Machnik, A. (2021). Responsible consumer and lifestyle: Sustainability insights. *Sustainable Production and Consumption*, 25, 91–101. <https://doi.org/10.1016/j.spc.2020.08.007>
- Marchand, A., & Walker, S. (2008). Product development and responsible consumption: Designing alternatives for sustainable lifestyles. *Journal of Cleaner Production*, 16(11), 1163–1169. <https://doi.org/10.1016/j.jclepro.2007.08.012>
- Markvica, K., Millonig, A., Haufe, N., & Leodolter, M. (2020). Promoting active mobility behavior by addressing information target groups: The case of Austria. *Journal of Transport Geography*, 83, 102664. <https://doi.org/10.1016/j.jtrangeo.2020.102664>
- McGregor, S. L. (2000). Using social and consumer values to predict market-place behaviour: Questions of congruency. *Journal of Consumer Studies & Home Economics*, 24(2), 94–103. <https://doi.org/10.1046/j.1365-2737.2000.00152.x>
- Middlemiss, L. (2011). The effects of community-based action for sustainability on participants' lifestyles. *Local Environment*, 16(3), 265–280. <https://doi.org/10.1080/13549839.2011.566850>
- Middleton, K. R., Anton, S. D., & Perri, M. G. (2013). Long-term adherence to health behavior change. *American Journal of Lifestyle Medicine*, 7(6), 395–404. <https://doi.org/10.1177/1559827613488867>
- Millot, A., Doudard, R., Gallic, T. L., Briens, F., Assoumou, E., & Maïzi, N. (2018). France 2072: Lifestyles at the core of carbon neutrality challenges. In G. Giannakidis, K. Karlsson, M. Labriet, & B. Gallachóir (Eds.), *Limiting global warming to well below 2°C: Energy system modelling and policy development* (pp. 173–190). Lecture Notes in Energy, vol 64.). Springer. https://doi.org/10.1007/978-3-319-74424-7_11

- Minich, D. M., & Bland, J. S. (2013). Personalized lifestyle medicine: Relevance for nutrition and lifestyle recommendations. *The Scientific World Journal*, 2013, 129841. <https://doi.org/10.1155/2013/129841>
- Mitchell, A. (1984). *Nine American lifestyles: Values and societal change*. Warner Books.
- Moore, J. (2015). Ecological footprints and lifestyle archetypes: Exploring dimensions of consumption and the transformation needed to achieve urban sustainability. *Sustainability*, 7(4), 4747–4763. <https://doi.org/10.3390/su7044747>
- Mowen, J. C., & Minor, M. (1998). *Consumer behaviour*. Prentice-Hall.
- Nadanyiova, M., Gajanova, L., & Majerova, J. (2020). Green marketing as a part of the socially responsible brand's communication from the aspect of generational stratification. *Sustainability*, 12(17), 7118. <https://doi.org/10.3390/su12177118>
- Neubert, D. (2019). Extended concepts of social positioning. In *Inequality, socio-cultural differentiation and social structures in Africa* (pp. 279–327). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-17111-7_7
- Nie, C., & Zepeda, L. (2011). Lifestyle segmentation of US food shoppers to examine organic and local food consumption. *Appetite*, 57(1), 28–37. <https://doi.org/10.1016/j.appet.2011.03.012>
- Niles, M. T., & Lubell, M. (2012). Integrative frontiers in environmental policy theory and research. *Policy Studies Journal*, 40, 41–64. <https://doi.org/10.1111/j.1541-0072.2012.00445.x>
- Office for National Statistics (ONS). (2017). *An overview of lifestyles and wider characteristics linked to healthy life expectancy in England*. Office for National Statistics (ONS) Retrieved from: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/articles/healthrelatedlifestylesandwidercharacteristicsofpeoplelivinginareaswiththehighestorlowesthealthylife/june2017>
- Paavola, J. (2001). Towards sustainable consumption: Economics and ethical concerns for the environment in consumer choices. *Review of Social Economy*, 59(2), 227–248. <https://doi.org/10.1080/00346760110036175>
- Packard, V. (1957). *The Hidden Persuaders*. Longman.
- Pekkanen, J., & Pearce, N. (2001). Environmental epidemiology: Challenges and opportunities. *Environmental Health Perspectives*, 109(1), 1–5. <https://doi.org/10.1289/ehp.011091>
- Picha, K., & Navrátil, J. (2019). The factors of lifestyle of health and sustainability influencing pro-environmental buying behaviour. *Journal of Cleaner Production*, 234, 233–241. <https://doi.org/10.1016/j.jclepro.2019.06.072>
- Pickering, G. J., Schoen, K., & Botta, M. (2021). Lifestyle decisions and climate mitigation: Current action and behavioural intent of youth. *Mitigation and Adaptation Strategies for Global Change*, 26(6), 1–27. <https://doi.org/10.1007/s11027-021-09963-4>
- Porter, A., Cohen, A., David Roessner, J., & Perreault, M. (2007). Measuring researcher interdisciplinarity. *Scientometrics*, 72(1), 117–147. <https://doi.org/10.1007/s11192-007-1700-5>
- Porter, A., & Rafols, I. (2009). Is science becoming more interdisciplinary? Measuring and mapping six research fields over time. *Scientometrics*, 81(3), 719–745. <https://doi.org/10.1007/s11192-008-2197-2>
- Quam, V. G., Rocklöv, J., Quam, M. B., & Lucas, R. A. (2017). Assessing greenhouse gas emissions and health co-benefits: A structured review of lifestyle-related climate change mitigation strategies. *International Journal of Environmental Research and Public Health*, 14(5), 468. <https://doi.org/10.3390/ijerph14050468>
- Rich, S. A., Wright, B. J., & Bennett, P. C. (2020). Development of the voluntary simplicity engagement scale: Measuring low-consumption lifestyles. *Journal of Consumer Policy*, 43(2), 295–313. <https://doi.org/10.1007/s10603-018-9400-5>
- Riesman, D., Glazer, N., & Denney, R. (1950). *The lonely crowd. A study of the changing American character*. Yale University Press.
- Rokeach, M. (1973). *The nature of human values*. The Free Press.
- Sanquist, T. F., Orr, H., Shui, B., & Bittner, A. C. (2012). Lifestyle factors in US residential electricity consumption. *Energy Policy*, 42, 354–364. <https://doi.org/10.1016/j.enpol.2011.11.092>
- Sathish, S., & Rajamohan, A. (2012). Consumer behaviour and lifestyle marketing. *International Journal of Marketing, Financial Services & Management Research*, 1(10), 152–166.
- Schipper, L., Bartlett, S., Hawk, D., & Vine, E. (1989). Linking life-styles and energy use: A matter of time? *Annual Review of Energy*, 14(1), 271–320. <https://doi.org/10.1146/annurev.eg.14.110189.001421>
- Seegebarth, B., Peyer, M., Balderjahn, I., & Wiedmann, K. P. (2016). The sustainability roots of anticonsumption lifestyles and initial insights regarding their effects on consumers' well-being. *Journal of Consumer Affairs*, 50(1), 68–99. <https://doi.org/10.1111/joca.12077>
- Shirani, F., Butler, C., Henwood, K., Parkhill, K., & Pidgeon, N. (2015). 'I'm not a tree hugger, I'm just like you': Changing perceptions of sustainable lifestyles. *Environmental Politics*, 24(1), 57–74. <https://doi.org/10.1080/09644016.2014.959247>
- Shove, E., & Spurling, N. (2013). Sustainable practices: Social theory and climate change. In *Sustainable Practices* (pp. 1–13). Routledge. <https://doi.org/10.4324/9780203071052>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Srihadi, T. F., Sukandar, D., & Soehadi, A. W. (2016). Segmentation of the tourism market for Jakarta: Classification of foreign visitors' life-style typologies. *Tourism Management Perspectives*, 19, 32–39. <https://doi.org/10.1016/j.tmp.2016.03.005>
- Starr, M. A. (2009). Lifestyle conformity and lifecycle saving: A Veblenian perspective. *Cambridge Journal of Economics*, 33(1), 25–49. <https://doi.org/10.1093/cje/ben020>
- Stebbins, R. A. (2017). Leisure lifestyle. In *Leisure's legacy. Challenging the common sense view of free time* (pp. 173–191). Springer. https://doi.org/10.1007/978-3-319-59794-2_12
- Thøgersen, J. (2017a). Housing-related lifestyle and energy saving: A multi-level approach. *Energy Policy*, 102, 73–87. <https://doi.org/10.1016/j.enpol.2016.12.015>

- Thøgersen, J. (2017b). Sustainable food consumption in the nexus between national context and private lifestyle: A multi-level study. *Food Quality and Preference*, 55, 16–25. <https://doi.org/10.1016/j.foodqual.2016.08.006>
- Thøgersen, J. (2018). Transport-related lifestyle and environmentally-friendly travel mode choices: A multi-level approach. *Transportation Research Part A: Policy and Practice*, 107, 166–186. <https://doi.org/10.1016/j.tra.2017.11.015>
- Tudor, T., Holt, C., Freestone, N., Bhaskaran, G., Suresh, M., & Banga, S. (2016). Sustainability practices and lifestyle groups in a rapidly emerging economy: A case study of Chennai, India. *International Journal of Environment and Sustainable Development*, 15(4), 337–351. <https://doi.org/10.1504/IJESD.2016.079475>
- UNEP. (2011). *Visions for change: Recommendations for effective policies on sustainable lifestyles*. United Nations Environment Programme, 83 pp. <https://wedocs.unep.org/20.500.11822/8009>
- Valentine, D. B., & Powers, T. L. (2013). Generation Y values and lifestyle segments. *Journal of Consumer Marketing*, 30(7), 597–606. <https://doi.org/10.1108/JCM-07-2013-0650>
- Valeri, E., Gatta, V., Teobaldelli, D., Polidori, P., Barratt, B., Fuzzi, S., Kazepov, Y., Sergi, V., Williams, M., & Maione, M. (2016). Modelling individual preferences for environmental policy drivers: Empirical evidence of Italian lifestyle changes using a latent class approach. *Environmental Science & Policy*, 65, 65–74. <https://doi.org/10.1016/j.envsci.2016.05.019>
- van Acker, V., Goodwin, P., & Witlox, F. (2016). Key research themes on travel behavior, lifestyle, and sustainable urban mobility. *International Journal of Sustainable Transportation*, 10(1), 25–32. <https://doi.org/10.1080/15568318.2013.821003>
- van den Berg, N. J., Hof, A. F., Akenji, L., Edelenbosch, O. Y., van Sluisveld, M. A., Timmer, V. J., & van Vuuren, D. P. (2019). Improved modelling of lifestyle changes in integrated assessment models: Cross-disciplinary insights from methodologies and theories. *Energy Strategy Reviews*, 26, 100420. <https://doi.org/10.1016/j.esr.2019.100420>
- van Sluisveld, M. A., Martínez, S. H., Daioglou, V., & van Vuuren, D. P. (2016). Exploring the implications of lifestyle change in 2°C mitigation scenarios using the IMAGE integrated assessment model. *Technological Forecasting and Social Change*, 102, 309–319. <https://doi.org/10.1016/j.techfore.2015.08.013>
- Verplanken, B., & Roy, D. (2016). Empowering interventions to promote sustainable lifestyles: Testing the habit discontinuity hypothesis in a field experiment. *Journal of Environmental Psychology*, 45, 127–134. <https://doi.org/10.1016/j.jenvp.2015.11.008>
- Vita, G., Ivanova, D., Dumitru, A., García-Mira, R., Carrus, G., Stadler, K., Krause, K., Wood, R., & Hertwich, E. G. (2020). Happier with less? Members of European environmental grassroots initiatives reconcile lower carbon footprints with higher life satisfaction and income increases. *Energy Research & Social Science*, 60, 101329. <https://doi.org/10.1016/j.erss.2019.101329>
- Vita, G., Lundström, J. R., Hertwich, E. G., Quist, J., Ivanova, D., Stadler, K., & Wood, R. (2019). The environmental impact of green consumption and sufficiency lifestyles scenarios in Europe: Connecting local sustainability visions to global consequences. *Ecological Economics*, 164, 106322. <https://doi.org/10.1016/j.ecolecon.2019.05.002>
- Vyncke, P. (2002). Lifestyle segmentation: From attitudes, interests and opinions, to values, aesthetic styles, life visions and media preferences. *European Journal of Communication*, 17(4), 445–463. <https://doi.org/10.1177/02673231020170040301>
- Wagner, C. S., Roessner, J. D., Bobb, K., Klein, J. T., Boyack, K. W., Keyton, J., Rafols, I., & Börner, K. (2011). Approaches to understanding and measuring interdisciplinary scientific research (IDR): A review of the literature. *Journal of Informetrics*, 5(1), 14–26. <https://doi.org/10.1016/j.joi.2010.06.004>
- Walker, S. N., & Hill-Polerecky, D. M. (1996). *Psychometric evaluation of the health-promoting lifestyle profile II* (Unpublished manuscript) (Vol. 13, pp. 120–126). University of Nebraska Medical Center.
- Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology*, 30(3), 305–314. <https://doi.org/10.1016/j.jenvp.2010.01.003>
- Whitmarsh, L. E., Haggard, P., & Thomas, M. (2018). Waste reduction behaviors at home, at work, and on holiday: What influences behavioral consistency across contexts? *Frontiers in Psychology*, 9, 2447. <https://doi.org/10.3389/fpsyg.2018.02447>
- Williams, K. C., Page, R. A., Petrosky, A. R., & Hernandez, E. H. (2010). Multi-generational marketing: Descriptions, characteristics, lifestyles, and attitudes. *The Journal of Applied Business and Economics*, 11(2), 21–36.
- World Health Organization. (1998). *Health promotion glossary*. World Health Organization (WHO) Retrieved from: <https://www.who.int/publications/i/item/WHO-HPR-HEP-98.1>
- Zhang, H., Shi, X., Wang, K., Xue, J., Song, L., & Sun, Y. (2020). Intertemporal lifestyle changes and carbon emissions: Evidence from a China household survey. *Energy Economics*, 86, 104655. <https://doi.org/10.1016/j.eneco.2019.104655>

SUPPORTING INFORMATION

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