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Review

Shifting consumer behavior to address climate change

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Abstract

We review recent articles on how to change consumer behavior in ways that improve climate impacts, with a special focus on those articles using experimental interventions and measuring actual behaviors. We organize the findings using the SHIFT framework to categorize behavior change strategies based on five psychological factors: Social influence (e.g. communicating that others are changing to plant-based diets doubled meatless lunch orders), Habit (e.g. consumer collaboration to establish new, value-based practices helped to reduce food waste), Individual self (e.g. when women made up half of the group, 51% more trees were conserved), Feelings and cognition (e.g. anticipated guilt reduced choice of unethical attributes in made-to-order products), and Tangibility (e.g. concrete representations of the future of recycled products improved recycling behavior).

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Consumer behavior, Climate change, Behavior change, Sustainability, Social influence, Habit, Individual self, Feelings, Tangibility.

Introduction

Many companies including Microsoft, Nike, Coca-Cola, and Walmart have committed to reducing carbon emissions or even becoming carbon negative in the next 5–20 years [1]. Although, of course, we will need action from business and government to combat climate change, consumers themselves will also be an important part of solving a problem as complex and significant as climate change. Such commitments from businesses and governments will only be successful if they come hand in hand with behavior change from consumers themselves. Indeed, the world's wealthiest individuals currently contribute the most to global carbon dioxide emissions, and the majority of this comes from the consumption of goods and services [2]. Individuals can do their part by engaging in climate-friendly consumer behavior, which we define as consumer choices and actions that result in the mitigation of greenhouse gases being released into the atmosphere or the reduction in negative impacts of climate change. Organizations can make use of recent research that has sought to identify drivers of sustainable consumer behavior change to design products, services, and communication strategies that will be most effective in encouraging climate-friendly consumer behavior [3–5].

This work reviews articles published since 2018 in the domain of climate-friendly consumer behavior change, focusing on research that includes experimental interventions and measures actual behaviors. We organize recent research using the SHIFT framework to categorize behavior change strategies based on five psychological factors that have been found to successfully improve pro-environmental consumer behavior: Social influence, Habit, Individual self, Feelings and cognition, and Tangibility [4]. Although each factor has its own specific influence on behavior, a recent meta-analysis of more than a hundred studies revealed that norms (Social influence), negative affect (Feelings and cognition), and self-efficacy (Individual self) were most strongly associated with climate-friendly behavior change [6].

In this article, we examine the full consumption cycle starting with consumption choices, followed by usage and disposal decisions. At each stage of the consumption process, consumers make decisions and engage in actions that can be more or less climate friendly based on each of the SHIFT factors (see Figure 1 for examples). Consumers purchase different products, determine how much to use them, and, eventually, dispose of them when they are no longer needed.

Social influence

The attitudes, expectations, and actions of others play a large role in how consumers behave [7,8]. When it

Figure 1

	Stage of the Consumption Cycle		
	Choice	**Usage**	**Disposal**
Social influence	People follow advocates who themselves engage in non-normative behavior, such as putting up solar panels (Kraft-Todd et al., 2019).	Dynamic norms emphasizing how others are adopting new behaviors reduce water usage (Sparkman et al., 2020).	Mothers' waste avoidance and recycling behaviors tend to encourage their children (Evans et al., 2018).
Habit	New sustainable habits often involve new product choices (Perera et al., 2018).	Defaults help lower meat consumption, and feedback reduces energy use (Wynes et al., 2018).	People form new habits such as food redistribution to reduce food waste (Gollnhofer 2019).
Individual self	Consumers' desire to view themselves positively leads to forgetting unethical attributes more than ethical ones (Reczek et al., 2018)	Higher status is associated with lower energy conservation (Wang et al., 2019).	Reminders of the past identity of repurposed products make consumers feel special and increases demand (Kamleitner et al., 2019).
Feelings and cognition	People's intuition that ethical products are less strong reduces choice share (Mai et al., 2019).	Using green products leads to greater warm glow than using traditional products (Tezer & Bodur 2020).	Lower anticipated guilt increases demand for made-to-order products, made from recycled materials (Paharia 2020).
Tangibility	Detailed, concrete information about sustainability can increase choice of eco-friendly products (Reczek et al., 2020).	Experiencing heatwaves can lead to perceptions of energy scarcity (Larcom et al., 2015).	Concrete representations of what products can become encourage recycling (Winterich et al., 2019).

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comes to climate-friendly behaviors, social influence can stem from different sources including family [9], organizers or advocates [10], social media influencers [11], and others in a community [12]. For instance, one study found that influencers vouching for the credibility of eco-friendly pesticides led to greater uptake by farmers [11]. A challenge with encouraging climate-friendly behaviors using social influence is that they are often not the norm. However, policymakers, marketers, and psychologists can harness the power of social influence, even when a behavior is non-normative. One way is to communicate how a behavior is becoming more prevalent over time, often referred to as dynamic norms (e.g. how more people are starting to limit their meat consumption) [12–14]. This can be effective because people tend to conform to what they expect future norms to be. Furthermore, dynamic norms allow people to believe that personal change is possible and that it is important to others and compatible with their identity. A second way is to emphasize joining others to change the norm as people are motivated to work together toward a common goal [13]. As climate change is a collective action problem, learning that others are taking action can motivate consumers to do so as well [15]. A third way is to involve advocates who themselves engage in the action in promoting it as they have a stronger influence on others. A large-scale field study of 1.4 million residents across 58 US towns found that community organizers who had installed solar panels themselves were able to recruit 62.8% more households than those who had not [10].

Habit

Habits are automatic, relatively uncontrolled behaviors that are easy for people to perform [16], and building climate-friendly consumption habits can be instrumental in guiding people's actions [17,18]. Defaults for lower meat consumption, incentives for driving less, and feedback on energy use can be particularly effective at reinforcing and solidifying climate-friendly habits, saving 51, 571, and 149 kg of CO_2, respectively, per individual or household [5].

When existing habits are unsustainable, the goal for behavior change is to develop new, more climate-friendly habits. Although there is a lack of recent experimental research on this topic, ethnographic work reveals important insights. Creating a new sustainable practice usually involves acquiring information, procuring necessary items, and sometimes even producing such items oneself [19]. For instance, new environmentalists may start with gaining knowledge about how products are produced, followed by nontraditional transactions to obtain items, such as swapping clothes or collecting unsold food, and later may knit one's own clothes or grow one's own food. Consumers can also work to create new, complementary consumption practices that align more clearly with their internal values, such as food redistribution to combat food waste [20].

Individual self

People are motivated to maintain a positive view of themselves. This motivation to see oneself as a good, virtuous person can be partially fulfilled through consuming climate-friendly products, particularly when one plays a role in its production [21]. Reading about the stories of repurchased products can help consumers feel unique and special when they purchase them, contributing positively to their self-concept [22]. When consumers feel a sense of ownership over public goods such as parks and lakes, they are more likely to put in effort to take care of their surroundings [23]. Moreover, consuming green products that are seen as virtuous can lead to positive spillover effects, wherein one climate-friendly product purchase leads to other prosocial behaviors, such as donations [24]. This motivation for positive self-perceptions can lead consumers to remember positive ethical information about a product, but to conveniently forget unethical information that might cast the self in a negative light [25].

Individual differences are also important in climate-friendly decision-making. Those who have a communal orientation, such as those with a feminine gender identity [26–28], a greater other orientation [29], liberal political identity [30], or low power [31], are more likely to take climate-friendly actions. One way to influence climate action is by including communally oriented members through conscious group formation; for instance, collective village groups in Indonesia, Peru, and Tanzania conserved about 51% more trees by ensuring that half of the group members were women [32]. In contrast, having an agentic orientation and valuing status and prestige are negatively related to climate-friendly behavior [29,31,33]. However, intergroup contact can change this; individuals from a majority group (e.g. local students or whites), who had greater positive intergroup contact (e.g. with international students or ethnic minorities), were more concerned about the environment and more likely to engage in climate-friendly actions [34].

Feelings and cognition

Consumers are influenced both by feelings and intuition(sometimes called 'system 1') and by more deliberative cognitions (often called 'system 2') [35,36]. When designing interventions, it is important to consider both pathways.

Feelings

Positive emotions such as elevation [37] and hope [38] have positive effects on climate-friendly consumer behavior. For instance, an image of solar panel installation led to feelings of hope and increased support for climate policies [38]. Not only do positive emotions lead to greater purchase of climate-friendly products but also using such products results in greater positive emotions, such as warm glow and enjoyment [24,39]. Moderate levels of negative emotions, such as shame [40], guilt [21,26], and fear [38], can also be highly effective in encouraging climate-friendly behaviors. Anticipated guilt is a particularly strong motivator and is part of the reason people prefer ethical production when they are directly involved [21]. Negatively framed messages can be more effective than positively framed messages, partially because they activate anticipated shame [40]. Similarly, climate messages that focus on negative impacts can lead to higher levels of fear and increased support for climate policies, especially among conservatives [38]. However, in an effort to avoid negative emotions, consumers may inadvertently act in climate-unfriendly ways such as placing items that cannot be recycled in the recycling bin [41].

Cognition

Consumers often rely on their cognitive system to make decisions about engaging in climate-friendly actions. A common belief about sustainable products is that they are not as strong or effective as their conventional counterparts [42,43]. This belief can be implicit (i.e. based in system 1, intuitive and difficult to control) or explicit (i.e. based in system 2, slow and controlled), and both have been shown to reduce sustainable product choices. Fortunately, explicit beliefs can be improved and sustainable product choices can be increased by strengthening people's motivation to behave sustainably, providing information about benefits and associating sustainability with the company rather than its products [43–45]. In the context of food waste, marketers can emphasize esthetic flaws in produce to correct for any negative associations with taste in consumers' minds [46]. Moreover, marketers can highlight durability to encourage the consumption of luxury products that tend to be more sustainable [47].

Another reason why consumers do not purchase sustainable products is their lack of understanding of climate impacts [48]. One way to correct consumers' erroneous perception of the climate impacts of different behaviors

is to present accurate information. For example, information in the form of labels can be especially useful when people have incorrect impressions, such as when they underestimate carbon emissions from food choices [49]. However, it is crucial to present information in a way that appeals to consumers, for example, by labeling a carbon price as a carbon offset for aviation fuel rather than a carbon tax on airplane travel [50]. Such interventions are an effective tool to shift consumers toward more climate-friendly actions. It is also important to ensure that small nudges do not provide consumers with a false sense of effectiveness that lowers support for other, more concrete policies such as a carbon tax [51].

Consumers may also hesitate to purchase climate-friendly products because they are often wary of sustainability claims. For instance, they may interpret the presence of extrinsic appeals as an indication that a company lacks intrinsic motives to help the environment and is acting in an eco-friendly manner only to make money [52]. Perceptions of greenwashing can lead to negative reactions, even if the discrepancy is on the supplier end [53]. This is made worse if both the environmental claims and the disconfirming information are specific [54].

Education alone has not been found to make a large impact on people's behaviors. For instance, those who participated in a workshop on water management practices behaved no differently from those who did not participate [55]. One explanation for this is people's motivated attention to and perception of climate change information. For instance, eye-tracking research reveals that both liberals and conservatives pay attention to information that corresponds with what they already believe [30]. In addition, greater knowledge of climate-friendly consumption can also lead to negative effects such as tension and decision paralysis [56].

Tangibility

A particularly striking feature of climate change is that it can feel abstract and psychologically distant — socially, temporally, spatially, and hypothetically — although it is looming closer as more people experience and observe adverse impacts [57]. This remains an understudied area with great potential for future research.

One way to increase climate-friendly behavior is to make the outcomes of actions more concrete and tangible. Concrete representations of what products will become after recycling can generate greater interest in advertisements and lead to increased recycling at outdoor events and residences [37]. Directly experiencing the impacts of climate change, such as increased electricity demand due to heat waves, can lead to perceptions of energy scarcity, but it does not always result in greater environmentally friendly behavior [58]. Another way to harness tangibility in encouraging climate-friendly behavior is to target consumers who already think abstractly or change consumer mindsets, by asking them to think more abstractly [59].

Conclusions

Research into the effects of interventions on consumers' climate-friendly behavior has covered different stages in the consumption process. This involves product choice, such as purchasing eco-friendly products [25,43,54], as well as made-to-order products [21] and solar panel installation [10]. It also extends to usage, including enjoyment of green products [39], energy and water conservation [5,13,33,58], and carbon footprint and pricing [49,50], as well as disposal, such as recycling [9,21,37], upcycling [22], and reducing food waste [20]. Just as climate change is caused by human behavior, so too must human behavior be part of the solution. Recent research in psychology, marketing, and related fields has revealed that interventions using Social influence, Habit, Individual self, Feelings and cognition, and Tangibility are all promising routes to climate-friendly consumer behavior.

Conflict of interest statement

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

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