Received: 5 September 2018 | Revised: 22 October 2018 | Accepted: 24 October 2018

DOI: 10.1002/arcp.1045

REVIEW

WILEY CONSUMER PSYCHOLOGY REVIEW

Sustainable consumer behavior

Remi Trudel

Questrom School of Business, Boston University, Boston, Massachusetts

Correspondence
Remi Trudel, Questrom School of Business, Boston University, Boston, MA.
Email: rtrudel@bu.edu

Abstract

Most agree that climate change is a serious threat. It has increasingly been recognized by scientists and policymakers as a consumer behavior issue: What, how, and how much people consume directly impacts the environment. Sustainable consumer behavior is behavior that attempts to satisfy present needs while simultaneously benefiting or limiting environmental impact. Moreover, understanding sustainable consumer behavior is central to any paradigm shifts in how society approaches environmental problems. This article summarizes and organizes research from the past 20 years and explores the psychological drivers of sustainable consumer behavior. Four areas of scientific inquiry that have dominated research agendas are identified: (a) cognitive barriers, (b) the self, (c) social influence, and (d) product characteristics. The objective is to provide a valuable research tool that stimulates additional research in the area of sustainable consumer behavior.

KEYWORDS

behavioral economics, decision-making, environmental consumer behavior, green consumer behavior, prosocial behavior, sustainability

1 | INTRODUCTION

The world is facing many environmental problems, and people are responsible for most of them. For example, the number of natural disasters has increased significantly, drastic changes in weather patterns are obvious, glaciers are melting, and global temperatures continue to rise, largely from greenhouse gases produced by humans (Cramer et al., 2014). Greenhouse gases largely consist of carbon dioxide, methane, and nitrous oxide. Humans have increased carbon dioxide concentration by more than 33% through deforestation, urbanization, manufacturing, auto emissions, and burning of fossil fuels. The use of fertilizers in the production of cotton and agricultural products increases nitrous oxide. Even post-consumption disposal decisions to trash or recycle affect greenhouse gas emissions. The decomposition of waste in landfills increases methane levels (methane is a far more active greenhouse gas than carbon dioxide), not to mention the net increase of producing a product from new materials in comparison with recycled materials. Consumption, therefore, is inherently linked to sustainability because every decision of what to buy, how much to buy, how much to consume, and how to dispose has a direct impact on the environment and future generations, and the cumulative effect of each individual consumer's consumption is devastating.

Most people want to live and make decisions to satisfy their present needs without compromising the environment. From this perspective, environmental or sustainable behavior is best defined by its impact: the extent to which decisions are driven with the intention to benefit or limit the impact on the environment (Stern, 2000). Yet most, if not all, people find themselves engaging in behaviors that have negative environmental impacts. Consumer psychology researchers have investigated why people engage in sustainable behaviors and why others engage in unsustainable behaviors despite having environmental concerns. Understanding the psychology behind environmental or sustainable behaviors is central to a sustainable future and widespread behavior change. However, despite its obvious importance and the substantive impact of research in this domain, knowledge of sustainable behavior and decision-making is scant and significantly lags behind other areas in consumer psychology.

 © 2018 Society for Consumer Psychology

1.1 | Objectives and approach

This article has two objectives. The first objective is to review and synthesize research on sustainable consumer behavior, and in doing so provide an organizing framework that identifies four research foci: cognitive barriers, the self, social influence, and product characteristics. The second objective is to specify important research gaps that provide opportunities for motivating sustainable consumption. Together, these objectives contribute to the overarching goal of providing guidance for firms, policy makers, and consumers themselves to empower sustainability in their communities.

The article starts with a brief history of the research investigating environmental and sustainable behaviors from 1970 to 1999, to set the stage for the current review. Although the early research is not the primary focus, it built the foundation from which more recent research has benefited. The focus then shifts to articles published in high-impact journals since 2000 and those that move us toward a better understanding of sustainable consumption and a theory of sustainable decision-making. The research reviewed takes a decision-making approach of sustainable consumption and is highly selective. Conducting research investigating sustainability is challenging because of prevalent demand effects and existing behavior. Consumers may be motivated to express positive sustainable responses that do not translate into positive sustainable behaviors. The articles included in this review have been selected partly because they have worked to overcome demand effects, and are specifically included so that they can be used as methodological and procedural prototypes for scholars interested in pursuing research in this area.

2 | EARLY SUSTAINABILITY RESEARCH—PRE 2000

Early research in the area of sustainable behavior focused on identifying and characterizing "green consumers" to determine their viability as a unique market segment. Consequently, the early research concentrated on measuring major socio-psychological and situational determinants of environmental and sustainable behavior, such as age, gender, economic and cultural background, attitudes, and motivation, and correlating them with measures of social consciousness and environmental concern (Anderson & Cunningham, 1972; Fisk, 1973; Kinnear, Taylor, & Ahmed, 1974; Mayer, 1976; Webster, 1975). For example, Anderson and Cunningham (1972) formed a typology of socially conscious consumers by measuring demographic and socio-psychological characteristics of consumers and correlating consumer characteristics with an 8-item social responsibility scale that had been developed and previously validated in sociology research (Berkowitz & Lutterman, 1968). Kinnear et al. (1974) attempted to extend Anderson and Cunningham's original study by incorporating attitudinal and behavioral measures aimed at capturing socially conscious purchasing behavior and developed a new scale of ecological concern. Their primary finding was that personality variables were better predictors of ecological concern than socioeconomic demographic variables.

Whereas early work attempted to establish a relationship between measures of social consciousness and environmental concern on environmentally related behaviors such as recycling (McCarty & Shrum, 1994; Schultz, Oskamp, & Mainieri, 1995), environmental attitudes (Murphy, Kangun, & Locander, 1978), and adoption of more environmentally friendly products (Kassarjian, 1971; Pickett, Kangun, & Grove, 1993), the results of these studies were frequently inconclusive and sometimes contradictory. For example, Kassarjian (1971) examined consumer response to Chevron's low-polluting gasoline advertising campaign. Although all consumers (both those with and without concern about air pollution) reported greater awareness and a willingness to pay up to 2 cents more per gallon, they were not more likely to drive smaller more fuel-efficient cars. There was no evidence of a relationship between concern for air pollution, car ownership, and socioeconomic and demographic variables, leading Kassarjian to conclude that there was no obvious way to segment the market for Chevron's low-polluting gasoline. Similarly, Webster (1975) found weak correlations of personality, attitude, and socioeconomic variables on socially conscious consumption like recycling, but found that previously used measures of social responsibility (Anderson & Cunningham, 1972; Berkowitz & Lutterman, 1968) had no relationship to socially conscious behavior.

Other than a few articles investigating consumer reactions to environmental legislation (e.g., Aaker & Bagozzi, 1982; Crosby & Taylor, 1982), sustainability research in the 1980s focused largely on one issue: energy conservation (Allen, 1982; Anderson & Claxton, 1982; Geller, 1981; Heslop, Moran, & Cousineau, 1981; Leonard-Barton, 1981; McNeill & Wilkie, 1979; Van Houwelingen & Van Raaij, 1989). Like earlier work, the majority of this research focused on individual attitudes and environmental beliefs and their relationship to behavioral intentions of conserving energy. Once again the results from these studies were inconclusive and did little to establish a reliable link between environmental attitudes and environmentally meaningful behaviors. For example, Leonard-Barton (1981) found that voluntary simplicity, a scale measure that is characterized by behaviors of a scaled-down lifestyle and includes items on recycling behaviors, composting, and riding a bicycle to work, predicted energy-efficient behavior and intentions to buy solar energy equipment. However, the majority of the research investigating energy conservation found that attitudinal measures were poor and inconsistent predictors of sustainable consumer behavior. For example, Heslop et al. (1981) found a relationship between price sensitivity and energy use but failed to find any relationship between social responsibility or environmental consciousness and energy conservation. Similarly, McNeill and Wilkie (1979) found that new energy labels brought on by the federal labeling program for home appliances, proved to be perceived as valuable information by consumers but did not influence behavioral change.

Energy conservation and recycling continued to be popular topics of research in the 1990s (e.g., Corral-Verdugo, 1997; McCarty & Shrum, 1994; Oskamp et al., 1991; Taylor & Todd, 1995) with

a shift toward "green" advertising (e.g., Banerjee, Gulas, & Iyer 1995; Kilbourne, 1995; Shrum, McCarty, & Lowrey, 1995; Zinkhan & Carlson, 1995). As an example, using a large-scale survey (DDB Needham Life Style Study, $N = 3{,}264$), Shrum et al. (1995) constructed a psychographic profile of green consumers to better understand and make recommendations for green marketing and advertising. There was also a notable shift to a more macro-level look at environmentalism or sustainability as a marketing strategy (Menon & Menon 1997; Shrum, Lowrey, & McCarty 1994). For example, Menon and Menon (1997) built a strategic management framework integrating consumers' environmental concerns with corporate social performance goals and corporate entrepreneurial strategy. The resulting framework identified both antecedents (external polity, external economy, internal polity, and internal economy) and consequences (performance and reputations) for firms adopting an *enviropreneurial* marketing strategy. The macro-level perspective of this work paved the way for larger questions of Corporate Social Responsibility and systems sustainability that shaped marketing strategy research in the years that followed (e.g., Sen & Bhattacharya, 2001; Trudel & Cotte, 2009).

To summarize, the early research focused on individual characteristics of the "green" consumer with the goal of identifying an environmentally concerned or sustainability minded consumer for segmentation purposes and thus could be generally characterized as managerial in perspective (Kilbourne & Beckmann, 1998). In the 2000s, the research investigating sustainable consumer behavior began to take on a decision-making perspective and focused more narrowly on consumers' motivations and other psychological factors driving environmentally consequential behaviors. Four major areas of scientific inquiry are identified. These areas of research form an organizing framework from which both a descriptive understanding of the decision processes driving behavior is provided in addition to prototypical examples that are representative of research in that area. The four areas of investigation reveal the progress that researchers have made in the past two decades in understanding the psychology of sustainable consumer behavior.

3 | ENVIRONMENTAL AND SUSTAINABLE BEHAVIORS: FOUR MAJOR AREAS OF INVESTIGATION 2000–2018

3.1 | Cognitive barriers to sustainability

Psychology differentiates between two types of processes that tend to operate in parallel in any given task: System 1 is affective in nature, autonomous, and associated with crude and rapid processing, and System 2 is cognitive in nature and associated with a more refined and deliberative processing (Sloman, 1996). System 1 makes fast automatic decisions largely based on affect, familiarly, and associated memory, which are then accepted, rejected, or corrected by System 2 (Morewedge & Kahneman, 2010). System 2 makes decisions based on a careful consideration of the facts and information available using effortful cognitive processing.

Sustainable consumer behavior is characteristically intertemporal, and thus, the environmental benefits of decisions made today result in benefits years down the road that consumers themselves may not even realize, and therefore, they almost always involve System 2 (Manning, 2009). Consider the decision to take commuter rail to work rather than driving. System 1 reacts emotionally and wants to drive: "No way, its cold out, I don't want to wait in the cold for the train and then freeze while I walk four blocks to the office." System 2 considers the benefits of taking the train to work and overrides the easier, less effortful, and less sustainable option: "I don't need to deal with traffic, the walk is much-needed exercise, the train is a better option environmentally, we need to protect our environment." These two systems make sustainability a challenge—it almost always involves overriding System 1 and a less effortful, or more attractive, short-term option (e.g., holding onto an empty soda can until you see a recycling bin instead of throwing it in the trash bin that is right next to you; see Brothers, Krantz, & McClannahan, 1994). Therefore, anything that can decrease effort and reduce the sacrifice consumers must make will improve the likelihood of sustainable behavior. As Weber (2017, p. 1) aptly notes, "As humans, our decision-making process is biased toward maintaining the status quo, even if an alternative choice has substantial long-term benefits. This cognitive myopia and present bias, when applied to decisions that affect sustainability, could be threatening our future." Cognitive myopia prevents consumers from focusing on the future benefits of their environmentally friendly purchases in relation to their immediate costs. Consequently, sales of more energy-efficient products lag, even though higher up-front costs are more than compensated by future energy savings (Gillingham, Newell, & Palmer, 2009).

3.1.1 | Economic incentives and nudges

Governments are increasingly interested in using behavioral insights to break through cognitive barriers to change people's behavior and pursue policy objectives (Benartzi et al., 2017; The World Bank, 2015). One option is to increase incentives to act sustainably. For example, an intervention provided California residents discounts on electricity bills if they reduced their summer energy usage by at least 20% relative to their prior year's usage. The program showed a 4.2% reduction of energy usage in some regions (Ito, 2015). Another program with similar success combined incentives and education to reduce energy use during peak times (Arimura, Li, Newell, & Palmer, 2011).

Another option used by governments and policy makers is to use *nudges* that predictably change behavior without forbidding any options or providing economic incentives (Thaler & Sunstein, 2003). Nudges are positive reinforcements, small suggestions, or changes in choice architecture intended to influence the behavior of consumers. Choice architecture refers to the different ways a decision can be presented to consumers. Defaults (requiring consumers to actively opt out of something if they do not want it) have proved to be an effective way to influence behavioral change (Kahneman, Knetsch, & Thaler, 1991). Defaults work in three different ways. The

first is through inertia. Consumers are often lazy and prefer to take the easy option—which is to not do anything. The second way defaults work is by taking advantage of consumers' status quo bias. Status quo bias refers to people's preference for the current state because any changes to the status quo are perceived as a loss to be avoided.

The third way defaults affect choice is that people think of the default option as an implicit recommendation, that is, as a social proof of sorts. The results from a large-scale German field study (N = 41,952 households) investigating green energy defaults showed how persuasive defaults can be (Ebeling & Lotz, 2015). In this study, participants were randomly assigned to one of two treatment conditions. In one condition, consumers had to actively opt into more expensive "green" energy. In the other condition, they had to opt out of the green energy to avoid passively purchasing green energy. The decision to opt in or out was presented in a basic website layout with the corresponding box for green energy either pre-selected (opt-out) or not (opt-in). The results showed that setting the default choice to more expensive green energy made its purchase 10 times more likely (Ebeling & Lotz, 2015).

Defaults in product and material design can also have an enormous impact on material consumption (Baxter & Childs, 2017). For example, defaults in which all product components are recyclable, made with recycled products, and packaged in easy-to-recycle materials are obvious ways to influence sustainable behaviors while limiting environmental impact and maintaining consumer choices. Similarly, using behavioral insights and nudges to influence infrastructure and building design has also been shown to influence engineers' and architectural professionals' design decisions and attain sustainability infrastructure targets (Shealy, Klotz, Weber, Johnson, & Bell, 2016). For example, the Envision Infrastructure Sustainability Rating System (https://sustainableinfrastructure.org/envision) provides a rating system to guide project energy efficiency and sustainability goals. The rating system provides quantifiable, industry wide sustainability metrics that measure the extent to which projects contribute to a social, economic, and environmental sustainability. Using a field study to measure engineering and design decisions, Shealy et al. (2016) manipulated whether project teams started with zero points and were given points for sustainable design choices or whether project teams were endowed with the maximum number of points and points were taken away for failing to make a sustainable design choice. Setting the default frame where infrastructure projects lost points from a maximum total lead design engineers to achieve 66% of sustainability targets, whereas gaining points from a starting point of zero lead design engineers to achieve 51% of sustainability targets.

3.1.2 | Future focus

Most sustainable behavior is inherently intertemporal, is difficult to measure, and has uncertain future benefits and consequences (for a review of intertemporal choice see Malkoc & Zauberman, 2019 in this issue). The benefits of sustainable behaviors are psychologically distant, abstract, uncertain, and difficult for consumers to grasp (Spence, Poortinga, & Pidgeon, 2012). These cognitive barriers to understanding sustainable benefits contribute to consumers' present bias—the tendency to prefer outcomes that are closer to the present when considering trade-offs between two outcomes (O'Donoghue & Rabin, 1999).

One way to overcome present bias is to have people adopt a future focus. Construal level theory (Trope & Liberman, 2003) suggests that people construe future events differently from present events. By their very nature, sustainable choices involve future benefits, and therefore are construed in abstract terms. Thus, to influence sustainable behavior, it would make sense to either make the future more salient in the present or have consumers process more abstractly and with a future focus. For example, priming a future focus by having participants write about what they want to be remembered for by future generations increased donations to an environmental charity, pro-environmental intentions, and climate change beliefs (Zaval, Markowitz, & Weber, 2015). These findings are consistent with work that shows that more future-focused people, or those with an abstract versus concrete construal, have greater preferences for ecofriendly products (Reczek, Trudel, & White, 2018). Similarly, highlighting economic benefits reduces consumers' interest in sustainable products when they are in a more abstract (vs. concrete) mindset because of incompatibility with the temporal focus of abstract construal individuals (Goldsmith, Newman, & Dhar, 2016). Finally, White, MacDonnell, and Dahl (2011) found that matching more future-focused, abstract construal consumers with gain-framed messages ("We will save over one million trees each year"), and matching present-focused, concrete construal consumers with loss-framed messages ("We will lose over one million trees each year") resulted in more positive attitudes toward recycling and also increased actual recycling behavior.

Another potential remedy for present bias in sustainable behaviors is to make the consequences less abstract and more tangible. For instance, personal experience with extreme weather increases consumers' acknowledgment of climate change's negative impact. Consumers who were asked about global warming on days they believed to be warmer than usual revealed greater concerns about global climate change and made larger donations to a global warming charity than consumers who were asked on days that were colder than usual (Li, Johnson, & Zaval, 2011). Research in this area is nascent but promising, with obvious implications for practice. Future research should investigate different ways to communicate sustainable behaviors in more concrete ways to effectively overcome present bias.

3.2 | The self

Research on the self dominates scientific inquiry of consumer sustainable behavior. Research on environmental and sustainable behavior shares the common underlying premise that consumers choose sustainable actions because these are consistent with and allow them to express their environmental beliefs; they are consistent with their

self-identity. People are often motivated to behave consistently with their own environmental beliefs and to present a positive image of themselves to others for self-signaling benefits (Bodner & Prelec, 2003; Sun & Trudel, 2017), self-identification benefits (Belk, 1988), status benefits (Griskevicius, Tybur, & Van den Bergh, 2010), or reputational benefits (e.g., Semmann, Krambeck, & Milinski, 2005). Although these motives can also operate independently and are presented as distinct motives for the sake of clarity, these motives often overlap such that sustainable behaviors are driven by some combination of these motives.

3.2.1 | Self-signaling

When consumers make sustainable consumption choices, they not only allow others to make inferences as to the type of person they are, but also signal this to themselves (Bodner & Prelec, 2003). The literature on the self and identity demonstrates individuals' need to feel what Steele (1988) refers to as "morally and adaptively adequate" or that they are "good and virtuous" and that attribution is to the self and not outside influences. For example, when a panel of consumers was asked for the most effective strategy for conserving energy, most people mentioned behaviors that could be attributed to the self (e.g., turning off lights, driving less, recycling) rather than attributed to products (energy-efficient appliances or light bulbs; Attari, DeKay, Davidson, & De Bruin, 2010). The motivational power of self-signaling one's environmental or sustainable behavior is rooted in the experience of moral evaluation (Aquino & Reed, 2002; Steele, 1988) and the self-conscious emotions that provide the impetus to act. Making consumers aware of the potential discrepancy between their self-standards and actual behavior can motivate sustainable behaviors as well, although through an alternative mechanism—avoiding the guilt associated with self-discrepancy (Higgins, 1987). Situational factors that heighten consumers' self-accountability increased preferences for products promoted through their ethical attributes to avoid the guilt associated with not living up to their self-standards (Peloza, White, & Shang, 2013).

Research has also found that self-accountability, commitment, and self-signaling affect hotel guests' environmental behavior in an intensive field experiment of more than 2,400 guests (Baca-Motes, Brown, Gneezy, Keenan, & Nelson, 2012). When guests made a specific commitment to practice sustainable behavior and wore a pin to signal their commitment, they were more likely to reuse their towels and turn off lights when they left their rooms than guests in the control condition (without the commitment and pin). Similarly, self-affirmation theory argues that when individuals' self-concept is threatened, people attempt to restore the self through a range of cognitive strategies and behaviors, including product choices to reaffirm their sense of self-concept (e.g., Gao, Wheeler, & Shiv, 2008). Thus, choosing a green product over a superior non-environmental product when under self-threat can confirm that environmental choices are not just about helping others; they also hold purposeful self-value by signaling one's moral and global values (Trudel, Klein, Sen, & Dawar, 2018). Finally, from a consumer well-being perspective, giving possessions to other people leads to greater happiness than trashing, recycling, or donating goods to a non-profit organization (Donnelly, Lamberton, Reczek, & Norton, 2017).

According to the aforementioned work, people are motivated to engage in sustainable behavior to avoid discrepancy between their self-standards and their behavior. Research has also clearly demonstrated that moral behaviors signal to the self and boost moral self-perception, which in some cases can license immoral behaviors (Kahn & Dhar, 2006). Because purchasing environmentally friendly products self-signals individuals' values of sustainability and social and moral consciousness, the moral credentials conferred by purchasing green products can ironically lead to selfish and morally questionable behavior. For example, Mazar and Zhong (2010) showed that consumers were more likely to steal and cheat after purchasing green products. The initial boost in the self-concept was shown to decrease the guilt associated with the morally questionable behavior, which in turn made consumers more likely to steal and cheat. More recently, research has shown the effect of "vicarious moral cleansing," whereby consumers who are strongly connected with a brand may feel licensed to act immorally because of a brand's socially responsible behavior (Newman & Brucks, 2018).

Finally, Sun and Trudel (2017) proposed a theoretical framework in which recycling reduces consumers' negative emotions (guilt) from wasting resources and increases their positive emotions (pride) from disposing of used resources in the recycling. Importantly, consumption and disposal in their model are not treated as isolated decisions; instead, consumers use anticipated emotions to guide their disposal decisions. This model clearly depicts the utility consumers gain by self-signaling environmental behaviors. Moreover, the model provides insights into behavior observed in prior research that found that the self-signaling effect of sustainable behavior is so powerful that people consume more of a resource (use more of a product) when given the opportunity to self-signal through recycling (Catlin & Wang, 2013; Sun & Trudel, 2017).

3.2.2 | Self-identification

People are motivated to develop a sense of self-identification that distinguishes them from others. Whereas self-signaling provides a positive self-image without regard to the perceptions of others, most of the self-identification benefits that consumers seek involve signaling information about themselves to others. Behavior, including, is inextricably linked to personal and collective identity. The idea that people's consumption behavior has some role in defining the concept of the self has a long history in consumer psychology (Belk, 1988). People value goods not just for the tangible benefits they bring but also for what they represent to themselves and others.

Social identity theory (Tajfel, 1982) contends that one's self-concept has two levels: individual identity, or the identity related to a person's individual sense of self, and social identity, or the portion of a person's identity that derives from the groups to which he or she belongs or is affiliated. That is, each individual has a collection of identities that includes his or her individual-level identities and

various social-level identities. In terms of identity signaling and identity maintenance, people tend to emulate positive environmental behaviors related to their identities (Van der Werff, Steg, & Keizer, 2013) and in-groups (White & Peloza, 2009), whereas they tend to avoid negative environmental behaviors (Trudel, Argo, & Meng, 2016a) and disassociate from out-groups (Brough, Wilkie, Ma, Isaac, & Gal, 2016).

Research provides evidence for the role of individual identity in sustainable behavior. In its most straightforward conceptualization, someone with an environmental self-identity is more likely to act pro-environmentally (Haws, Winterich, & Naylor, 2014; Whitmarsh & O'Neill, 2010) and be environmentally active (Van der Werff et al., 2013). Behaving consistently with their self-identity allows individuals to view themselves positively; however, the desire to have a positive self-perception can lead to self-defensive behaviors such as denying climate change evidence (Feygina, Jost, & Goldsmith, 2010) and denigrating other consumers who behave more environmentally (Zane, Irwin, & Reczek, 2016).

Self-defensive behaviors can also lead consumers to willfully ignore ethical attribute information to avoid negative emotions when making purchase decisions (Ehrich & Irwin, 2005). For example, in their initial study, Ehrich and Irwin (2005) showed that consumers who stated that they were concerned about the environment and the protection of rain forest wood were the least likely to request and use environmental attribute information in making their purchase decisions. By avoiding ethical attribute information altogether, those who were most concerned with the environmental issue were able to justify their purchase of an unsustainable option by defensively claiming ignorance. Building on Ehrich and Irwin (2005), Zane et al. (2016) found that observing others acting ethically provided a self-threat that was intensified by consumers own inaction on an issue. Failing to ask for ethical attribute information while others behaved ethically leads to self-defensive denigration of ethical others in response to the negative social comparison.

Not all self-defensive behaviors are negative; some can lead to sustainable behavior like when people recycle identity-linked products as a self-defensive behavior to avoid the threat of tossing a "piece of themselves" in the trash. In their work on the role of self-identity and disposal behavior, Trudel et al. (2016a) found that people were more likely to recycle (vs. trash) products linked to the self. For example, in one study, they measured participants' self–brand connection (Escalas & Bettman, 2005) to Coca-Cola and then provided them with a recycling scenario with either a Coke can or a Pepsi can. They found that those who were high in Coke self–brand connections were more likely to recycle a Coke can than a Pepsi can, while those low in Coke self–brand connection showed the opposite pattern. In another study, participants who were given a cup with their name spelled correctly on it were significantly more likely to recycle the cup than were those who were given a cup with their name spelled incorrectly or those in a control condition with a blank cup.

Winterich, Reczek, and Irwin (2017) also found that consumers were reluctant to part with clothing donations because they held strong self-identity associations. In a field study involving 6 campus residence halls and about 800 residents, the authors conducted a holiday donation drive for Goodwill in which they manipulated students' memory preservation strategies to increase donations. In the memory preservation condition, the donation drive campaign included the following statement: "Don't pack up your sentimental clutter. Just keep a photo of it, then donate." In the control condition, the donation drive campaign stated "Don't pack up your sentimental clutter. Just collect the items, then donate." Providing proof of the identity process, they found that encouraging students to take photos for a "memories file" decreased identity loss and increased donations by 15% in comparison to when no photos were taken.

3.2.3 | Social identification

In addition to individual identity, social or group identity influences sustainable behavior. People's attitudes, beliefs, and behaviors are affected by the social groups to which they belong (Tajfel, 1982), at times even more so than their personal identities (Onorato & Turner, 2004). People tend to mimic behaviors that strengthen group identity and their ties to the group. For example, climate change has been strongly contested and increasingly politicized. Consequently, many of the differences in attitudes toward and beliefs about climate change fall along political lines; conservatives and Republicans are less likely to believe the scientific evidence and less likely to display concern about climate change than liberals and Democrats (Brulle, Carmichael, & Jenkins, 2012; Hardisty, Johnson, & Weber, 2010; McCright & Dunlap, 2011).

Attitudes and behavior are heavily influenced by other individuals who are trusted and share membership to the in-group (people who share one's social identity). Cohen (2003) showed that when political membership is strong, and if information about their party's position is available, participants adopt that position and behave consistently with their political affiliation so as to strengthen their group identity, despite the merit of the information. Additionally, because people generally lack knowledge and expertise to make informed decisions themselves, and also lack the desire to gain the knowledge to make an informed decision, people's responses to the climate science are influenced by the attitudes and expressed opinions of their political party leaders (Unsworth & Fielding, 2014). In support of this proposition, a 1997 Gallop poll found that Democrats and Republicans were equally likely to believe in climate change (47% and 46%, respectively), but by 2008, due to differing attitudes and expressed positions of their political party elites, 76% of Democrats and only 41% of Republicans shared a belief in climate change (Dunlap, 2008; Pearson, Schuldt, & Romero-Canyas, 2016).

Understanding the moral foundations of groups can be effective in driving consumer behavior and understanding consumers' decision-making in the area of sustainability. Markowitz and Shariff (2012) explain differences in climate change beliefs as a consequence of different moral priorities endorsed by liberals and conservatives. Liberals base their moral priorities on harm and fairness, whereas conservatives base their moral priorities on in-group loyalty, respect for authority, and sanctity. Markowitz and Shariff further argue that

climate change holds less moral priority for conservatives than for liberals because it is most often framed as "harm to present and future generations and the unfairness of the distribution of burdens caused by climate change" (Markowitz & Shariff, 2012, p. 244). Kidwell, Farmer, and Hardesty (2013) investigated adherence to self-identity and in-group behavior and found that sustainable behaviors were more likely when messages were tailored to consumers' political ideology. More specifically, the authors designed persuasive appeals based on the group norms and moral foundations of liberals and conservatives. Messages to liberals focused on their core values of fairness and empathy, whereas messages to conservative centered on core values of duty and authority. Designing messages on the fundamental differences between conservatives and liberals proved effective in increasing sustainable consumer behaviors when the messages where aligned with consumers' political ideology but decreased sustainable behaviors when receiving messages from the opposing political ideology.

People are also likely to avoid behaviors that threaten their social or group identity. One way is to avoid products or behaviors that are linked to dissociative reference groups. Drawing on the stereotypical association that green behaviors are feminine and that men are more concerned with preserving their masculine image, Brough et al. (2016) found that men were less likely to choose green products or engage in green behaviors when their masculine identity was threatened. In their study investigating consumers' willingness to engage in sustainable behaviors, such as composting, water conservation, and recycling, White, Simpson, and Argo (2014) found that when participants learned that a dissociative reference group had outperformed them on sustainable behavior, they boosted their own group's performance and increased their own positive behaviors because being outperformed by a dissociative out-group threatened their social identity.

Seeking status has always been a central motivation in human behavior (Veblen, 1899). In the past, status was pre-determined by birth, and a person's worth was judged by bloodline. Status has since evolved to a point at which, today, wealth and affluence increasingly signal status (Han, Nunes, & Drèze, 2010), and status inferences are based on people's material possessions and the brands they own (Belk, 1988). Consequently, status inferences are often based on what people can afford and what they sacrifice. Costly signaling theory proposes that expensive and often seemingly arbitrary or wasteful behavioral or consumption signals are valuable signals because they provide legitimate information benefiting both signalers and observers about one's ability to sacrifice or infer costs (Bénabou & Tirole, 2006; Gneezy, Imas, Brown, Nelson, & Norton, 2012; Zahavi, 1975).

Griskevicius et al. (2010) studied conspicuous status signaling in the context of green products. They argued that because green products often cost more and are often of lower quality than equally priced alternatives, they are a "costly signal." Furthermore, purchasing conspicuous green products, such as a Toyota Prius, is a demonstration of one's willingness and financial ability to incur the costs of suboptimal products for the good of society. Another example comes from research using a climate change public goods game in which all profits from a small group were put in a climate pool account that would benefit all members of society by producing and releasing information regarding the scientific community's current knowledge on climate change (Milinski, Semmann, Krambeck, & Marotzke, 2006). The amount of information and reach would be affected by the amount in the climate pool account. Milinski et al. found that people did altruistically sacrifice all benefits for the good of society over their own personal financial benefit; however, it was additionally revealed that personal investments in climate protection increased substantially if there was a possibility of gaining social reputation and status.

3.3 | Social influence and social norms

Social influence is the change in a person's attitude or behavior resulting from the influence of others in a group. Whereas social influence can occur on an interpersonal level in much the same way as one's social identity influences behavior, social influence often results from other groups outside of one's group affiliations. The research highlighted here is resultant of influence without social categorization and therefore, not necessarily affiliation based.

Social norms are a common type of social influence. Social norms are the unwritten rules developed through shared interactions of a social group that govern social behavior. Social norms represent social approval and disapproval by specifying what ought and ought not be done; the repercussions of going against a social norm are the disapproval of peers and social sanctions (Cialdini 2004; Cialdini & Trost, 1998; Sunstein, 1996). Social norms exist for nearly every aspect of human behavior (Cialdini, 1993). Furthermore, norms are either descriptive or injunctive. Descriptive norms are characterized by the perception of what people commonly do, while injunctive norms characterize what consumers ought to do and what is commonly approved or disapproved by a social group (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). Research has consistently demonstrated the benefits of communicating social norms across a variety of domains, indicating that social norms can influence changes in people's energy consumption (e.g., Allcott & Mullainathan, 2010), likelihood to compost (White & Simpson, 2013), likelihood to reuse towels in hotels (Goldstein, Cialdini, & Griskevicius, 2008), and likelihood to recycle (Meng & Trudel, 2017). Collectively, research shows that social influence, and social norms in particular, powerfully, predictably, and pervasively influence sustainable behaviors.

3.3.1 | Descriptive and injunctive norms

There are many ways to communicate descriptive norms to influence behavior. For example, normative information of how many people are taking action can be communicated in marketing messages such as "90% of Boston residents recycle," "Two-thirds of your neighbors source their energy through renewable sources," or "Your energy consumption last month was above the average in your neighborhood." The effectiveness of these types of descriptive

norm messages is evident in Goldstein et al.'s (2008) study. Two field studies investigating hotel towel reuse (energy conservation) revealed that consumers who received descriptive norm messages in their hotel rooms ("Join your fellow guests in helping save the environment") were more likely to reuse their towels than were consumers who received a standard environmental message ("Help save the environment").

Several examples in energy field studies have also successfully used descriptive norms to decrease energy consumption among consumers (e.g., Allcott, 2011; Ayres, Raseman, & Shih, 2013; Schultz et al., 2007). Allcott (2011) evaluated a series of programs run by Opower that send Home Energy Report letters to 600,000 residential utility customers providing similar normative information. The analyses estimated that the average program reduces energy consumption by 2.0%. Schultz et al. (2007) provided residents with descriptive norm information about the energy consumption of the average household in their neighborhoods. They subsequently tracked energy consumption and found that providing descriptive norm information to high-usage consumers (those consuming above the average) decreased energy consumption but the same descriptive norm information inadvertently increased energy consumption in low-usage consumers (those consuming less than the average). However, adding an injunctive norm by including a happy face emoticon (☺) to signal approval of their behavior eliminated the boomerang effect for low-energy consumers.

Research has also shown that communicating what consumers ought to do can backfire as well. Kronrod, Grinstein, and Wathieu (2012) found that assertive, injunctive statements that framed a sustainable behavior as a *must* (e.g., "Reducing air pollution: everyone *must* use more public transportation!") resulted in consumer reactance to the issue. Consumers reported lower intentions of complying with an assertive message depending on how important they perceived the issue to be, but responded positively to assertive messages when they believed the environmental issue to be important. However, when they believed the environmental issue to be less important, suggestive messages were more effective than assertive messages.

3.3.2 | Social proof

A social proof is a type of descriptive social norm providing proof of how people actually behave. Social proof assumes that people believe that others possess more knowledge then they do about a situation, and that they make good decisions as a result. When people are unsure of how to behave, they may look to others for the appropriate behavior and "view a behavior as correct in a given situation to the degree that they see others performing it" (Cialdini, 1993, p. 100). Cialdini, Reno, and Kallgren's (1990) early work on social norms demonstrated the powerful effects of social proof on littering. In one study, they placed flyers on people's windshields to see what people would do with them. To manipulate social proof, a confederate littered in the presence of half the study participants. Those who observed the confederate littering were almost twice as likely to litter themselves. Bollinger and Gillingham (2012) investigated the diffusion of rooftop solar panels in California and found that the number of homes using solar in a given area code predicted the probability of adoption in that area. Observing solar panels on neighbors' homes provided direct social proof of normative behavior and increased adoption of solar energy by others.

3.4 | Product characteristics and sustainable behavior

Sustainable products have certain characteristics that provide benefits to the environment and society as a whole during their usage and disposal. Although some work has shown that consumers value sustainable attributes (e.g., Trudel & Cotte, 2009), preferences for sustainable products and their attributes depend on how consideration sets are formed (Irwin & Naylor, 2009), consumers' worldviews (e.g., White, MacDonnell, & Ellard, 2012), and the types of benefits consumers expect from certain product categories (e.g., Luchs, Naylor, Irwin, & Raghunathan, 2010). For example, consumers generally prefer to choose from large assortments (e.g., Broniarczyk, Hoyer, & McAlister, 1998; Whitley, Trudel, & Kurt, 2018). However, the mode with which consideration sets are formed influences the weight put on ethical attributes. Forming consideration sets by excluding options versus including options leads consumers to more heavily weight ethical attributes (Irwin & Naylor, 2009). Relatedly, preference for ethical attributes may be influenced by consumers' consumption goals. For example, using both implicit association tests and experiments, Luchs et al. (2010) found that sustainable products are associated with gentleness-related attributes, whereas traditional products are associated with strength-related attributes. Thus, sustainability could be a liability when consumers are looking for products with strength-related products. Across five experiments, using both projective techniques and actual consumer choice, Luchs et al. (2010) found that support for a sustainability liability whereby consumers preferred sustainable products when seeking gentle attributes (e.g., baby shampoo) but traditional products when seeking strength attributes (e.g., car tires).

Trudel and Argo (2013) and Trudel, Argo, and Meng (2016b) examined the role of product distortion (the physical dissimilarity between and the original product and its current state) in disposal behavior. In a series of studies investigating actual disposal behavior, they found that changes in a product's size and form during the consumption process increased the likelihood that people would trash rather than recycle it. People are far more likely to trash paper that is cut into smaller pieces, torn, or crumpled than paper that is intact and undistorted. These findings have important implications for product and packaging design. Designing products and packages that limit the degree to which they can be distorted should substantially increase recycle rates. Better, stronger products should not only last longer but are more likely to be recycled than trashed. Converting to easy-to-open packaging, which limits distortion upon opening, is likely to increase packaging recycling rates relative to

more difficult-to-open alternatives that are inevitably distorted when attempting to open (Baxter & Childs, 2017).

4 | CONCLUSION

In many ways, marketing is the antithesis of sustainability. Driven by insights revealed in research into the psychology of buyers, marketers have strategically used product design, advertising, and other marketing cues to drive people to purchase and consume more, with detrimental effects on the environment (Cramer et al., 2014). However, understanding consumer decision-making is also the key to empowering consumers to behave more sustainably. The insights gleaned from research investigating sustainable consumer behavior are imperative for green strategy at both the government policy level and the firm level. It is crucial that policy makers and sustainability-driven organizations understand how and why people make choices, consume, conserve, and dispose of products that affect the environment.

The research reviewed here represents the past 20 years of studies investigating the consumer psychology driving sustainable behavior, and I have summarized the studies and findings most relevant to driving sustainable behaviors that firms and policy makers can use to help influence sustainable behaviors. The four areas of investigation advanced herein reveal the progress that has been made in the past two decades in understanding the psychology of sustainable consumer behavior. They reveal a wide range of factors that affect how people make sustainable decisions. However, whereas sustainable consumer psychology research in these areas has flourished, research in other areas that is also likely to contribute to our knowledge of sustainable behavior, such as attitude formation, information processing, moral regulation, emotions, psychological ownership, goals, power, and product design, has yet to receive attention in top academic journals and reveal the infancy of work in this area.

Finally, the majority of research has investigated low-impact, frequently enacted behaviors (e.g., turning out lights, reusing towels, or recycling soda can) rather than high-impact but infrequently enacted behaviors (e.g., installing solar panels; Bratt, Stern, Matthies, & Nenseth, 2015; Stern, 2000, 2014). Although these behaviors are often treated the same, it is likely that decision-making is different for high- and low-impact behaviors. High-impact behaviors involve much more depth of processing and consideration of trade-offs than do low-impact behaviors (e.g., trade-offs between financial costs and effectiveness). Moving research in the direction of higher-impact behaviors to better understand and develop theory that will inform decision-making for behaviors that can have a larger impact environmentally is also an important area for future research.

ORCID

Remi Trudel http://orcid.org/0000-0001-7744-3385

REFERENCES

Aaker, D. A., & Bagozzi, R. P. (1982). Attitudes toward public policy alternatives to reduce air pollution. *Journal of Marketing and Public Policy*, *1*, 85–94. https://doi.org/10.2307/30000009

Allcott, H. (2011). Social norms and energy conservation. *Journal of Public Economics*, *95*(9/10), 1082–1095. https://doi.org/10.1016/j.jpubeco.2011.03.003

Allcott, H., & Mullainathan, S. (2010). Behavior and energy policy. *Science*, *327*(5970), 1204–1205. https://doi.org/10.1126/science.1180775

Allen, C. T. (1982). Self-perception based strategies for stimulating energy conservation. *Journal of Consumer Research*, *8*(4), 381–390. https://doi.org/10.1086/208878

Anderson, C. D., & Claxton, J. D. (1982). Barriers to consumer choice of energy efficient products. *Journal of Consumer Research*, *9*(2), 163–170. https://doi.org/10.1086/208909

Anderson, W. T. Jr, & Cunningham, W. H. (1972). The socially conscious consumer. *Journal of Marketing*, *36*(3), 23–31. https://doi.org/10.2307/1251036

Aquino, K., & Reed, I. I. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology*, *83*(6), 1423–1440. https://doi.org/10.1037/0022-3514.83.6.1423

Arimura, T. H., Li, S., Newell, R. G., & Palmer, K. (2011). Cost-effectiveness of electricity energy efficiency programs (No. w17556). *National Bureau of Economic Research*.

Attari, S. Z., DeKay, M. L., Davidson, C. I., & De Bruin, W. B. (2010). Public perceptions of energy consumption and savings. *Proceedings of the National Academy of Sciences*, *107*(37), 16054–16059. https://doi.org/10.1073/pnas.1001509107

Ayres, I., Raseman, S., & Shih, A. (2013). Evidence from two large field experiments that peer comparison feedback can reduce residential energy usage. *Journal of Law, Economics, and Organization*, *29*(5), 992–1022. https://doi.org/10.1093/jleo/ews020

Baca-Motes, K., Brown, A., Gneezy, A., Keenan, E. A., & Nelson, L. D. (2012). Commitment and behavior change: Evidence from the field. *Journal of Consumer Research*, *39*(5), 1070–1084.

Banerjee, S., Gulas, C. S., & Iyer, E. (1995). Shades of green: A multidimensional analysis of environmental advertising. *Journal of Advertising*, *24*(2), 21–31. https://doi.org/10.1080/00913367.1995.10673473

Baxter, W., & Childs, P. (2017). Designing circular possessions. In J. Chapman (Ed.), *Routledge handbook of sustainable product design* (pp. 391–404). Oxon, UK: Routledge.

Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research*, *15*(2), 139–168. https://doi.org/10.1086/209154

Bénabou, R., & Tirole, J. (2006). Incentives and prosocial behavior. *American Economic Review*, *96*(5), 1652–1678. https://doi.org/10.1257/aer.96.5.1652

Benartzi, S., Beshears, J., Milkman, K. L., Sunstein, C. R., Thaler, R. H., Shankar, M., … Galing, S. (2017). Should governments invest more in nudging? *Psychological Science*, *28*(8), 1041–1055. https://doi.org/10.1177/0956797617702501

Berkowitz, L., & Lutterman, K. G. (1968). The traditional socially responsible personality. *Public Opinion Quarterly*, *32*(2), 169–185. https://doi.org/10.1086/267597

Bodner, R., & Prelec, D. (2003). Self-signaling and diagnostic utility in everyday decision making. *Psychology of Economic Decisions*, *1*, 105–126.

Bollinger, B., & Gillingham, K. (2012). Peer effects in the diffusion of solar photovoltaic panels. *Marketing Science*, *31*(6), 900–912. https://doi.org/10.1287/mksc.1120.0727

Bratt, C., Stern, P. C., Matthies, E., & Nenseth, V. (2015). Home, car use, and vacation: The structure of environmentally significant individual behavior. *Environment and Behavior*, *47*(4), 436–473. https://doi.org/10.1177/0013916514525038

Broniarczyk, S. M., Hoyer, W. D., & McAlister, L. (1998). Consumers' perceptions of the assortment offered in a grocery category: The

impact of item reduction. *Journal of Marketing Research*, *35*, 166–176. https://doi.org/10.2307/3151845

Brothers, K. J., Krantz, P. J., & McClannahan, L. E. (1994). Office paper recycling: A function of container proximity. *Journal of Applied Behavior Analysis*, *27*, 153–160. https://doi.org/10.1901/jaba.1994.27-153

Brough, A. R., Wilkie, J. E., Ma, J., Isaac, M. S., & Gal, D. (2016). Is eco-friendly unmanly? The green-feminine stereotype and its effect on sustainable consumption. *Journal of Consumer Research*, *43*(4), 567–582. https://doi.org/10.1093/jcr/ucw044

Brulle, R. J., Carmichael, J., & Jenkins, J. C. (2012). Shifting public opinion on climate change: An empirical assessment of factors influencing concern over climate change in the US, 2002–2010. *Climatic Change*, *114*(2), 169–188. https://doi.org/10.1007/s10584-012-0403-y

Catlin, J. R., & Wang, Y. (2013). Recycling gone bad: When the option to recycle increases resource consumption. *Journal of Consumer Psychology*, *23*(1), 122–127. https://doi.org/10.1016/j.jcps.2012.04.001

Cialdini, R. B. (1993). *The psychology of influence*. New York, NY: William Morrow & Co.

Cialdini, R. (2004). *Influence: Science and practice*. Boston, MA: Allyn & Bacon.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, *58*(6), 1015–1026. https://doi.org/10.1037/0022-3514.58.6.1015

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151–192). New York, NY: McGraw-Hill.

Cohen, G. L. (2003). Party over policy: The dominating impact of group influence on political beliefs. *Journal of Personality and Social Psychology*, *85*(5), 808–822. https://doi.org/10.1037/0022-3514.85.5.808

Corral-Verdugo, V. (1997). Dual 'realities' of conservation behavior: Self-reports vs observations of re-use and recycling behavior. *Journal of Environmental Psychology*, *17*(2), 135–145. https://doi.org/10.1006/jevp.1997.0048

Cramer, W., Yohe, G. W., Auffhammer, M., Huggel, C., Molau, U., da Silva Dias, M. A. F., … Tibig, L. (2014). Detection and attribution of observed impacts. In C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, … L. L. White (Eds.), *Climate change 2014: Impacts, adaptation, and vulnerability. Part a: Global and sectoral aspects. Contribution of working group ii to the fifth assessment report of the intergovernmental panel on climate change* (pp. 979–1037). Cambridge, UK: Cambridge University Press.

Crosby, L. A., & Taylor, J. R. (1982). Consumer satisfaction with Michigan's container deposit law: An ecological perspective. *Journal of Marketing*, *46*(1), 47–60. https://doi.org/10.2307/1251159

Donnelly, G. E., Lamberton, C., Reczek, R. W., & Norton, M. I. (2017). Social recycling transforms unwanted goods into happiness. *Journal of the Association for Consumer Research*, *2*(1), 48–63. https://doi.org/10.1086/689866

Dunlap, R. E. (2008). Climate-change views: Republican-Democratic gaps expand. Retrieved from https://news.gallup.com/poll/107569/climatechange-views-republicandemocratic-gaps-expand.aspx

Ebeling, F., & Lotz, S. (2015). Domestic uptake of green energy promoted by opt-out tariffs. *Nature Climate Change*, *5*(9), 868–871. https://doi.org/10.1038/nclimate2681

Ehrich, K. R., & Irwin, J. R. (2005). Willful ignorance in the request for product attribute information. *Journal of Marketing Research*, *42*(3), 266–277. https://doi.org/10.1509/jmkr.2005.42.3.266

Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of Consumer Research*, *32*(3), 378–389. https://doi.org/10.1086/497549

Feygina, I., Jost, J. T., & Goldsmith, R. E. (2010). System justification, the denial of global warming, and the possibility of "system-sanctioned change". *Personality and Social Psychology Bulletin*, *36*(3), 326–338. https://doi.org/10.1177/0146167209351435

Fisk, G. (1973). Criteria for a theory of responsible consumption. *The Journal of Marketing*, *37*(2), 24–31. https://doi.org/10.2307/1250047

Gao, L., Wheeler, S. C., & Shiv, B. (2008). The "shaken self": Product choices as a means of restoring self-view confidence. *Journal of Consumer Research*, *36*(1), 29–38.

Geller, E. S. (1981). Evaluating energy conservation programs: Is verbal report enough? *Journal of Consumer Research*, *8*(3), 331–335. https://doi.org/10.1086/208872

Gillingham, K., Newell, R. G., & Palmer, K. (2009). Energy efficiency economics and policy. *Annual Review of Resource Economics*, *1*(1), 597–620. https://doi.org/10.1146/annurev.resource.102308.124234

Gneezy, A., Imas, A., Brown, A., Nelson, L. D., & Norton, M. I. (2012). Paying to be nice: Consistency and costly prosocial behavior. *Management Science*, *58*(1), 179–187. https://doi.org/10.1287/mnsc.1110.1437

Goldsmith, K., Newman, G. E., & Dhar, R. (2016). Mental representation changes the evaluation of green product benefits. *Nature Climate Change*, *6*(9), 847–850. https://doi.org/10.1038/nclimate3019

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, *35*(3), 472–482. https://doi.org/10.1086/586910

Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, *98*(3), 392–404. https://doi.org/10.1037/a0017346

Han, Y. J., Nunes, J. C., & Drèze, X. (2010). Signaling status with luxury goods: The role of brand prominence. *Journal of Marketing*, *74*(4), 15–30. https://doi.org/10.1509/jmkg.74.4.15

Hardisty, D. J., Johnson, E. J., & Weber, E. U. (2010). A dirty word or a dirty world? Attribute framing, political affiliation, and query theory. *Psychological Science*, *21*(1), 86–92. https://doi.org/10.1177/0956797609355572

Haws, K. L., Winterich, K. P., & Naylor, R. W. (2014). Seeing the world through GREEN-tinted glasses: Green consumption values and responses to environmentally friendly products. *Journal of Consumer Psychology*, *24*(3), 336–354. https://doi.org/10.1016/j.jcps.2013.11.002

Heslop, L. A., Moran, L., & Cousineau, A. (1981). "Consciousness" in energy conservation behavior: An exploratory study. *Journal of Consumer Research*, *8*(3), 299–305. https://doi.org/10.1086/208868

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, *94*(3), 319–340. https://doi.org/10.1037/0033-295X.94.3.319

Irwin, J. R., & Naylor, R. W. (2009). Ethical decisions and response mode compatibility: Weighting of ethical attributes in consideration sets formed by excluding versus including product alternatives. *Journal of Marketing Research*, *46*(2), 234–246. https://doi.org/10.1509/jmkr.46.2.234

Ito, K. (2015). Asymmetric incentives in subsidies: Evidence from a large-scale electricity rebate program. *American Economic Journal: Economic Policy*, *7*, 209–237.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, *5*(1), 193–206. https://doi.org/10.1257/jep.5.1.193

Kassarjian, H. H. (1971). Incorporating ecology into marketing strategy: The case of air pollution. *Journal of Marketing*, *35*(3), 61–65. https://doi.org/10.2307/1249791

Khan, U., & Dhar, R. (2006). Licensing effect in consumer choice. *Journal of Marketing Research*, *43*(2), 259–266. https://doi.org/10.1509/jmkr.43.2.259

Kidwell, B., Farmer, A., & Hardesty, D. M. (2013). Getting liberals and conservatives to go green: Political ideology and congruent

appeals. *Journal of Consumer Research*, *40*(2), 350–367. https://doi.org/10.1086/670610

Kilbourne, W. E. (1995). Green advertising: Salvation or oxymoron? *Journal of Advertising*, *24*(2), 7–20. https://doi.org/10.1080/00913367.1995.10673472

Kilbourne, W. E., & Beckmann, S. C. (1998). Review and critical assessment of research on marketing and the environment. *Journal of Marketing Management*, *14*(6), 513–532. https://doi.org/10.1362/026725798784867716

Kinnear, T. C., Taylor, J. R., & Ahmed, S. A. (1974). Ecologically concerned consumers: Who are they? *Journal of Marketing*, *38*(2), 20–24. https://doi.org/10.2307/1250192

Kronrod, A., Grinstein, A., & Wathieu, L. (2012). Go green! Should environmental messages be so assertive? *Journal of Marketing*, *76*(1), 95–102. https://doi.org/10.1509/jm.10.0416

Leonard-Barton, D. (1981). Voluntary simplicity lifestyles and energy conservation. *Journal of Consumer Research*, *8*(3), 243–252. https://doi.org/10.1086/208861

Li, Y., Johnson, E. J., & Zaval, L. (2011). Local warming: Daily temperature change influences belief in global warming. *Psychological Science*, *22*(4), 454–459. https://doi.org/10.1177/0956797611400913

Luchs, M. G., Naylor, R. W., Irwin, J. R., & Raghunathan, R. (2010). The sustainability liability: Potential negative effects of ethicality on product preference. *Journal of Marketing*, *74*(5), 18–31. https://doi.org/10.1509/jmkg.74.5.18

Malkoc, S., & Zauberman, G. (2019). Psychological analysis of consumer decisions from an intertemporal choice perspective. *Consumer Psychology Review*, *2*(1), 97–113. https://doi.org/10.1002/arcp.1048

Manning, C. (2009). *The psychology of sustainable behavior: Tips for empowering people to take environmentally positive action*. St. Paul: Minnesota Pollution Control Agency.

Markowitz, E. M., & Shariff, A. F. (2012). Climate change and moral judgement. *Nature Climate Change*, *2*(4), 243–247. https://doi.org/10.1038/nclimate1378

Mayer, R. N. (1976). The socially conscious consumer—another look at the data. *Journal of Consumer Research*, *3*(2), 113–115. https://doi.org/10.1086/208659

Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science*, *21*(4), 494–498. https://doi.org/10.1177/0956797610363538

McCarty, J. A., & Shrum, L. J. (1994). The recycling of solid wastes: Personal values, value orientations, and attitudes about recycling as antecedents of recycling behavior. *Journal of Business Research*, *30*(1), 53–62. https://doi.org/10.1016/0148-2963(94)90068-X

McCright, A. M., & Dunlap, R. E. (2011). The politicization of climate change and polarization in the American public's views of global warming, 2001–2010. *Sociological Quarterly*, *52*(2), 155–194. https://doi.org/10.1111/j.1533-8525.2011.01198.x

McNeill, D. L., & Wilkie, W. L. (1979). Public policy and consumer information: Impact of the new energy labels. *Journal of Consumer Research*, *6*(1), 1–11. https://doi.org/10.1086/208743

Meng, M. D., & Trudel, R. (2017). Using emoticons to encourage students to recycle. *Journal of Environmental Education*, *48*(3), 196–204. https://doi.org/10.1080/00958964.2017.1281212

Menon, A., & Menon, A. (1997). Enviropreneurial marketing strategy: the emergence of corporate environmentalism as market strategy. *Journal of Marketing*, *61*(1), 51–67.

Milinski, M., Semmann, D., Krambeck, H., & Marotzke, J. (2006). Stabilizing the Earth's climate is not a losing game: Supporting evidence from public goods experiments. *Proceedings of the National Academy of Sciences of the United States of America*, *103*, 3994–3998. https://doi.org/10.1073/pnas.0504902103

Morewedge, C. K., & Kahneman, D. (2010). Associative processes in intuitive judgment. *Trends in Cognitive Sciences*, *14*(10), 435–440. https://doi.org/10.1016/j.tics.2010.07.004

Murphy, P. E., Kangun, N., & Locander, W. B. (1978). Environmentally concerned consumers-racial variations. *Journal of Marketing*, *42*(4), 61–66. https://doi.org/10.2307/1250087

Newman, K. P., & Brucks, M. (2018). The influence of corporate social responsibility efforts on the moral behavior of high self-brand overlap consumers. *Journal of Consumer Psychology*, *28*(2), 253–271. https://doi.org/10.1002/jcpy.1027

O'Donoghue, T., & Rabin, M. (1999). Doing it now or later. *American Economic Review*, *89*(1), 103–124. https://doi.org/10.1257/aer.89.1.103

Onorato, R. S., & Turner, J. C. (2004). Fluidity in the self-concept: The shift from personal to social identity. *European Journal of Social Psychology*, *34*(3), 257–278. https://doi.org/10.1002/(ISSN)1099-0992

Oskamp, S., Harrington, M. J., Edwards, T. C., Sherwood, D. L., Okuda, S. M., & Swanson, D. C. (1991). Factors influencing household recycling behavior. *Environment and Behavior*, *23*(4), 494–519. https://doi.org/10.1177/0013916591234005

Pearson, A. R., Schuldt, J. P., & Romero-Canyas, R. (2016). Social climate science: A new vista for psychological science. *Perspectives on Psychological Science*, *11*(5), 632–650. https://doi.org/10.1177/1745691616639726

Peloza, J., White, K., & Shang, J. (2013). Good and guilt-free: The role of self-accountability in influencing preferences for products with ethical attributes. *Journal of Marketing*, *77*(1), 104–119. https://doi.org/10.1509/jm.11.0454

Pickett, G. M., Kangun, N., & Grove, S. J. (1993). Is there a general conserving consumer? A public policy concern *Journal of Public Policy and Marketing*, *12*(2), 234–243.

Reczek, R. W., Trudel, R., & White, K. (2018). Focusing on the forest or the trees: How abstract versus concrete construal level predicts responses to eco-friendly products. *Journal of Environmental Psychology*, *57*, 87–98. https://doi.org/10.1016/j.jenvp.2018.06.003

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, *18*(5), 429–434. https://doi.org/10.1111/j.1467-9280.2007.01917.x

Schultz, P. W., Oskamp, S., & Mainieri, T. (1995). Who recycles and when? A review of personal and situational factors. *Journal of Environmental Psychology*, *15*(2), 105–121. https://doi.org/10.1016/0272-4944(95)90019-5

Semmann, D., Krambeck, H. J., & Milinski, M. (2005). Reputation is valuable within and outside one's own social group. *Behavioral Ecology and Sociobiology*, *57*(6), 611–616. https://doi.org/10.1007/s00265-004-0885-3

Sen, S., & Bhattacharya, C. B. (2001). Does doing good always lead to doing better? Consumer reactions to corporate social responsibility. *Journal of Marketing Research*, *38*(2), 225–243. https://doi.org/10.1509/jmkr.38.2.225.18838

Shealy, T., Klotz, L., Weber, E. U., Johnson, E. J., & Bell, R. G. (2016). Using framing effects to inform more sustainable infrastructure design decisions. *Journal of Construction Engineering and Management*, *142*(9), 04016037. https://doi.org/10.1061/(ASCE)CO.1943-7862.0001152

Shrum, L. J., Lowrey, Tina M., & McCarty, John A. (1994). Recycling as a marketing problem: A framework for strategy development. *Psychology & Marketing*, *11*(4), 393–416.

Shrum, L. J., McCarty, J. A., & Lowrey, T. M. (1995). Buyer characteristics of the green consumer and their implications for advertising strategy. *Journal of Advertising*, *24*(2), 71–82. https://doi.org/10.1080/00913367.1995.10673477

Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin*, *119*(1), 3–22. https://doi.org/10.1037/0033-2909.119.1.3

Spence, A., Poortinga, W., & Pidgeon, N. (2012). The psychological distance of climate change. *Risk Analysis: An International Journal*, *32*(6), 957–972. https://doi.org/10.1111/j.1539-6924.2011.01695.x

Steele, C. M. (1988). *The psychology of self-affirmation: Sustaining the integrity of the self. In Advances in experimental social psychology* (Vol. *21*, pp. 261–302). Academic Press.

Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, *56*(3), 407–424. https://doi.org/10.1111/0022-4537.00175

Stern, P. C. (2014). Individual and household interactions with energy systems: Toward integrated understanding. *Energy Research and Social Science*, *1*, 41–48. https://doi.org/10.1016/j.erss.2014.03.003

Sun, M., & Trudel, R. (2017). The effect of recycling versus trashing on consumption: Theory and experimental evidence. *Journal of Marketing Research*, *54*(2), 293–305. https://doi.org/10.1509/jmr.15.0574

Sunstein, C. R. (1996). Social norms and social roles. *Columbia Law Review*, *96*(4), 903–968. https://doi.org/10.2307/1123430

Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology*, *33*(1), 1–39. https://doi.org/10.1146/annurev.ps.33.020182.000245

Taylor, S., & Todd, P. (1995). Understanding household garbage reduction behavior: A test of an integrated model. *Journal of Public Policy and Marketing*, *14*(2), 192–204.

Thaler, R. H., & Sunstein, C. R. (2003). Libertarian paternalism. *American Economic Review*, *93*(2), 175–179. https://doi.org/10.1257/000282803321947001

The World Bank (2015). World development report 2015: Mind, society, and behavior. Washington, DC. Retrieved from http://documents.worldbank.org/curated/en/645741468339541646/pdf/928630WDR0978100Box385358B00PUBLIC0.pdf

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*(3), 403–421. https://doi.org/10.1037/0033-295X.110.3.403

Trudel, R., & Argo, J. J. (2013). The effect of product size and form distortion on consumer recycling behavior. *Journal of Consumer Research*, *40*(4), 632–643. https://doi.org/10.1086/671475

Trudel, R., Argo, J. J., & Meng, M. D. (2016a). The recycled self: Consumers' disposal decisions of identity-linked products. *Journal of Consumer Research*, *43*(2), 246–264. https://doi.org/10.1093/jcr/ucw014

Trudel, R., Argo, J. J., & Meng, M. D. (2016b). Trash or recycle? How product distortion leads to categorization error during disposal. *Environment and Behavior*, *48*(7), 966–985. https://doi.org/10.1177/0013916515577635

Trudel, R., & Cotte, J. (2009). Does it pay to be good? *MIT Sloan Management Review*, *50*(2), 61–68.

Trudel, R., Klein, J., Sen, S., & Dawar, N. (2018). Feeling good by doing good: A selfish motivation for ethical choice. *Working Paper*, Boston University.

Unsworth, K. L., & Fielding, K. S. (2014). It's political: How the salience of one's political identity changes climate change beliefs and policy support. *Global Environmental Change*, *27*, 131–137. https://doi.org/10.1016/j.gloenvcha.2014.05.002

Van der Werff, E., Steg, L., & Keizer, K. (2013). The value of environmental self-identity: The relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behaviour. *Journal of Environmental Psychology*, *34*, 55–63. https://doi.org/10.1016/j.jenvp.2012.12.006

Van Houwelingen, J. H., & Van Raaij, W. F. (1989). The effect of goal-setting and daily electronic feedback on in-home energy use. *Journal of Consumer Research*, *16*(1), 98–105. https://doi.org/10.1086/209197

Veblen, T. (1899). *The theory of the leisure class*. New York, NY: Penguin.

Weber, E. U. (2017). Breaking cognitive barriers to a sustainable future. *Nature: Human Behaviour*, *1*(1), 0013.

Webster, F. E. Jr. (1975). Determining the characteristics of the socially conscious consumer. *Journal of Consumer Research*, *2*(3), 188–196. https://doi.org/10.1086/208631

White, K., MacDonnell, R., & Dahl, D. W. (2011). It's the mind-set that matters: The role of construal level and message framing in influencing consumer efficacy and conservation behaviors. *Journal of Marketing Research*, *48*(3), 472–485. https://doi.org/10.1509/jmkr.48.3.472

White, K., MacDonnell, R., & Ellard, J. H. (2012). Belief in a just world: Consumer intentions and behaviors toward ethical products. *Journal of Marketing*, *76*(1), 103–118. https://doi.org/10.1509/jm.09.0581

White, K., & Peloza, J. (2009). Self-benefit versus other-benefit marketing appeals: Their effectiveness in generating charitable support. *Journal of Marketing*, *73*(4), 109–124. https://doi.org/10.1509/jmkg.73.4.109

White, K., & Simpson, B. (2013). When do (and don't) normative appeals influence sustainable consumer behaviors? *Journal of Marketing*, *77*(2), 78–95. https://doi.org/10.1509/jm.11.0278

White, K., Simpson, B., & Argo, J. J. (2014). The motivating role of dissociative out-groups in encouraging positive consumer behaviors. *Journal of Marketing Research*, *51*(4), 433–447. https://doi.org/10.1509/jmr.12.0335

Whitley, S. C., Trudel, R., & Kurt, D. (2018). The influence of purchase motivation on perceived preference uniqueness and assortment size choice. *Journal of Consumer Research*, *45*(4). https://doi.org/10.1093/jcr/ucy031

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

Winterich, K. P., Reczek, R. W., & Irwin, J. R. (2017). Keeping the memory but not the possession: Memory preservation mitigates identity loss from product disposition. *Journal of Marketing*, *81*(5), 104–120. https://doi.org/10.1509/jm.16.0311

Zahavi, A. (1975). Mate selection—a selection for a handicap. *Journal of theoretical Biology*, *53*(1), 205–214. https://doi.org/10.1016/0022-5193(75)90111-3

Zane, D. M., Irwin, J. R., & Reczek, R. W. (2016). Do less ethical consumers denigrate more ethical consumers? The effect of willful ignorance on judgments of others. *Journal of Consumer Psychology*, *26*(3), 337–349. https://doi.org/10.1016/j.jcps.2015.10.002

Zaval, L., Markowitz, E. M., & Weber, E. U. (2015). How will I be remembered? Conserving the environment for the sake of one's legacy. *Psychological Science*, *26*(2), 231–236. https://doi.org/10.1177/0956797614561266

Zinkhan, G. M., & Carlson, L. (1995). Green advertising and the reluctant consumer. *Journal of Advertising*, *24*(2), 1–6. https://doi.org/10.1080/00913367.1995.10673471

How to cite this article: Trudel R. Sustainable consumer behavior. *Consum Psychol Rev*. 2019;2:85–96. https://doi.org/10.1002/arcp.1045