

# Going green to be morally clean: An examination of environmental behavior among materialistic consumers

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## Abstract

Materialism and environmentalism have emerged as megatrends in developed western societies. Prior research has suggested that these two values are incompatible. The current research shows that materialistic values can strengthen the positive relationship between environmental knowledge and environmental behaviors under certain conditions. The results suggest moral compensation as the underlying cause. Across four studies, this research uses experimental, survey, and secondary data to show that materialistic values can have a positive impact on indirect environmental behaviors when an individual possesses sufficient environmental knowledge. This effect is stronger in individuals who are highly self-conscious as well as those primed to be self-conscious, consistent with the moral compensation paradigm. In summary, the impact of environmental attitudes on environmental behaviors through environmental knowledge is most pronounced when one's materialistic values and self-consciousness are high. Conceptual, policy-making, and managerial implications are discussed.

## KEYWORDS

environmental attitude, environmental behavior, environmental knowledge, materialism, moral compensation, self-consciousness

*For America's Loudest Climate Alarmists, Do as I Say, Not as I Do.*

—Tiana Lowe, June 6, 2017, *National Review*

## 1 | INTRODUCTION

For many of America's most vocal climate change activists, it seems that “do as I say, not as I do” is the norm rather than the exception. Actor and film producer Leonardo DiCaprio, who created the climate change documentary *The 11th Hour* and was awarded the “UN Messenger of Peace with a special focus on climate change,” owns two homes in Hollywood and three in New York (MRCTV, 2015). Former U.S. Vice President Al Gore, who was awarded a Nobel Peace Prize for his work in environmental protection, maintained multiple homes and frequently flew on chartered jets, actions that directly conflict with the values of environmentalism (Taylor, 2011).

News stories like these reflect a prevalent phenomenon in today's society. In recent years, two seemingly opposed values, one associated with materialism and the other associated with environmentalism, have emerged as megatrends in developed western societies (Burroughs & Rindfleisch, 2002; Hurst, Dittmar, Bond, & Kasser, 2013;

Lubin & Esty, 2010). On the one hand, environmental issues have become a prominent mainstream topic. The *New York Times* publishes an entire section of the paper titled “Environment,” and the Academy Award winning environmental documentary, *An Inconvenient Truth*, has become a part of public school curricula in developed countries such as England and the United States. On the other hand, the rise of environmentalism has coincided with the emergence of materialism as “a pervasive value in American society” (Kim, 2013, p. 759), with many individuals focusing on obtaining worldly possessions and social renown. To these individuals, material possessions are so important that they become a part of the individual's self-identity and affect the individual's subjective well-being (Burroughs & Rindfleisch, 2002).

The co-emergence of these two antithetical sets of values is perplexing. Values are motivational in that they represent aspirational objective states that are relatively stable over time (Rokeach, 1973). Values guide the selection or evaluation of actions, and people decide what is worth doing or avoiding based on their values. Values have been linked to behaviors in many empirical studies (Bardi & Schwartz, 2003; Bond & Chi, 1997; Rokeach, 1973; Schwartz, 1996). Because values drive behaviors, an individual must hold values that are complementary or congruent; if one set of values dictates a specific behavior while the other set dictates the opposite, dissonance would most likely

develop (Bardi & Schwartz, 2003; Burroughs & Rindfleisch, 2002; Festinger, 1962; Mick & Fournier, 1998).

Philosophically, especially at the poles, materialistic values and environmental values should drive individuals to behave quite differently. For example, an ideal environmentalist should consume as few material resources as possible, while an ideal materialist's identity is based on their level and type of physical consumption. This conflict in goals and values is seemingly unjustifiable. Schwartz's (1992) theory of basic values suggests that the self-enhancement values associated with materialism (e.g., Hedonism, Power, and Achievement) oppose the self-transcendent values associated with environmentalism (e.g., Universalism and Benevolence). A large body of extant research supports the idea that materialism and environmentalism are incompatible, and a meta-analysis of these studies shows a negative correlation between materialism and both environmental attitudes and behaviors (Hurst et al., 2013). Hurst et al. (2013) urge future research to clarify this relationship "by including measures for both environmental behaviors and environmental attitudes and performing mediation analysis" (p. 265). This echoes a call for research on how materialistic values interact with other factors to affect environmental behaviors (Cleveland, Kalamas, & Laroche, 2012). Motivated by the research gap mentioned above, the current work explores the interaction of materialistic and environmental values, and it reveals the nuanced manner in which materialistic values influence the relationship between environmental attitudes and environmental behaviors.

From a marketing practitioner's point of view, understanding the interaction between materialistic and environmental values and how materialistic values influence the relationship between environmental attitudes and environmental behaviors is invaluable. An increasing number of consumers articulate environmental attitudes and beliefs that drive demand for environmentally friendly products (Tseng & Hung, 2013). For example, opinion polls in the United States and other developed countries show that a large majority of consumers express an increased interest in socially conscious and environmentally friendly products (Cotte & Trudel, 2009; Olson, 2013). According to the American Climate Values Survey from 2014, four in five Americans support a U.S. energy transition away from coal and oil and toward renewable energy sources like wind and solar. Many consumers are conscientious about their own personal impact on the environment, and Mintel Reports found that close to 100 million Americans define themselves as "super green" or "true green" (O'Donnell, 2014). Additionally, Cone Communications (2017) reports that 79% of U.S. individuals claim to seek out environmentally responsible products whenever possible.

It is important that marketers and other environmental stakeholders consider the increasing interest in environmental issues given the large number of individuals who espouse both environmental and materialistic values. For marketers, addressing these consumers directly will yield bottom-line results. For environmental organizations, the inclusion of materialistic consumers as a target market may have a profound impact due to the overall size of the market. Most believe that materialistic individuals do not care about the environment. However, there are numerous examples of individuals exhibiting behaviors consistent with materialistic values as they lobby for a

societal focus on environmental values. The current research builds on the intersection of the Theory of Basic Values and Moral Compensation Theory to offer an explanation for such puzzling phenomena. Individuals who are highly materialistic, but also espouse environmental values may justify these opposing values through a mechanism known to social psychologists as moral compensation. These individuals use environmental behaviors to "offset" or "balance" materialistic behaviors in order to achieve an ideal moral self. The findings show that, counterintuitively, high levels of materialistic values work hand-in-hand with high levels of environmental knowledge to drive certain forms of environmental behavior.

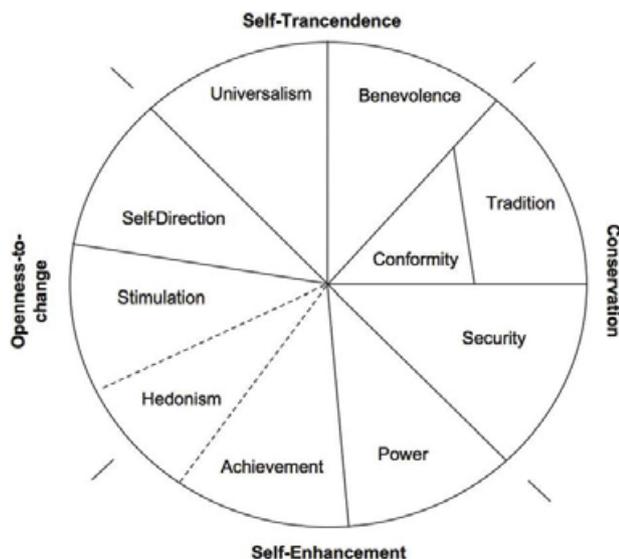
The current research makes three important contributions to extant literature. First, leveraging the Theory of Basic Values (Schwartz, 1992), this research demonstrates that individuals who hold incongruent values with respect to materialism and environmentalism often display environmental behaviors. While there has been some anecdotal evidence for this, the current research is the first to empirically show that these two seemingly opposite values interact to influence consumer behaviors. Second, building upon Moral Compensation Theory, this research offers an explanation as to how materialistic individuals justify the two incongruent values in their behaviors. By using moral behavior to compensate for morally dubious behavior, materialistic values actually strengthen the application of environmental values. The studies in this paper extend prior research on the negative correlation between materialism and environmentalism by exploring the interaction of their components. Third, this research establishes materialistic values as a boundary condition that affects certain environmental behaviors. Contrary to the common belief that materialistic individuals are not interested in behaving in an environmentally friendly way, materialistic values can actually spur environmental behaviors under certain conditions. Thus, understanding these phenomena can bear important implications for marketers as well as policy makers.

The remainder of this paper is organized as follows. First, the literature and relevant research findings are reviewed, and a theoretical framework is proposed. Next, an overview of the empirical studies is presented, followed by the details and results of each study. Then, the theoretical contributions and managerial implications of the findings are discussed. The paper ends with several conclusions and directions for future research.

## 2 | CONCEPTUAL DEVELOPMENT

### 2.1 | Theory of basic values

The Theory of Basic Values (Schwartz, 1992) defines 10 fundamental human values by their underlying motivations. These values are further defined in relation to other values that may complement or conflict with each value. The 10 values are arranged on a circumplex with congruent values adjacent to each other, and conflicting values on opposite sides of the circle. Figure 1 displays the circumplex, which is divided into self-focused values on the lower left (self-direction, stimulation, hedonism, achievement, power) and other-focused values



**FIGURE 1** The circumplex model of values (Schwartz, 2012)

on the upper right (universalism, benevolence, conformity, tradition, security).

A number of studies have shown a positive relationship between values and behaviors as an avenue toward either maintaining internal consistency or achieving goals (i.e., values align with desired end states) (Rokeach, 1973). Bardi and Schwartz (2003) show a positive correlation between values and behaviors for all 10 values in the circumplex. The current research is focused on the relationship between environmental and materialistic values. Materialistic values are best aligned with hedonism (defined as “pleasure and sensuous gratification for oneself”), achievement (defined as “personal success through demonstrating competence according to social standards”), and power (defined as “social status and prestige, control or dominance over people and resources”). Environmental values are best aligned with universalism (defined as “understanding, appreciation, tolerance and protection of the welfare of all people and nature”) and benevolence (defined as “preservation and enhancement of people with whom one is in frequent personal contact”) (Bardi & Schwartz, 2003, p. 1208). As seen in Figure 1, these values are on opposite sides of the circumplex and are expected to conflict with each other in terms of how they guide or predict behavior.

## 2.2 | Materialism

Materialism is defined as the importance placed on the ownership and acquisition of material goods with respect to the achievement of major life goals (Richins & Dawson, 1992). Richins and Dawson (1992) define materialistic values in three domains: the use of possessions to judge success for self and others, the centrality of possessions in one’s life, and the belief that possessions and their acquisition lead to happiness and satisfaction. In other words, materialists believe that happiness can be achieved through relationships with objects (Burroughs & Rindfleisch, 2002). The social psychology literature identifies a materialistic values orientation as one that originates in

insecurity, but is reinforced by a pervasive culture of consumption (Kasser, Ryan, Couchman, & Sheldon, 2004).

Materialism is an important life value (Burroughs & Rindfleisch, 2002; Mick, 1996) endemic to capitalist societies. The expansion of consumption is a necessary component to a capitalist economy, and advertising messages are often designed to engender upward social comparison (Richins, 1995; Sirgy, 1998) and consumeristic desire (O’Barr, 1994). The culture of consumption that both drives and is driven by materialistic values can directly conflict with prosocial attitudes and values (Abramson & Inglehart, 2009; Cohen & Cohen, 1996v; Kasser & Ryan, 1993; Schwartz, 1996), and can directly undermine environmental issues (Kasser et al., 2004).

## 2.3 | Environmentalism

Environmentalism may be defined behaviorally as “the propensity to take actions with pro-environmental intent” (Stern, 2000, p. 411), as a worldview (Dunlap & Van Liere, 1978), or as beliefs, norms, and behaviors that follow an individual’s values (Stern, 2000). The Value-Belief-Norm Theory postulates that three types of values (Altruistic, Biospheric, and Egoistic) drive environmental behaviors (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Rokeach (1968) defines a value as a centrally located concept determining how one ought (or ought not) to behave. He similarly defines an attitude as a relatively enduring concept about an object or situation that drives the individual to behave in a specific way. In essence, the attitude is the application of the value toward specific behaviors. Value-Belief-Norm theory suggests that beliefs will mediate the link between values and behaviors. Rokeach’s (1968) seminal work defines a belief as virtually anything that can be preceded by the phrase “I believe ...” These beliefs are grounded in knowledge to some degree, and individuals with more favorable environmental attitudes will likely retain higher levels of environmental knowledge. Therefore, following Value-Belief-Norm theory, environmental attitudes, as an application of values, should drive environmental behaviors, and environmental knowledge will mediate the link between environmental attitudes and environmental behaviors.

**H1:** Environmental attitude influences environmental behavior through environmental knowledge.

The self-enhancing materialistic values that drive consumer culture oppose self-transcendent environmental values. These values are incongruent (Bardi & Schwartz, 2003) because materialistic values would drive consumption behaviors while environmental values would minimize consumption behaviors. A recent meta-analysis showed a medium-sized negative correlation between materialism and both environmental attitudes and behaviors (Hurst et al., 2013), which is exactly what one would expect based on the values that drive these discordant world views (Schwartz, 1992). However, while materialistic behaviors generally conflict with environmental values, certain environmental behaviors can coexist with a materialistic lifestyle.

**TABLE 1** Types of behaviors and their relationship to materialistic values

Type of behavior	Direct environmental behavior	Indirect environmental behavior	Materialistic behavior
Definition	Proenvironmental behavior that has a direct and immediate positive impact on the environment	Proenvironmental behavior that has an indirect positive impact on the environment	Acquiring and possessing material objects to demonstrate value, status, or power
Corresponding Construct in Dietz, Stern, & Guagnano, 1998 typology	Private-sphere environmental behavior	Nonactivist environmental behavior in the public sphere	Materialism as opposed to postmaterialism
Example behavior	Making responsible consumption choices, directly limiting environmental harm such as CO <sub>2</sub> production, consuming less, choosing energy efficient transportation methods	Petitioning and making monetary contributions to environmental causes, willing to pay higher environmental taxes	Conspicuous consumption, overconsumption, seeking well-being through consumption
Associated values	Self-transcendence (e.g., universalism and benevolence)	Self-transcendence (e.g., universalism and benevolence)	Self-enhancement (e.g., hedonism, power, and achievement)
Relationship to materialistic values	In direct conflict	Not in direct conflict	Congruent

## 2.4 | Public or indirect environmental behaviors

In recent years, scholars have recognized that environmental behavior is a multidimensional rather than a unidimensional construct. Based on a factor analysis of the General Social Survey data, there are three conceptually distinct and statistically reliable forms of environmental behavior (Dietz, Stern, & Guagnano, 1998): (1) environmental activism, such as committed and active involvement in environmental organizations, (2) nonactivist behaviors in the public sphere, such as petitioning for environmental issues, contributing monetarily to environmental causes, and paying higher environmental taxes, and (3) private-sphere environmentalism, where individuals directly minimize their personal impact on the environment by making responsible consumption choices and directly limiting environmental harm.

Kilbourne and Pickett (2008) developed a measurement scale for both direct environmental behaviors (equivalent to Dietz, Stern & Guagnano's private-sphere environmentalism) and indirect environmental behaviors (equivalent to Dietz, Stern & Guagnano's nonactivist behaviors in the public sphere). As indicated by their names, direct environmental behaviors have a direct and immediate positive impact on the environment; on the other hand, indirect environmental behaviors have no direct positive impact on the environment, but rather support environmentalism in other important ways. Table 1 compares the two types of environmental behaviors and contrasts them with materialistic behavior.

The current research focuses on indirect environmental behaviors for two reasons. First, prior research suggests that indirect environmental behaviors are both more prevalent and more influential than direct environmental behaviors (Prothero et al., 2010). Stern (2000, p. 409) states, "although these (indirect environmental) behaviors affect the environment only indirectly, by influencing public policies, the effects may be large, because public policies can change the behaviors of many people and organizations at once." Marketers have long known that consumers are affected by others in the marketplace (Arndt, 1967; Price & Feick, 1984), and that an individual's environmental behavior can affect other consumers in many ways. Second, indirect environmental behaviors do not directly conflict with a materi-

alistic lifestyle. While many direct environmental behaviors limit consumption, an individual can make environmentally harmful consumption choices while still engaging in indirect environmental behaviors. In fact, prominent environmental activists often cite specific indirect environmental behaviors, like utilizing carbon offsets or purchasing only renewable energy, when questioned about their high levels of consumption. A well-known example is that Al Gore takes pride in his "carbon-free lifestyle" while living in a 20-bedroom Nashville mansion (Taylor, 2011). Individuals like Gore may be using indirect environmental behaviors to morally compensate for their materialistic consumption behaviors.

## 2.5 | Moral compensation

People do not make consumption decisions in a vacuum. Decisions are inevitably embedded in a dense history of past decisions and behaviors (Mazar & Zhong, 2010). "Moral cleansing" and its companion "moral licensing" are examples of how past behaviors impact future decisions and behaviors. Moral licensing refers to the situation where "past moral behavior makes people more likely to do potentially immoral things without worrying about feeling or appearing immoral" (Merritt, Effron, & Monin, 2010, p. 344). Moral cleansing is the opposite phenomenon where an individual engages in moral behaviors to compensate for past immoral acts (Zhong & Liljenquist, 2006). Both cleansing and licensing are tactics that individuals can use to compensate for immoral or undesirable behaviors. The moral compensation concept provides a foundation for understanding and justifying competing values driven behaviors (e.g., self-enhancing materialistic consumption and self-transcendent environmentally friendly behaviors).

Each individual has an ideal moral self, or a conceptualization of who they are with respect to moral and social principles (Sachdevam, Iliev, & Medin, 2009). Morality can be viewed as a balancing act between performing prosocial actions and limiting the costs associated with such actions (Eisenberg & Shell, 1986). To achieve a moral balance (Nisan, 1991) or a moral equilibrium (Prentice, 2011), individuals can employ the strategy of moral compensation. The underlying assumption is that individuals prefer to have a positive view of their moral selves.

Prosocial behaviors can help them achieve this goal; however, prosocial decisions come at a cost and often involve conflicts of interest (Mazar & Zhong, 2010). When behaviors drive the moral self-concept below the ideal level, individuals are motivated to act in a more prosocial manner to return to their ideal moral equilibrium.

The effects of moral compensation, as a mechanism to maintain a desired or ideal moral self, are evident in everyday life, and these effects have been consistently reproduced in laboratory and field experiments. For example, in a recent field experiment, Tiefenbeck, Staake, Roth, and Sachs (2013) split the residents of an apartment building into two groups. Residents in the treatment group received a weekly update on their water consumption along with a reminder that one should conserve energy and resources. Residents in the control group received neither the weekly update nor the reminder notes. At the end of the experimental period, those who received weekly feedback on their water consumption lowered their water use by 6% when compared to the control group. However, the same group also increased their electricity use by 5.6% when compared to the control group. A plausible explanation is that individuals viewed their involvement in one area of environmental protection (reducing water usage) as a license to be less prudent in another area of environmental protection (increasing electricity usage). Similar compensatory behaviors have been observed in laboratory settings. For example, Mazar and Zhong (2010) found that subjects who bought environmentally friendly products in a laboratory experiment shared less money with others than subjects who bought environmentally unfriendly products. The authors also showed that purchasers of green products were more likely to cheat to earn more money or to steal money when paying themselves from an unattended envelope. Even simply imagining doing good (Khan & Dhar, 2006) or contemplating prosocial actions that one might undertake (Tanner & Carlson, 2009) are sufficient to limit future prosocial motivation. In the same way, moral compensation is used as a balancing mechanism when an individual chooses to engage in prosocial behaviors following morally dubious behaviors. For example, in a survey study, participants who were asked to recall past immoral actions reported higher prosocial intentions than either those in the control group or those asked to recall past moral actions (Merritt et al., 2010). One way that an individual can demonstrate prosocial behavior is by engaging in environmentally friendly activities, and it is possible that these actions can morally compensate for materialistic consumption.

## 2.6 | Environmental behavior as a moral compensation mechanism

Consumers attach higher social and moral values to green consumerism than to conventional consumerism (Mazar & Zhong, 2010). According to a Mintel shoppers report, more than half of Millennials say they feel better about themselves after purchasing organic products (Roberts, 2015). In a laboratory study, subjects displayed moral compensation when making decisions to either abide by or violate air quality standards (Sachdeva, Iliev, & Medin, 2009). Findings such as these suggest that individuals view environmental behaviors as proso-

cial actions, which can be used to adjust or correct their moral self-image (Merritt et al., 2010).

When individuals with a materialistic lifestyle possess knowledge about how consumption can affect the environment, they become aware of the negative consequences associated with their consumption behaviors, and this can result in damage to the individual's self-image. To repair this damage, these individuals may choose to participate in some environmentally friendly activities. Direct environmental behaviors often require a reduction in consumption, and they create conflicts with materialistic values. However, since indirect environmental behaviors typically do not require a change of lifestyle, individuals with materialistic values will be more likely to engage in indirect environmental behaviors when they understand environmental issues. This is consistent with past findings that suggest that people engage in certain exchanges to "feel good about doing their part without committing themselves to a hard-to-live-up-to psychological contract" (Holmes, Miller, & Lerner, 2002, p. 145).

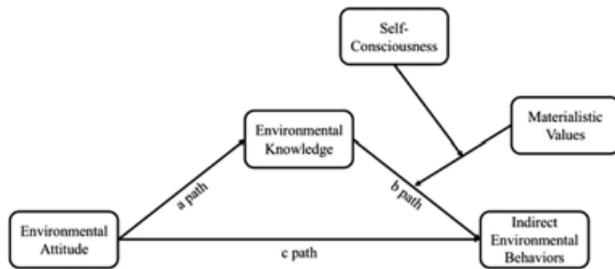
**H2:** Materialistic values positively moderate the impact of environmental knowledge on indirect environmental behavior.

## 2.7 | The role of self-consciousness

Individuals can have a high degree of environmental knowledge, but they still might not act on this knowledge if they do not perceive a reason for corrective action. Self-consciousness is the tendency to focus on oneself with an acute awareness of one's own and others' opinions about oneself (Buss, 1980), and it has been shown to negatively affect an individual's level of consumption (Iyer & Muncy, 2009). A crucial component of Moral Compensation Theory suggests that the individual must realize the need for moral compensation for cleansing to occur (Mazar & Zhong, 2010). In other words, the impetus for cleansing and licensing comes from a moral self-image that does not align with a desired moral self-image. Individuals vary in the degree to which they monitor their behaviors (Scheier & Carver, 1985). Highly self-conscious individuals are more likely to be cognizant of the negative impacts of acting in a self-interested manner because they actively monitor their self-concepts and are more likely to recognize deviations from their ideal moral conceptualization following a social misstep. For these individuals, behaviors that cause negative environmental outcomes will spur a need for moral compensation. Between two individuals who are equally materialistic, the one who is more self-conscious monitors his/her moral self-concept more closely and is more likely to regulate the self-concept through moral compensation.

**H3:** An individual's level of self-consciousness moderates the impact of materialistic values on the path from environmental knowledge to indirect environmental behavior.

Based on the above arguments, Figure 2 displays the proposed theoretical framework. The model suggests that environmental attitude impacts environmental behavior through the mediation of environmental knowledge. When an individual is high on materialistic values, the mediation effect becomes stronger. As would be



**FIGURE 2** Conceptual model

expected if moral compensation was driving the effect, the moderated effect of materialistic values is even more pronounced when the individual is highly self-conscious. If supported, this framework will enhance understanding of the mechanism through which materialistic values and self-consciousness affect an individual's environmental behavior.

### 3 | EMPIRICAL RESEARCH

A series of studies was conducted to test the proposed theoretical framework. The pretest provides initial support for the conceptual framework by showing that materialistic consumption can indeed stimulate environmental behaviors. Study 1 provides a cross-sectional test of the environmental attitudes → environmental knowledge → indirect environmental behaviors mediation model while showing the moderating role of materialistic values. Study 2 replicates Study 1 with secondary data from the World Values Survey (WVS). Study 3 introduces the self-consciousness construct, and tests the full theoretical framework displayed in Figure 2. Finally, Study 4 experimentally manipulates the respondents' self-consciousness while testing the full theoretical framework once more.

## 4 | PRETEST

### 4.1 | Contemplating materialistic consumption and its impact on environmental behavior

Materialism has long been conceptualized as a driver of consumer behavior (Belk, 1985; Kim & Kramer, 2015; Richins, 2004). The proposed conceptual framework is based on the premise that materialistic consumption can provide an impetus for moral compensation behaviors. Prior to testing the hypotheses, it is important to test whether materialistic consumption can indeed be linked to subsequent environmentally friendly behaviors. Extant research has shown that simply contemplating or imagining a purchase can trigger moral compensation behaviors (Khan & Dhar, 2006; Tanner & Carlson, 2009). If materialistic purchases can indeed evoke the need for moral compensation, then the contemplation of a significant materialistic purchase can be expected to increase an individual's intention to engage in future environmental behaviors, while the contemplation of a more utilitarian purchase would not. In this pretest, subjects contemplated either a materialistic purchase or a utilitarian purchase. Subjects then answered

questions about their intention to engage in future environmental behaviors.

## 4.2 | Methodology

### 4.2.1 | Sample

Subjects were 142 senior undergraduate students from a large U.S. university who responded to an online survey in exchange for course credit. Using birth month, subjects were randomly assigned to one of three experimental conditions. Forty-three subjects were assigned to a "vehicle" condition, 50 were assigned to a "wardrobe" condition, and 49 were assigned to a "house" condition.

### 4.2.2 | Procedures

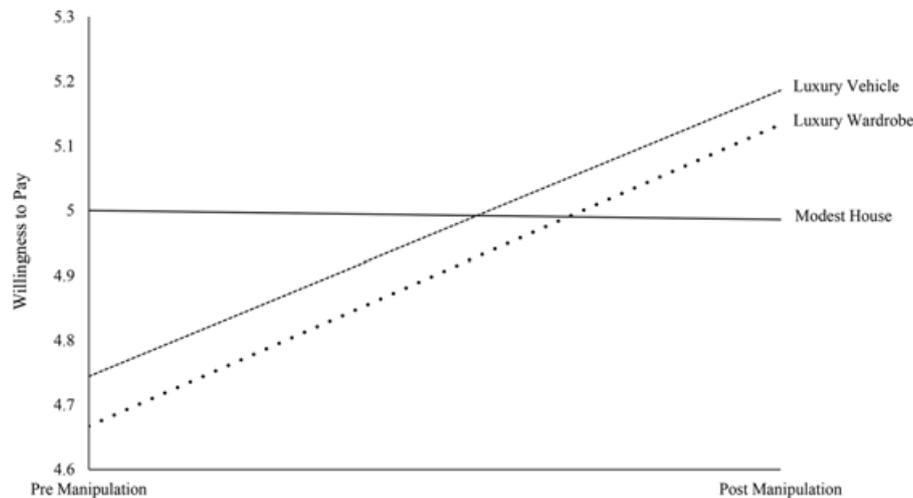
Subjects were informed that they inherited \$50,000 from an unknown relative. Subjects were then told that they decided to use a portion of this inheritance on a specific purchase. The first group was told that they had purchased an expensive "vehicle" ("like a luxury car, truck, or boat"), the second group was informed that they purchased an extensive upscale wardrobe ("fashionable and expensive clothes, shoes, and jewelry"), and the last group was told that they put a down payment on a "nice but modest house." The first two groups imagined making a materialistic purchase while the third group imagined making a utilitarian purchase.

### 4.2.3 | Measures

Environmental behaviors were operationalized by measuring the willingness to pay (WTP) for proenvironmental causes or products. WTP was assessed using the three-item scale from Laroche, Bergeron, and Barbaro-Forleo (2001) that asks whether the subject would pay 10% more for groceries that are packaged in an environmentally friendly way, 10% more in taxes that would fund an environmental cleanup program, and five dollars a week to purchase more environmentally friendly products. The items were measured on a 7-point Likert scale prior to exposure to the scenario, and again after reading and thinking about the particular purchase (luxury vehicle, luxury wardrobe, or modest house). Higher scores indicate higher WTP.

### 4.2.4 | Findings

The data were analyzed using mixed repeated-measures ANOVA. The results reported below compare either the "luxury vehicle" condition to the "modest house" condition, or the "luxury wardrobe" condition to the "modest house" condition. Figure 3 displays the mean plots for the three experimental conditions. As expected, the mean for WTP in the "house" condition remained consistent prior to and following exposure to the scenario (5.00 vs. 4.99). In contrast, the means for the "vehicle" condition (4.74 vs. 5.19) and the "wardrobe" condition (4.67 vs. 5.13) increased significantly after subjects read the scenario. WTP for the "vehicle" condition displayed a significant interaction when compared to the "house" condition ( $F(1, 90) = 5.07, P = 0.027$ ). Similarly, WTP for the "wardrobe" condition displayed a significant interaction when compared to the "house" condition ( $F(1, 97) = 5.44, P = 0.022$ ).



**FIGURE 3** Impact of materialistic consumption on willingness to pay for environmental causes or products (pretest)

### 4.3 | Discussion

This pretest provides initial support for the premise that materialistic purchases, or merely the contemplation of them, can spur some environmental behavior. This pattern is directly in line with what would be expected if individuals were looking for opportunities to morally cleanse after contemplating materialistic purchases. Those who envisioned spending money on a necessary good (i.e., a modest house) displayed no changes in WTP. On the other hand, those who envisioned a materialistic purchase (i.e., a luxury vehicle or wardrobe) displayed an increase in their WTP.

The pretest shows a positive relationship between materialistic consumption contemplation and WTP—a specific form of environmental behavior. However, it does not measure subjects' materialistic values, or test materialistic values as a moderator between environmental knowledge and environmental behavior as outlined in Figure 2. These are addressed in the following four studies.

## 5 | STUDY 1

### 5.1 | Survey evidence for materialistic values as a moderator

While the pretest showed that contemplating a materialistic purchase could indeed induce the desire to engage in some forms of environmental behaviors, the main objective of Study 1 was to investigate the moderating role of materialistic values on the relationship between environmental knowledge and environmental behavior.

### 5.2 | Methodology

#### 5.2.1 | Sample

Subjects for Study 1 were 158 students from a large U.S. university who participated in an online survey in exchange for course credit. This cross-sectional study aimed to probe the natural relationship between materialistic and environmental variables. Respon-

dents answered questions about their materialistic values, environmental attitudes, environmental knowledge, and indirect environmental behaviors.

#### 5.2.2 | Measures

Environmental attitude was measured using a three-item scale from Arcury (1990). This scale asked respondents to rate, on a 1 (strongly disagree) to 7 (strongly agree) Likert scale, their agreement with the following statements: "The balance of the nature is delicate," "Mankind is severely abusing the environment," and "Humans need to adapt to the natural environment."

Environmental knowledge was measured using a scale from Barber, Taylor, and Strick (2009) that asked individuals to rate their familiarity with current environmental issues on a Likert scale from 1 (very low) to 7 (very high). Specifically, participants rated their general environmental knowledge, and their environmental knowledge compared to both the average person and to environmental experts. Indirect environmental behavior was measured using the four-item scale from Kilbourne and Pickett (2008). This scale includes items like "I contribute money to an environmental organization" and "I would contact my political representative about an environmental issue."

Materialistic values were measured using the nine-item materialistic values scale from Richins (2004). Respondents indicated their level of agreement, on a 7-point Likert scale, to items like "I admire people who own expensive homes, cars and clothes" and "I'd be happier if I could afford to buy more things." Higher scores indicate a higher level of materialistic values.

#### 5.2.3 | Findings

Figure 2 suggests a moderated mediation model that shows that environmental knowledge mediates the effect of environmental attitudes on environmental behaviors, and the strength of this relationship is conditional on the individual's adherence to materialistic values. Following Preacher, Rucker, and Hayes (2007), two regression equations were estimated: Equation (1) is for the direct effect of

**TABLE 2** Linear regression results for Study 1

Antecedent		Consequent						
		M (environmental knowledge)			Y (indirect environmental behavior)			
		Coeff.	SE	P	Coeff.	SE	P	
X (environmental attitude)	$a_1$	0.265	0.070	0.000	$c_1$	0.087	0.078	0.269
M (environmental knowledge)		–	–	–	$b_1$	–0.186	0.303	0.540
W (materialistic values)		–	–	–	$b_2$	–0.906	0.427	0.036
$M \times W$		–	–	–	$b_3$	0.276	0.118	0.020
Control (gender)		–0.393	0.158	0.014		0.242	0.171	0.159
Control (age)		0.001	0.050	0.990		0.031	0.054	0.573
Constant	$i_1$	2.879	0.506	0.000	$i_2$	1.812	1.224	0.141
$R^2 = 0.12, F(1, 156) = 6.846, P < 0.001$					$R^2 = 0.24, F(4, 153) = 7.92, P < 0.001$			

**TABLE 3** Indirect effects through environmental knowledge at different levels of materialistic values, Study 1

Moderator percentile (materialistic values)	Value of moderator	Effect size	Bootstrap SE	Lower level CI	Upper level CI
10th	1.4	0.056	0.043	–0.020	0.153
25th	2.0	0.097	0.040	0.035	0.196 <sup>a</sup>
50th	2.6	0.137	0.048	0.060	0.244 <sup>a</sup>
75th	2.9	0.162	0.056	0.070	0.285 <sup>a</sup>
90th	3.4	0.202	0.072	0.084	0.356 <sup>a</sup>

<sup>a</sup>Signifies a confidence interval for the mediated effect that excludes zero.  
DV: indirect environmental behavior.

environmental attitudes on environmental knowledge, and Equation (2) is for the indirect effect of environmental attitudes on environmental behaviors through environmental knowledge. This effect is conditional on the moderator materialistic values.

$$M = i_1 + a_1X + a_2C_1 + a_3C_2 + e_M. \quad (1)$$

$$Y = i_2 + c'_1X + b_1M + b_2W + b_3MW + b_4C_1 + b_5C_2 + e_Y. \quad (2)$$

In these equations,  $X$  represents the independent variable environmental attitude,  $M$  corresponds to the mediator environmental knowledge,  $Y$  represents the dependent variable indirect environmental behavior,  $W$  stands for the individual's adherence to materialistic values as the moderator,  $C_1$  and  $C_2$  represent controls for the individual's age and gender, and  $e_M$  and  $e_Y$  are error terms.

This analysis is called conditional process analysis because the mediation mechanism differs in size or strength as a function of the moderator (Hayes, 2013). Process model 14 was used to conduct a bias-corrected bootstrap analysis that involved 5,000 repeated extractions of samples from the data set and the estimation of the indirect effect on each sample. Bootstrapping mediation analysis techniques identify a mediation effect based on the confidence intervals (CIs) for the effect size of the "a path" multiplied by the "b path." Conditional indirect effects with a 95% bootstrap CI that excludes zero are evidence of a mediation effect. A mediation effect is moderated if the moderator significantly impacts the size and/or direction of the mediated effect (Hayes, 2013).

Table 2 displays the regression results. There is a significant interaction between the mediator (environmental knowledge) and the moderator (materialistic values). Table 3 presents the CIs for the indirect effect. The results show a pattern of moderated mediation, which is derived from the conditional indirect mediation effects provided through bootstrapping the effects at different percentiles of the moderator (materialistic values). Specifically, there is a significant mediation effect at higher levels of materialistic values (i.e., CI does not include zero), but not at the lowest level of materialistic values.

### 5.3 | Discussion

Study 1 provides initial evidence that materialistic values can stimulate (instead of inhibit) certain environmental behaviors by moderating the effect of environmental knowledge on environmental behaviors. This counterintuitive finding is directly in line with the theory underlying moral compensation. Those who have higher levels of environmental knowledge are more likely to understand the carbon cycle, and how consumption habits contribute to CO<sub>2</sub> production. Individuals who are both knowledgeable about the environment and ascribe to materialistic values engage in more environmental behaviors, presumably to compensate for their materialistic consumption. Furthermore, when materialistic values are high, the path from environmental attitudes to environmental behaviors through environmental knowledge complements the direct effect from environmental attitudes to environmental behaviors.

## 6 | STUDY 2

### 6.1 | Secondary data evidence for materialistic values as a moderator

Study 2 was designed to test the external validity of the effects identified in Study 1. Data for this study came from the WVS Database (Inglehart, Basanez, Diez-Medrano, Halman, & Luijckx, 2004). The WVS is a global research project that explores values and beliefs across the globe. Social scientists from universities around the world have built this database based on surveys and personal interviews conducted in the language of native populations. The project began in 1981, and the data have contributed to the publication of more than 1,000 research papers. The current research utilized the fifth wave of the WVS, which was collected between 2005 and 2009.

#### 6.1.1 | Data and measures

As this study utilized secondary data from the WVS, most of the data were not provided in the exact format of existing scales to measure the constructs of interest. While this might be concerning to some, concerns should be mitigated by two factors. First, moral compensation effects have been consistently shown in laboratory experiments but not in secondary data. If support is found in secondary data, it will strengthen the external validity of both the results reported in the following studies and the moral compensation paradigm in general. Second, all remaining studies in the current research utilize published scales, and all show a pattern of results consistent with findings from this study.<sup>1</sup>

In the WVS data, environmental attitude, defined as the individual's perception of mankind's impact on the environment and its importance, was measured using the single item: "Looking after the environment is important to this person; to care for nature." Answers to this item were recorded on a 1 (very much like me) to 6 (Not at all like me) Likert scale, which was then reverse coded such that higher scores indicate a more positive environmental attitude. Environmental knowledge was measured by presenting specific environmental problems and asking respondents to use their knowledge of the issues to judge the severity of these problems. The problems were "Global warming or the greenhouse effect," "Loss of plant or animal species or biodiversity," and "Pollution of rivers or lakes." Responses were recorded in a Likert format from 1 (Very serious) to 4 (Not seri-

ous at all), which were subsequently reverse coded such that higher scores indicate greater environmental knowledge. Indirect environmental behavior was recorded with two items: "I would give part of my income for the environment" and "I would agree to an increase in taxes if the extra money were used to prevent environmental pollution." Responses were recorded on a Likert scale from 1 (Strongly agree) to 4 (Strongly disagree). These items were reverse coded and then averaged, such that higher scores indicate greater engagement in indirect environmental behaviors. Finally, materialistic values were measured using Inglehart's (1971) postmaterialistic values scale. Participants identified important directions for society from a series of choices. A materialist would prioritize items tied to their ability to consume material goods (e.g., "Maintain a high rate of economic growth" or "Fight rising prices"), whereas a postmaterialist (or non-materialist) would choose nonmaterialistic items (e.g., "Move toward a society where ideas count more than money" or "Move toward a friendlier, less impersonal society") as top priority. The compilers of the WVS transformed and recoded the responses to this scale into six categories from 0 (materialist) to 5 (postmaterialist or nonmaterialist) based on the number of chosen postmaterialist goals. This score was reverse coded to reflect the individual's view of materialistic values such that higher scores indicate a deference to more materialistic priorities. While this scale differs from the widely accepted Richins (2004) materialistic values scale, Richins and Dawson (1992) acknowledge that Inglehart's method approaches the same construct by emphasizing values, such as belonging and self-expression, over societal climates that can lead to increased material possession.

### 6.2 | Full sample findings

Process model 14 (Hayes, 2013) in SPSS 20 was used to test the conceptual model with 52,626 subjects. Regression results are presented in Table 4. There is a significant interaction between environmental knowledge and materialistic values ( $-0.262$ ,  $P = 0.009$ ), but the variance explained is relatively low ( $R^2$  of 0.029 and 0.057 for the two equations). The moderated mediation effect can be derived from the conditional indirect mediation effects provided through bootstrapping the effects at quartiles of the moderator (materialistic values), which is displayed in Table 5. The effect size column in Table 5 represents the coefficient of the "a path" multiplied by the "b path" as depicted in Figure 2. As the value of the moderator (materialistic values) increased,

**TABLE 4** Linear regression results for Study 2 full sample

Antecedent		Consequent						
		M (environmental knowledge)			Y (indirect environmental behavior)			
		Coeff.	SE	P	Coeff.	SE	P	
X (environmental attitude)	$a_1$	0.043	0.006	0.000	$c_1$	1.289	0.030	0.000
M (environmental knowledge)		–	–	–	$b_1$	3.555	0.421	0.000
W (materialistic values)		–	–	–	$b_2$	–0.097	0.357	0.787
$M \times W$		–	–	–	$b_3$	–0.262	0.100	0.009
Constant	$i_1$	3.106	0.169	0.000	$i_2$	42.108	1.523	0.000
$R^2 = 0.029$ , $F(3, 52624) = 1542.13$ , $P < 0.001$					$R^2 = 0.057$ , $F(6, 52621) = 790.31$ , $P < 0.001$			

**TABLE 5** Indirect effects through environmental knowledge at different levels of materialistic values, Study 2 full sample

Quartile of moderator (materialistic values)	Value of moderator	Effect size	Bootstrap SE	Lower level CI	Upper level CI
1	2.0	0.131	0.011	0.111	0.153 <sup>a</sup>
2	3.0	0.120	0.008	0.105	0.135 <sup>a</sup>
3	4.0	0.108	0.006	0.096	0.120 <sup>a</sup>
4	5.0	0.097	0.007	0.083	0.111 <sup>a</sup>

<sup>a</sup>Signifies a confidence interval for the mediated effect that excludes zero.  
DV: indirect environmental behavior.

**TABLE 6** Linear regression results for Study 2 OECD sample only

Antecedent		Consequent						
		M (environmental knowledge)			Y (indirect environmental behavior)			
		Coeff.	SE	P	Coeff.	SE	P	
X (environmental attitude)	$a_1$	0.069	0.006	0.000	$c_1$	1.093	0.217	0.000
M (environmental knowledge)	–	–	–	–	$b_1$	–2.066	–0.633	0.527
W (materialistic values)	–	–	–	–	$b_2$	–9.240	3.277	0.005
$M \times W$	–	–	–	–	$b_3$	2.269	0.881	0.010
Constant	$i_1$	3.046	0.054	0.000	$i_2$	62.158	12.175	0.000
$R^2 = 0.123, F(3, 925) = 129.85, P < 0.001$					$R^2 = 0.097, F(6, 922) = 24.644, P < 0.001$			

the mediated effect decreased in size. In other words, as materialistic values increased in the presence of environmental knowledge, environmental behavior decreased. This is antithetical to the model outlined in Figure 2 that portrays materialistic values as enhancing the positive relationship between environmental knowledge and environmental behavior.

### 6.3 | OECD member country findings

However, because the current research focuses on environmental behavior, the inclusion of all WVS respondents from more than 100 countries is not appropriate. Environmental consciousness is a concept that is not universally accepted among all cultures, social classes, or income levels. Numerous researchers have found evidence that social consciousness increases as socioeconomic status and occupational status increase (Aaker & Bagozzi, 1982; Anderson & Cunningham, 1972; Zimmer, Stafford, & Stafford, 1994). Consideration of environmentally friendly behaviors is a luxury not afforded to those who live in the developing world. Those living hand-to-mouth are unlikely to contemplate environmentally friendly behaviors since the associated costs can be prohibitively high (Straughan & Roberts, 1999). In fact, Lee (2011) warned about the danger of treating all countries as one entity when evaluating environmental issue awareness. Data from the member countries of the Organization for Economic Cooperation and Development (OECD) was selected because these countries generally have developed economies, higher education levels, higher environmental consciousness, and often share an environment directorate (see the Kyoto Protocol). Individuals in these countries are more likely to learn about, contemplate, and act on environmental issues. In addition, numerous studies have shown that age and generational differences greatly affect environmental attitudes and environmental behaviors (Torgler & Garcia-Valinas, 2007). A 2014 Neilson survey

found that Millennials were more responsive to sustainability actions; 51 percent of this group would pay extra for sustainable products, and the same percentage check product packaging for sustainable labeling. A 2012 sustainability survey from the International Markets Bureau also suggested that environmental sustainability claims are particularly effective with Millennials. Furthermore, these individuals have come of age in a world with a significant focus on environmental issues. Based on the above reasoning, the WVS data were filtered to include only respondents under the age of 25.

Process model 14 (Hayes, 2013) in SPSS 20 was used to test the conceptual model with data from those under the age of 25 residing in OECD countries who completed all questions of interest. The final sample included 928 individuals. The regression results presented in Table 6 display significant relationships consistent with the conceptual model outlined in Figure 2. Most importantly, there is a significant interaction between environmental knowledge and materialistic values (2.269,  $P = 0.010$ ), opposite of what was observed in the WVS full sample. In addition, the variance explained ( $R^2$  of 0.123 and 0.097 for the two equations) is higher than that in the full sample ( $R^2$  of 0.029 and 0.057 for the two equations), demonstrating stronger explanatory power. Unlike the results in the full sample, environmental behaviors increase as materialistic values increase, consistent with the proposed model. As shown in Table 7, the CI for the mediation effect included zero at the lowest level of materialistic values, but not at the higher levels. In other words, the mediated path complemented the direct path with an exception at the lowest level of materialistic values, demonstrating clear evidence of a moderated mediation effect.

### 6.4 | Discussion

This study provides evidence that materialistic values can stimulate environmental behavior by moderating the relationship between

**TABLE 7** Indirect effects through environmental knowledge at different levels of materialistic values, Study 2 OECD sample only

Quartile of moderator (materialistic values)	Value of moderator (materialistic values)	Effect size	Bootstrap SE	Lower level CI	Upper level CI
1	2.0	0.170	0.126	-0.087	0.409
2	3.0	0.326	0.098	0.152	0.529 <sup>a</sup>
3	4.0	0.482	0.104	0.297	0.703 <sup>a</sup>
4	5.0	0.638	0.140	0.379	0.952 <sup>a</sup>

<sup>a</sup>Signifies a confidence interval for the mediated effect that excludes zero. DV: indirect environmental behavior.

environmental knowledge and environmental behavior. This counter-intuitive finding is directly in line with Moral Compensation Theory, which states that people typically engage in morally compensatory behavior before or after engaging in ethically questionable behavior (Zhong, Liljenquist, & Cain, 2009). In this case, individuals who are knowledgeable about the environment and ascribe to materialistic values can compensate for their materialistic consumption patterns through environmentally friendly behaviors. Furthermore, when materialistic values are high, the path from environmental attitudes to environmental behaviors through the subject's environmental knowledge complements the direct effect from environmental attitudes to environmental behaviors. By showing this effect through secondary, cross-sectional data, Study 2 added external validity to the findings. This study also complements extant studies, which primarily used laboratory settings to examine moral compensation (Ramanathan & Williams, 2007).

## 7 | STUDY 3

### 7.1 | Self-consciousness, materialistic values, and environmental behavior

Study 3 further tests the conceptual framework by examining if the awareness of environmental harm associated with materialistic consumption can explain the motivation for certain environmental behaviors. Studies 1 and 2 showed that environmental knowledge and materialistic values interact to spur environmental behaviors. Based on the earlier discussion, it is proposed that self-consciousness will increase awareness of the individual's role in environmental harm through materialistic behaviors, therefore inducing the need for moral compensation and increased environmental behavior.

## 7.2 | Methodology

### 7.2.1 | Sample

Subjects were 145 students at a large U.S. university who completed a survey in exchange for course credit. The measures were the same as those used in Study 1 with the addition of a scale to measure public self-consciousness (Scheier & Carver, 1985). This scale used items like "I'm usually aware of my appearance," "I'm concerned about what other people think of me," and "I usually worry about making a good

impression," where respondents indicated whether the statements were characteristic of themselves in a 7-point Likert format.

### 7.2.2 | Findings and discussion

Process model 18 was used to test the hypothesized three-way interaction between environmental knowledge, materialistic values, and self-consciousness. Table 8 displays a clear three-way interaction through the regression coefficients: the mediated effect size is largest when all three variables are high. Figure 4 is a plot of the effect size for the mediating effect of environmental knowledge on the relationship between environmental attitudes and environmental behaviors in the presence of both moderators. As noted earlier, bootstrapping mediation analysis techniques identify a mediation effect based on the CIs for the effect size of the "a path" multiplied by the "b path." A mediation effect is moderated if the moderator significantly impacts the size and/or direction of the mediated effect (Hayes, 2013). Figure 2 suggests a three-way interaction that affects a mediated path; this involves two moderators and a mediator in a three-way interaction. While it has been traditionally difficult to plot three-way interactions, the proposed relationships can be demonstrated by plotting the mediated effect size at different levels of the two moderators since the third variable is embedded in the indirect effect (Dong, Zhang, Hinsch, & Zou, 2016). Using this simple and effective method, Figure 4 plots the effect size for the mediating effect of environmental knowledge in the presence of both moderators: materialistic values and self-consciousness. The Y-axis represents the effect size for the indirect effect from environmental attitudes to environmental behaviors. The mediating effect generally increased as respondents' self-consciousness increased. Furthermore, it increased more rapidly when respondents displayed higher levels of materialistic values. Moral compensation theory would predict the pattern displayed in Figure 4. Individuals who are more aware of the impacts of their behaviors are more likely to compensate through environmental behaviors.

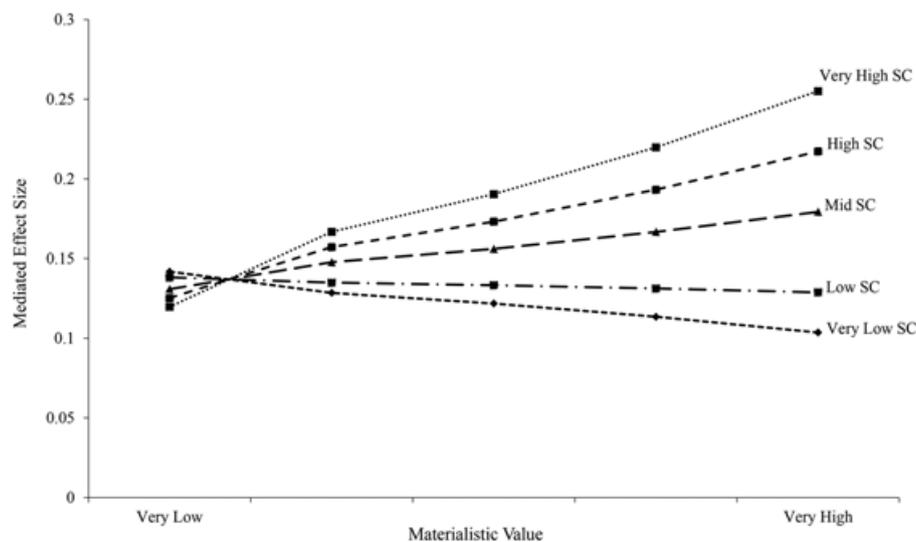
## 8 | STUDY 4

### 8.1 | Primed self-consciousness, materialistic values, and environmental behavior

The primary objective of Study 4 was to test the robustness of the three-way interaction between environmental knowledge,

**TABLE 8** Linear regression results for Study 3

Antecedent		Consequent						
		M (environmental knowledge)			Y (indirect environmental behavior)			
		Coeff.	SE	P	Coeff.	SE	P	
X (environmental attitude)	$a_1$	0.308	0.083	0.000	$c_1$	-0.187	0.096	0.054
M (environmental knowledge)		-	-	-	$b_1$	2.501	1.204	0.040
W (materialistic values)		-	-	-	$b_2$	3.167	1.067	0.004
V (self-consciousness)		-	-	-	$b_3$	2.411	1.023	0.020
$W \times V$		-	-	-	$b_4$	-0.921	0.287	0.002
$M \times W$		-	-	-	$b_5$	0.656	0.295	0.028
$M \times V$		-	-	-	$b_6$	-0.615	0.314	0.052
$M \times V \times W$		-	-	-	$b_7$	0.199	0.074	0.008
Control (gender)		-0.220	0.219	0.317		0.131	0.237	0.583
Control (age)		0.011	0.039	0.772		0.032	0.042	0.437
Constant	$i_1$	2.440	0.569	0.000	$i_2$	-6.669	3.464	0.057
$R^2 = 0.10, F(3, 126) = 4.6516, P = 0.004$					$R^2 = 0.36, F(10, 119) = 6.8203, P < 0.001$			

**FIGURE 4** Mediated effect size as a function of self-consciousness (SC) and materialistic values (Study 3)

materialistic values, and self-consciousness. Instead of measuring subjects' innate self-consciousness as in Study 3, participants' self-consciousness was experimentally manipulated. The exposition of a three-way interaction through manipulated self-consciousness served two purposes. First, it tested the robustness of the identified effects. Second, the exposition of a similar pattern of effects through self-consciousness manipulation suggests that these effects arise from factors unrelated to individual differences. As such, marketers and other public policy influencers may use these findings to influence future consumption behaviors.

## 8.2 | Methodology

### 8.2.1 | Sample

Subjects were 250 students at a large U.S. university who completed an online survey in exchange for course credit. Participants were informed that they would participate in an experiment that pertained to their

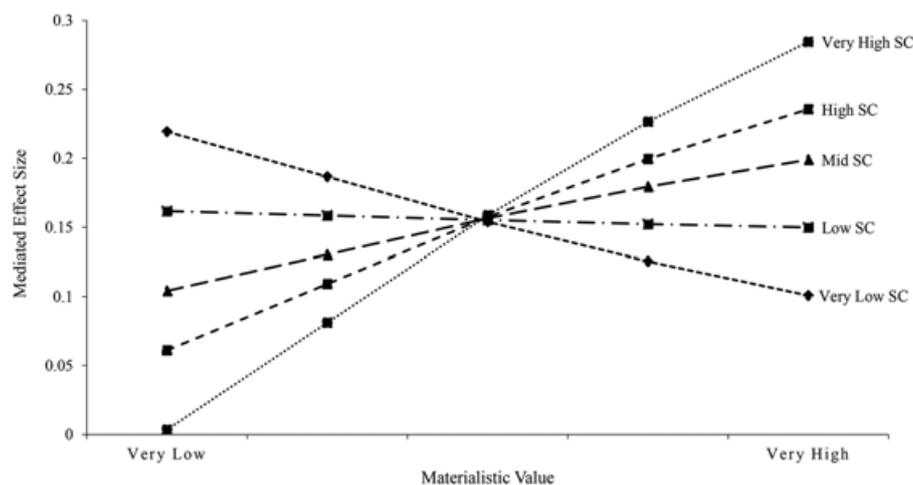
writing style based on how they incorporated a given set of words into a story.

### 8.2.2 | Procedures and measures

Study participants were randomly assigned to one of two groups. Consistent with both Fenigstein and Levine (1984) and Goukens, Dewitte, and Warlop (2009), all participants were given a list of 12 words to blend into a story. Of the 12 words, seven were identical between the two conditions and five were altered to manipulate self-consciousness. Participants in the high self-consciousness condition used the words "I, me, myself, alone, and mirror" to write a story about themselves, whereas those in the low self-consciousness condition used the words "he, himself, him, together, and picture" to write a story about the King of Belgium. Writing stories using self-relevant or other relevant words can force participants to direct their attention either toward or away from themselves. All measures were the same as those in Study 3.

**TABLE 9** Linear regression results for Study 4

Antecedent		Consequent						
		M (environmental knowledge)			Y (indirect environmental behavior)			
		Coeff.	SE	P	Coeff.	SE	P	
X (environmental attitude)	$a_1$	0.295	0.071	0.000	$c_1$	0.125	0.085	0.145
M (environmental knowledge)		–	–	–	$b_1$	3.155	0.943	0.001
W (materialistic values)		–	–	–	$b_2$	2.246	1.109	0.044
V (self-consciousness)		–	–	–	$b_3$	2.865	1.050	0.007
$W \times V$		–	–	–	$b_4$	–0.707	0.264	0.008
$M \times W$		–	–	–	$b_5$	–0.628	0.249	0.012
$M \times V$		–	–	–	$b_6$	–0.820	0.247	0.001
$M \times V \times W$		–	–	–	$b_7$	0.196	0.061	0.001
Control (gender)		–0.468	0.169	0.006		0.177	0.185	0.339
Control (age)		–0.076	0.033	0.021		–0.001	0.036	0.981
Constant	$i_1$	3.253	0.477	0.000	$i_2$	–8.834	4.172	0.035
$R^2 = 0.097, F(3, 246) = 8.789, P < 0.001$					$R^2 = 0.346, F(10, 239) = 12.572, P < 0.001$			

**FIGURE 5** Mediated effect size as a function of self-consciousness (SC) and materialistic values (Study 4)

### 8.2.3 | Preanalysis checks

As a manipulation check, an independent sample *t*-test was used to determine whether having subjects focus on “I, me, myself, alone, and mirror” was effective in increasing their public self-consciousness. Participants in the “I” condition ( $M = 3.77$ ) reported higher levels of public self-consciousness than those in the “he” condition ( $M = 3.55, t(248) = 2.38, P = 0.018$ ). This confirms that the use of self-relevant words forced participants to direct their attention to their own actions and attitudes.

### 8.3 | Findings

The PROCESS macro was loaded with the variables as described in Study 3, and Table 9 displays the regression coefficients. A full mediation effect was indicated as the direct path from environmental attitudes to environmental behaviors was no longer significant when accounting for the mediated effect through environmental knowledge ( $P = 0.145$ ). The results show clear evidence of a three-way interaction. Figure 5 is a plot of the effect size for the mediating effect of

environmental knowledge in the presence of both moderators (materialistic values and public self-consciousness). This plot clearly shows a crossover for the mediating impact of environmental knowledge as individuals move from low to high self-consciousness, and as they move from low to high levels of materialistic values. This is what one would expect with moral compensation. Individuals who were more aware of the impacts of their behaviors were more likely to compensate for their materialistic consumption by engaging in environmental behaviors.

### 8.4 | Discussion

The findings from Study 4 further support the robust nature of the identified effects. By manipulating the subject's self-consciousness, this study shows that the theorized moral compensation effects can be magnified through the individual's temporal self-consciousness. Though Figure 5 clearly resembles Figure 4, one might question why the crossover point moves from the 20th percentile of materialistic values in Figure 4 to the 50th percentile in Figure 5. The probable

explanation stems from the fact that self-consciousness was manipulated in Study 4, while the natural level of self-consciousness was measured in Study 3. The findings support the model proposed in Figure 2 and suggest that the process is malleable and subject to the influence of exogenous factors.

## 9 | GENERAL DISCUSSION

From the Kyoto Protocol to the Paris Agreement, governments and organizations from around the world have taken strides to protect the environment. In order for real societal changes to occur, however, the actions of these entities must be complemented by the actions of individuals. Due to the sheer number of consumers who espouse some degree of materialistic values, it is crucial that these individuals are included in the environmental movement. These individuals have a desire to be included in this movement, even if their overt behaviors conflict with their broader values.

Using a pretest and four studies, the current research shows that materialistic values moderate the application of environmental values to environmental behaviors. Further, it shows that an individual's self-consciousness affects this relationship. These relationships are demonstrated with experimental, survey, and cross-sectional secondary data. The pretest shows that contemplating materialistic purchases can induce environmental behaviors. This is consistent with the notion that environmental behaviors can be used to mentally compensate for the negative psychological effects of materialistic consumption. Study 1 shows that environmental knowledge mediates the path from environmental attitudes to indirect environmental behaviors, and that materialistic values strengthen this effect. Study 2 replicates the effects found in Study 1 with secondary data from the WVS, enhancing the external validity of the findings. Study 3 investigates the underlying mechanism through which materialistic values moderate the impact of environmental knowledge on environmental behavior. As hypothesized, the moderating effect of materialistic values is stronger among highly self-conscious individuals, presumably because they are more aware of their own actions and the subsequent consequences. As expected, materialistic values and self-consciousness work together to enhance the relationship between environmental knowledge and environmental behavior. Finally, Study 4 manipulates subjects' self-consciousness to verify the robustness of the proposed theoretical framework. In summary, the findings are consistent across all four studies, demonstrating the robustness of the relationships proposed in Figure 2. As such, the current research offers the first evidence that indirect environmental behaviors are used to compensate for materialistic values.

The findings presented here are what one would expect if individuals were using environmental behaviors to counter materialistic consumption and regulate their moral self-concepts. When an individual's moral self-concept is threatened due to materialistic consumption, s/he can morally compensate for these infractions by engaging in indirect environmental behaviors. This effect is magnified among individuals who are highly self-conscious, likely because they are more aware of the negative outcomes of consumption (both individually and

collectively), and they have a stronger urge to compensate in order to maintain the desired moral self-concept.

One may ask how the current work relates to prior findings that materialistic values and environmental behaviors are negatively correlated (Hurst et al., 2013). It is important to note that the current research does not conflict with this finding (the main effects generally support this premise); rather, the focus here is on how materialistic values interact with incongruent environmental values. Indirect environmental behaviors provide an avenue for materialists to compensate for their self-enhancing consumption behaviors.

## 10 | MANAGERIAL IMPLICATIONS

These research findings bear important implications for many stakeholders. Below, we outline the implications for public policy makers, social marketing practitioners, and marketers in for-profit organizations. These implications suggest managerially relevant recommendations and examples where businesses have successfully engaged materialistic consumers through indirect environmental behaviors.

This research has particularly important implications for public policy makers and social marketing practitioners because it strongly advocates for the inclusion of materialists in environmental campaigns. The common assumption is that materialists should be the last group approached by environmental campaigns, as these individuals are less likely to change their behavior to benefit the environment. However, the validity of this assumption should be questioned based on the number of luxury vehicles driven to environmental benefits and the luxurious living and traveling arrangements of many prominent environmentalists. The current research offers a potential explanation for the "Al Gores" of the world, where an individual's lifestyle choices do not appear to align with his/her environmental values. The studies provide empirical evidence that the anecdotes relayed by the popular press are indeed real (see Lowe, 2017). More importantly, this research shows that it is not just confused celebrities who display behaviors associated with incongruent values. Rather, large subsets of the population struggle with these value-based conflicts. Thus, while materialistic individuals hold certain values that are inconsistent with environmentalism, they can be quite receptive to environmental campaigns, especially when they are knowledgeable about environmental issues and are highly self-conscious. Governments, environmental organizations, and social marketers can design campaigns aimed directly at materialists, as they may be an untapped market with pent up demand for certain environmental programs. In addition, based on the Study 4 results where priming self-consciousness served to motivate materialistic consumers to engage in environmental behaviors, social marketing campaigns can aim to activate consumers' self-consciousness, especially in situations when behavioral and political decisions are consequential for environmental protection.

Consumer desire to engage in indirect environmental behaviors to compensate for materialistic consumption represents a business opportunity. Today's consumers have increased environmental knowledge and expectations. According to SC Johnson's Green Gauge report, the longest running research program probing American con-

sumers' appetite for green products, the percentage of Americans who say they know a lot or fair amount about environmental problems has increased from 53% in 1995 to 73% today (Johnson, 2011). Extant research has identified large segments of highly educated, affluent, and materialistic individuals in both developed and emerging markets (Strizhakova & Coulter, 2013). High levels of environmental knowledge coupled with high levels of materialism suggest that these individuals may be very responsive to environmental marketing messages. Marketers of "green products" can attract individuals in the aforementioned segments as they are likely more receptive to choosing and paying a premium for environmentally friendly products and services.

The implications of this research go beyond the scope of environmental marketing and even marketers of "green products". According to the 2017 Cone Communications Global CSR (Corporate Social Responsibility) study, U.S. consumers view their role in creating social and environmental change as extending well beyond the cash register. Even firms in industries unrelated to environmental causes need to factor this societal trend into their marketing strategies. In fact, consumers who purchase luxury or materialistic items might especially welcome ways to engage in some environmental behaviors as moral compensation. Conversely, firms selling products that are materialistic in nature could complement their offerings with convenient options for indirect environmental behaviors. This may be a fruitful approach as the percentage of consumers who are likely to switch brands to one that is associated with a good cause has increased from 66% in 1993 to 90% in 2017 (Cone Communications, 2017). The current research suggests that the demand for products with an environmental cause may be greater in materialistic consumer segments. Companies can provide an array of indirect environmental behaviors, such as offering a platform for environmental donations, volunteerism, and perhaps even advocacy. Many high-end brands are already engaging in such practices. For example, Rolex works with customers to fund projects in 34 countries to raise awareness of environmental issues (Swithinbank, 2014). Gucci has contributed over \$20 million to UNICEF during a 10-year partnership through a mix of charitable donations and by creating "UNICEF" products where 25% of the retail proceeds are passed on to charity (Hashmi, 2017; UNICEF, 2015). The current research explains why this approach may work, and why the benefits can go beyond reputation to impact the businesses bottom line. One take-away for marketers of sustainable products and high-end brands alike is that they can become more attractive to materialistic consumers if they activate consumers' self-consciousness while positioning the brand as an environmentally responsible option.

## 11 | CONCLUSION

Across four studies and using a multimethod approach, the current research presents the first empirical evidence that materialistic individuals adopt indirect environmental behaviors to offset their materialistic consumption. This work illustrates the boundary conditions under which materialism and environmentalism can coexist within an individual. When materialistic individuals are knowledgeable about environmental issues, they actively engage in indirect environmental

behaviors. Such effects are even more evident in highly self-conscious individuals, likely because they have a stronger desire to compensate and achieve a balanced moral self-concept. These relationships can be amplified simply by inducing self-consciousness. Similar to the use of mindfulness in inducing behavioral changes, heightened self-consciousness can potentially trigger an individual's desire to behave in a prosocial manner.

Extant research has found that materialistic values and environmental behaviors are negatively correlated, which suggests that they are incompatible (Hurst et al., 2013). This narrative has fit with the conventional wisdom that the purest form of environmentalism involves heavily restricted consumption while materialism involves the opposite. However, the current research shows that this relationship is much more nuanced. Materialistic values can actually coexist with some forms of environmental behaviors. This is consistent with recent exploratory research, which suggests that consumption decisions may play a role in encouraging sustainable behaviors (Antonetti & Maklan, 2014).

Methodologically, this research makes a contribution through the visual depiction of the three-way interaction. Since the two moderators (self-consciousness and materialistic values) impact the mediated path from environmental attitudes to environmental knowledge to indirect environmental behaviors, the three-way interaction can be displayed coherently by simply graphing the mediation effect coefficient at various levels of the two moderators (Figures 4 and 5). This is possible because environmental knowledge, which is the mediator and also one of the constructs involved in the three-way interaction, is encompassed in the effect coefficient. Compared to conventional methods for graphing a three-way interaction (i.e., three-dimensional graphs, multiple graphs, etc.), the approach outlined here utilizes a simple two-dimensional graph, making it easy to visualize and interpret the moderators' impact on the focal relationship.

As with all research, the current research has a number of limitations that suggest future research opportunities. First, results from the four studies are robust and consistent with the moral compensation paradigm, but they did not directly test whether materialistic individuals view environmental behavior as a moral compensation agent; rather, they relied on theory (Antonetti & Maklan, 2014). Future research can directly examine whether materialistic individuals perceive environmental behaviors differently from those low in materialistic values, and how motivations for environmental behaviors differ between individuals with high versus low materialistic values. Second, the dependent variable in this research is indirect environmental behavior. Future research should investigate how individuals make decisions about engagement in direct versus indirect environmental behaviors. Third, future research can measure actual indirect environmental behaviors. For example, in a laboratory environment, respondents can be asked to allocate compensation for study participation between cash for themselves and a donation to an environmental organization.

A final note is that the current research does not impugn the value of environmental education programs. In fact, it suggests that environmental knowledge and self-consciousness work hand-in-hand to stimulate environmental behaviors in materialistic individuals.

Without a basic knowledge of environmentalism even highly self-conscious individuals may not engage in additional environmental behaviors. Similarly, activating an individual's self-consciousness without the requisite levels of environmental knowledge would not be effective. Thus, environmental education is a necessary but insufficient condition for a materialist to engage in increased environmental behaviors.

Materialism is often referred to as the root cause of environmental problems, and some even perceive materialism as a "dark side" variable (Mick, 1996). Rather than simply castigating consumers with materialistic values, which are relatively enduring and difficult to change, the current research suggests ways to engage these individuals in the environmental movement. For example, they can be effectively targeted for fundraising campaigns and environmental organization membership. Thus, while materialistic individuals may struggle to reduce their consumption of environmental resources, they often exhibit environmentally friendly behaviors, especially when they retain environmental knowledge and when their self-consciousness is activated. As such, marketers and environmental activists alike may tailor products and integrated marketing communications messages to target this group of individuals.

This paper concludes on the positive note that materialistic individuals can be stimulated to execute indirect environmental behaviors. Contrary to the popular belief that materialistic individuals do not and will not behave in an environmentally friendly way, this research shows that they are open to certain forms of environmental support. Our society and virtually all stakeholders will benefit if organizations recognize the desire of materialists to engage in indirect environmental behaviors and offer them convenient paths of engagement.

## ENDNOTE

<sup>1</sup> An astute reviewer questioned the construct validity of the environmental knowledge measure used in this study. The authors agree that this is a concern, but these concerns are mitigated by the following factors. First, as the reviewer perceived the knowledge measure to actually be a second environmental attitude measure, the results still show how materialistic values impact the application of environmental values (i.e., the link between EA and indirect environmental behaviors). Second, the items used in the knowledge measure request a specific judgment (based in knowledge) of different environmental problems, so this measure is at least a proxy for environmental knowledge. Third, the pattern of effects mirrors the pattern from the other studies, and the unique secondary data set adds external validity to the results.

## REFERENCES

- Aaker, D. A., & Bagozzi, R. P. (1982). Attitudes toward public policy alternatives to reduce air pollution. *Journal of Marketing & Public Policy*, 1, 85–94.
- Abramson, P. R., & Inglehart, R. F. (2009). *Value change in global perspective*. University of Michigan Press.
- Anderson, W. T., Jr., & Cunningham, W. H. (1972). The socially conscious consumer. *Journal of Marketing*, 36(3), 23–31.
- Antonetti, P., & Maklan, S. (2014). Exploring postconsumption guilt and pride in the context of sustainability. *Psychology & Marketing*, 31(9), 717–735.
- Arcury, T. (1990). Environmental attitude and environmental knowledge. *Human Organization*, 49(4), 300–304.
- Arndt, J. (1967). Role of product-related conversations in the diffusion of a new product. *Journal of Marketing Research*, 291–295.
- Bang, H., Ellinger, A. E., Hadimarcou, J., & Traichal, P. A. (2000). Consumer concern, knowledge, belief and attitude toward renewable energy: An application of the reasoned action theory. *Psychology & Marketing*, 17(6), 449–468.
- Barber, N., Taylor, C., & Strick, S. (2009). Wine consumers' environmental knowledge and attitudes: Influence on willingness to purchase. *International Journal of Wine Research*, 1(1), 59–72.
- Bardi, A., & Schwartz, S. H. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin*, 29(10), 1207–1220.
- Belk, R. W. (1985). Materialism: Trait aspects of living in the material world. *Journal of Consumer Research*, 12(3), 265–280.
- Bond, M. H., & Chi, V. M. Y. (1997). Values and moral behavior in Mainland China. *Psychologia*, 40, 251–264.
- Burroughs, J. E., & Rindfleisch, A. (2002). Materialism and well-being: A conflicting values perspective. *Journal of Consumer Research*, 29(3), 348–370.
- Buss, A. H. (1980). *Self-consciousness and social anxiety*. San Francisco, CA: Freeman.
- California Energy Commission. (2007). Full fuel cycle assessment: Tank to wheels emissions and energy consumption. Retrieved from <https://www.energy.ca.gov/2007publications/CEC-600-2007-003/CEC-600-2007-003-D.PDF>
- Cleveland, M., Kalamas, M., & Laroche, M. (2012). "It's not easy being green": Exploring green creeds, green deeds, and internal environmental locus of control. *Psychology & Marketing*, 29(5), 293–305.
- Cone Communications. (2017). 2017 *Cone communications CSR study*. Retrieved from <https://www.conecomm.com/2017-cone-communications-csr-study-pdf>
- Cotte, J., & Trudel, R. (2009). Socially conscious consumerism: A systematic review of the body of knowledge. *Network for Business Sustainability*. Retrieved from <https://eldis.org/document/A44981>
- Dietz, T., Stern, P. C., & Guagnano, G. A. (1998). Social structural and social psychological bases of environmental concern. *Environment & Behavior*, 30(4), 450–471.
- Dong, X., Zhang, Z., Hinsch, C. A., & Zou, S. (2016). Reconceptualizing the elements of market orientation: A process-based view. *Industrial Marketing Management*, 56, 130–142.
- Dunlap, R. E., & Van Liere, K. D. (1978). The new environmental paradigm: A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9(4), 10–19.
- Eisenberg, N., & Shell, R. (1986). Prosocial moral judgment and behavior in children: The mediating role of cost. *Personality and Social Psychology Bulletin*, 12(4), 426–433.
- Fenigstein, A., & Levine, M. P. (1984). Self-attention, concept activation, and the causal self. *Journal of Experimental Social Psychology*, 20(3), 231–245.
- Festinger, L. (1962). *A theory of cognitive dissonance* (Vol. 2). Stanford university press.
- Goukens, C., Dewitte, S., & Warlop, L. (2009). Me, myself, and my choices: The influence of private self-awareness on choice. *Journal of Marketing Research*, 46(5), 682–692.
- Hashmi, G. (2017). Redefining the essence of sustainable luxury management: The slow value creation model. In M. A. Gardetti (Ed.), *Sustainable management of luxury* (pp. 3–27). Singapore: Springer.

- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Holmes, J. G., Miller, D. T., & Lerner, M. J. (2002). Committing altruism under the cloak of self-interest: The exchange fiction. *Journal of Experimental Social Psychology, 38*(2), 144–151.
- Hurst, M., Dittmar, H., Bond, R., & Kasser, T. (2013). The relationship between materialistic values and environmental attitudes and behaviors: A meta-analysis. *Journal of Environmental Psychology, 36*, 257–269.
- Inglehart, R. (1971). The silent generation in Europe: Intergenerational change in post-industrial societies. *American Political Science Review, 65*(4), 991–1017.
- Inglehart, R., Basáñez, M., Díez-Medrano, J., Halman, L., & Luijckx, R. (2004). *World values surveys and European values surveys, 1999–2001*. Ann Arbor, MI: Inter-University Consortium for Political and Social Research.
- Iyer, R., & Muncy, J. A. (2009). Purpose and object of anti-consumption. *Journal of Business Research, 62*(2), 160–168.
- Johnson, S. C. (2011). *The environment: Public attitudes and individual behavior—A twenty-year evolution*. Retrieved from [https://www.scjohnson.com/libraries/download\\_documents/scj\\_and\\_gfk\\_roper\\_green\\_gauge.sflb.ashx](https://www.scjohnson.com/libraries/download_documents/scj_and_gfk_roper_green_gauge.sflb.ashx)
- Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65*(2), 410–422.
- Kasser, T., Ryan, R. M., Couchman, C. E., & Sheldon, K. M. (2004). Materialistic values: Their causes and consequences. In T. Kasser & A. D. Kanner (Eds.), *Psychology and Consumer Culture: The struggle for a good life in a materialistic world* (pp. 11–28). Washington, DC: American Psychological Association.
- Khan, U., & Dhar, R. (2006). Licensing effect in consumer choice. *Journal of Marketing Research, 43*(2), 259–266.
- Kilbourne, W., & Pickett, G. (2008). How materialism affects environmental beliefs, concern, and environmentally responsible behavior. *Journal of Business Research, 61*(9), 885–893.
- Kim, H. C. (2013). Situational materialism: How entering lotteries may undermine self-control. *Journal of Consumer Research, 40*(4), 759–772.
- Kim, H. C., & Kramer, T. (2015). Do materialists prefer the “brand-as-servant?” The interactive effect of anthropomorphized brand roles and materialism on consumer responses. *Journal of Consumer Research, 42*(2), 284–299.
- Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing, 18*(6), 503–520.
- Lee, K. (2011). The role of media exposure, social exposure and biospheric value orientate on in the environmental attitude-intention-behavior model in adolescents. *Journal of Environmental Psychology, 31*(4), 301–308.
- Lowe, Tiana (2017). For America's Loudest Climate Alarmists, Do as I Say, Not as I Do. National review. Retrieved from <https://www.nationalreview.com/corner/bill-de-blasio-al-gores-climate-change-hypocrisy/>
- Lubin, D. A., & Esty, D. C. (2010). The sustainability imperative. *Harvard Business Review, 88*(5), 42–50.
- Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science, 21*(4), 494–498.
- Merritt, A. C., Effron, D. A., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and Personality Psychology Compass, 4*(5), 344–357.
- Mick, D. G. (1996). Are studies of dark side variables confounded by socially desirable responding? The case of materialism. *Journal of Consumer Research, 23*(2), 106–119.
- Mick, D. G., & Fournier, S. (1998). Paradoxes of technology: Consumer cognizance, emotions, and coping strategies. *Journal of Consumer Research, 25*(2), 123–143.
- MRCTV. (2015). The 12 most hypocritical environmentalists in Hollywood. Retrieved from <https://www.mrctv.org/blog/12-most-hypocritical-environmentalists-hollywood>
- Nisan, M. (1991). The moral balance model: Theory and research extending our understanding of moral choice and deviation. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development* (Vol. 3). Hillsdale, NJ: Lawrence Erlbaum Associates.
- O'barr, W. M. (1994). *Culture and the ad: Exploring otherness in the world of advertising*. Boulder, CO: Westview Press.
- O'Donnell, F. (2014). *Marketing to the green consumer—US*. Retrieved from <https://academic.mintel.com/>
- Olson, E. L. (2013). It's not easy being green: The effects of attribute trade-offs on green product preference and choice. *Journal of the Academy of Marketing Science, 41*(2), 171–184.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*(1), 185–227.
- Prentice, R. A. (2011). Moral equilibrium: Stock brokers and the limits of disclosure. *Wisconsin Law Review, 2011*, 1059–1107.
- Price, L. L., & Feick, L. F. (1984). The role of interpersonal sources in external search: An informational perspective. *Advances in Consumer Research, 11*(1), 250–255.
- Prothero, A., McDonagh, P., & Dobscha, S. (2010). Is green the new black? Reflections on a green commodity discourse. *Journal of Macromarketing, 30*(2), 147–159.
- Ramanathan, S., & Williams, P. (2007). Immediate and delayed emotional consequences of indulgence: The moderating influence of personality type on mixed emotions. *Journal of Consumer Research, 34*(2), 212–223.
- Richins, M. L. (1995). Social comparison, advertising, and consumer discontent. *American Behavioral Scientist, 38*(4), 593–607.
- Richins, M. L. (2004). The material values scale: Measurement properties and development of a short form. *Journal of Consumer Research, 31*(1), 209–219.
- Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research, 19*, 303–316.
- Roberts, W., Jr. (2015). *Organic food and beverage shoppers—US*. Retrieved from <https://academic.mintel.com/>
- Rokeach, M. J. (1968). *Beliefs, attitudes, and values: A theory of organization and change*. San Francisco, CA: Josey-Bass.
- Rokeach, M. J. (1973). *The nature of human values*. New York: Free Press.
- Sachdeva, S., Iliev, R., & Medin, D. L. (2009). Sinning saints and saintly sinners the paradox of moral self-regulation. *Psychological Science, 20*(4), 523–528.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*(3), 219–247.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). New York: Academic Press.
- Schwartz, S. H. (1996). Value priorities and behavior: Applying a theory of integrated value systems. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The Ontario symposium: Vol. 8. The psychology of values* (pp. 1–24). Hillsdale, NJ: Lawrence Erlbaum.

- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2(1). <https://doi.org/10.9707/2307-0919.1116>.
- Sirgy, M. J. (1998). Materialism and quality of life. *Social indicators research*, 43(3), 227–260.
- Stern, P. C. (2000). Towards a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407–424.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 81–97.
- Straughan, R. D., & Roberts, J. A. (1999). Environmental segmentation alternatives: A look at green consumer behavior in the new millennium. *Journal of Consumer Marketing*, 16(6), 558–575.
- Swithinbank, R. (2014). Luxury brands add value with charity partnerships. *Financial Times*, Retrieved from <https://www.ft.com/content/51eec732-696d-11e3-aba3-00144feabdc0>
- Tanner, R. J., & Carlson, K. A. (2009). Unrealistically optimistic consumers: A selective hypothesis testing account for optimism in predictions of future behavior. *Journal of Consumer Research*, 35(5), 810–822.
- Taylor, J. (2011). Is al gore a fossil-fuel industry mole? *Forbes*, Retrieved from <https://www.forbes.com/sites/jamestaylor/2011/06/29/is-al-gore-a-fossil-fuel-industry-mole/#803057b7c49b>
- Tiefenbeck, V., Staake, T., Roth, K., & Sachs, O. (2013). For better or for worse? Empirical evidence of moral licensing in a behavioral energy conservation campaign. *Energy Policy*, 57, 160–171.
- Tseng, S. C., & Hung, S. W. (2013). A framework identifying the gaps between customers' expectations and their perceptions in green products. *Journal of Cleaner Production*, 59, 174–184.
- UNICEF. (2015). Gucci-UNICEF partnership turns 10: Over 7.5 million children reap rewards. Retrieved from [https://www.unicef.org/media/media\\_82165.html](https://www.unicef.org/media/media_82165.html)
- Torgler, B., & Garcia-Valiñas, M. A. (2007). The determinants of individuals' attitudes towards preventing environmental damage. *Ecological Economics*, 63(2), 536–552.
- Zhong, C. B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, 313(5792), 1451–1452.
- Zhong, C. B., Liljenquist, K., & Cain, D. M. (2009). Moral self-regulation: Licensing and compensation. In D. De Cremer (Ed.), *Psychological Perspectives on Ethical Behavior and Decision Making* (pp. 75–89). Charlotte, NC: Information Age Publishing.
- Zimmer, M. R., Stafford, T. F., & Stafford, M. R. (1994). Green issues: Dimensions of environmental concern. *Journal of Business Research*, 30(1), 63–74.

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