The impact of moral identity on consumers' green consumption tendency: The role of perceived responsibility for environmental damage

By: Bo Wu and Zhiyong Yang

Abstract:

In this research, we examine the effects of moral identity on green consumption tendency and a key process underlying such effects. In five studies, we show that moral identity increases consumers' tendency to choose green products or exert effort on green consumption. This is mainly due to feelings of responsibility for environmental damage. Consistent with the responsibility account, consumers whose moral identity is not activated are more likely to engage in green consumption when their responsibility for environmental damage is heightened (compared to a control condition in which perceived responsibility is unchanged). However, consumers whose moral identity is activated are less likely to engage in green consumption when their responsibility for environmental damage is reduced (compared to a control condition in which perceived responsibility is unchanged).

Keywords: moral identity | green consumption tendency | perceived responsibility for environmental damage | moral rationalization

Article:

1. Introduction

Population growth and industrialization exacerbate the deterioration of the ecological environment (Wang, Krishna, & McFerran, 2017). One way to alleviate environmental deterioration is through changing individuals' consumption patterns, since 30%–40% of ecological environmental deterioration is caused by personal and household consumption (Grinstein & Nisan, 2009). Consumers often face choices related to the ecological environment in their daily lives, such as whether to bring their own eco-friendly bags for grocery shopping or to use plastic bags provided by the store, to use energy-saving LED lamps or incandescent lamps at home, to recycle waste materials or to discard them, or to choose an eco-friendly backpack or a conventional one for a coming trip. Apart from their own consumption patterns, consumers may also affect other people's green consumption by increasing their concern about environmental issues, desire for green products, support for eco-friendly corporations, and boycott of environment-unfriendly firms (White, Simpson, & Argo, 2014). In addition, consumers' green consumption preferences can motivate companies to actively engage in pro-

environment activities, consider the environment in the process of product development and marketing, and invest more into environmental protection (Menon & Menon, 1997).

Green consumption refers to the extent to which consumers consider the impact of their own behavior on the environment when they purchase, use, or dispose of products, and try to minimize the negative impact and maximize the positive impact on the environment (Carlson, Grove, & Kangun, 1993). Different from conventional consumption behavior, which usually is self-benefitting, the beneficiaries of green consumption are not just the consumers themselves, but also the environment (Kronrod, Grinstein, & Wathieu, 2012). Environmental benefits of green consumption are often accompanied by some cost to consumers (e.g., extra time, incremental effort, or change of consumption habits; White & Simpson, 2013), so consumers need to make a tradeoff between self-sacrifice and environmental benefit. Actually, some green consumption behaviors do not require consumers to make such tradeoffs, as these behaviors benefit both consumers themselves and the environment (Peloza, White, & Shang, 2013). For example, if an eco-friendly appliance saves on consumers' utility bills, purchasing that appliance is by nature quite similar to conventional consumption. Following the extant literature in this domain (Brough et al., 2016, Cornelissen et al., 2008, White et al., 2014), we focus only on the green consumption behaviors that require consumers to make some sacrifices. Therefore, green consumption behaviors that do not involve any tradeoff as indicated above are beyond the scope of this research.

Most of the early research on green consumption involving tradeoffs has primarily focused on how consumer characteristics are associated with green consumption tendencies, such as socio-demographics (Poškus & Žukauskienė, 2017), environmental consciousness (Schlegelmilch, Bohlen, & Diamantopoulos, 1996), and green consumption values (Haws, Winterich, & Naylor, 2014). Subsequent research has also examined conditions and factors that facilitate or hinder green consumption, such as self-perception (Cornelissen et al., 2008), environmental behavior of other people (White et al., 2014), social motives (Griskevicius, Tybur, & Van den Bergh, 2010), and appeal type (Kronrod et al., 2012). More recently, research in this area has examined how consumers' gender identity affects their preference for eco-friendly options (Brough et al., 2016).

Despite these intriguing findings, research has devoted limited attention to the role that moral identity plays in green consumption. *Moral identity* refers to a structured cognitive schema of moral values, goals, traits and behavioral scripts, the strength of which not only varies across individuals (e.g., moral identity centrality) but also can be activated or deactivated by situational factors (Aquino, Freeman, Reed, Lim, & Felps, 2009). Moral identity has been proven to be a useful predictor of altruistic behavior (Aquino & Reed, 2002; Reed and Aquino, 2003, Reed et al., 2016). In the context of green consumption, however, there are mixed findings regarding how moral identity may affect individuals' green consumption behavior. While some studies (Chowdhury and Fernando, 2014, Jia et al., 2017, Karmarkar and Bollinger, 2015) have shown that moral identity is positively related to pro-environmental beliefs and behavior, other studies (Crimston, Bain, Hornsey, & Bastian, 2016) have found no significant relationship between moral identity and green consumption beliefs and behavior. Still others (Ehrich and Irwin, 2005, Sachdeva et al., 2009) have suggested an opposite pattern: moral identity is negatively associated with pro-environmental beliefs and behavior.

To explain such mixed findings, we conducted a series of studies to examine the effect of moral identity on green consumption preference, and a key mechanism underlying the effect. We propose that moral identity increases individuals' perceived responsibility for environmental damage, which in turn leads to a higher tendency to prefer eco-friendly products. A responsibility-based account helps explain the mixed findings in the literature: consumers whose moral identity is not activated are more likely to engage in green consumption when their perceived responsibility for environmental damage is heightened (compared to a control condition in which perceived responsibility is unchanged). As a result, if consumers feel responsible for environmental damage, they will have high levels of green consumption tendency, no matter whether their moral identity is activated or not. In contrast, consumers whose moral identity is activated are less likely to engage in green consumption when their perceived responsibility for environmental damage is reduced (compared to a control condition in which perceived responsibility is unchanged). Thus, if consumers do not feel responsible for environmental damage, they will have low levels of green consumption tendency, in spite of their level of moral identity.

The issues we address in this research have two significant contributions to the moral identity and green consumption literature. First, our research represents the first attempt to provide theoretical explanations about the mixed findings documented in the literature. Second, we are also the first to uncover a responsibility-based account that allows us to explain how moral identity may affect downstream variables such as green consumption tendency. Using this account, we show how theoretical moderators that enhance or reduce consumers' perceived responsibility for environmental damage can affect the impact of moral identity on green consumption tendency, thereby advancing our understanding about the phenomenon.

2. Theoretical background

When consumers buy a product, they usually evaluate the potential benefits and costs the product could bring them. Different from conventional consumption, a large part of green consumption involves considering both the benefits to the environment and the sacrifices to one's self (Kronrod et al., 2012, White and Simpson, 2013). For instance, some green products have a higher price and lower quality, but have less negative impact on the environment than conventional products (Griskevicius et al., 2010). Similarly, although recycling reduces environmental pollution and saves resources, the whole process of recycling—including storing, organizing, and placing materials—is inconvenient (e.g., taking extra time, effort, and a change of behavior; White, MacDonnell, & Dahl, 2011). Due to its altruistic nature, impression management motives, status motives, and social norms are often major drivers of green consumption (Griskevicius et al., 2010, White and Simpson, 2013, White et al., 2014). Besides those social factors, personal values, goals, standards, beliefs, and attitudes can also influence green consumption (Cornelissen et al., 2008, Haws et al., 2014). In this research, we propose that moral identity exerts significant influences on consumers' tendency to choose green products or employ effort on green consumption. This is mainly due to feelings of responsibility for environmental damage.

2.1. Moral identity and green consumption tendency

Moral identity, a self-schema organized around a set of moral traits, is a powerful predictor of altruistic behavior (Aquino and Reed, 2002, Winterich et al., 2009). For instance, moral identity increases individuals' altruism that benefits both in-group members and out-group members (Reed & Aquino, 2003), no matter whether the help is in the currency of time or money (Reed II et al., 2016). This is especially true after consumers are exposed to acts of uncommon moral goodness (Aquino, McFerran, & Laven, 2011), when they have just recalled their previous dishonest behavior (Mulder & Aquino, 2013), or when they feel that the recipients of altruistic behavior deserve empathy (Lee, Winterich, & Ross Jr, 2014).

Considering the regulating effect of moral identity on the altruistic aspect of green consumption, we expect moral identity to increase individuals' tendency to engage in green consumption, such as choosing eco-friendly products. However, prior research has painted an unclear picture about how moral identity may affect individuals' green consumption preferences. Karmarkar and Bollinger (2015), for example, showed that moral identity has a positive effect on individuals' pro-environmental behavior. Similarly, Chowdhury and Fernando (2014) also indicated that moral identity is positively related to pro-environmental belief. However, other studies have demonstrated that moral identity is not related to environmental concern or the tendency to engage in green consumption (Crimston et al., 2016).

Even worse, Sachdeva and associates (2009) found moral identity to be negatively related to green consumption tendency. Specifically, compared to those whose moral identity is not activated, individuals whose moral identity is activated would choose to run filters less often (which is not good for averting the release of pollutants of the manufacturing plant), be more likely to indicate that plant managers should place the profit of the plant ahead of environmental concern, and view the decision about how much to run the filters as a business decision, rather than an environmental or ethical decision (Sachdeva et al., 2009). Other studies also showed that people who care about the environment do not practice green consumption very well. Ehrich and Irwin (2005), for example, found that when making decisions on furniture purchases, individuals who state that they care very much about the protection of the rain forest tend to under-request information about the source of the wood used and show a large discrepancy between their request for and use of the wood source information.

These mixed findings indicate the need for further investigations on the psychological process and boundary conditions of the relationship between moral identity and green consumption. In this research, we predict that moral identity in general enhances individuals' perceived responsibility for environmental damage, which in turn increases their tendency to engage in green consumption. If our proposed responsibility account is viable, people with a low level of moral identity will engage in green consumption if their perceived responsibility for environmental damage is heightened. Further, moral identity will not enhance consumers' green consumption tendency if a situational factor reduces their perceived responsibility for environmental damage. Next, we provide theoretical justifications on the responsibility account, starting from the effect of moral identity on perceived responsibility for environmental damage.

2.2. Moral identity and perceived responsibility for environmental damage

Perceived responsibility for environmental damage refers to the degree to which one believes that one is the agent directly or indirectly causing harm to the environment (Schwartz, 1968). In this research, we propose that, relative to those whose moral identity is not activated, people whose moral identity is activated tend to feel greater responsibility for environmental damage. Though to our knowledge no prior research has examined this relation, we have two theoretical reasons for this relationship.

First, people with active moral identity tend to feel responsible for environmental damage caused not just by themselves, but also by other people. Moral identity is associated with an expansive moral circle (Winterich, Mittal, & Ross, 2009), which enhances individuals' concern for the needs and interests of all human beings (Aquino, Reed, Thau, & Freeman, 2007). Consistent with our reasoning, prior research showed that people not only feel moral obligation to entities within their own moral circle, but also feel shameful, guilty, and even responsible for other people's wrongdoings, especially for those within their moral boundary (Gausel, Leach, Vignoles, & Brown, 2012). Because people whose moral identity is activated have greater moral concern for all human beings than those whose moral identity is not activated (Crimston et al., 2016), we believe they are more likely to feel responsible for environmental damage even when caused by other people.

Second, we expect people whose moral identity is activated to be less likely to use moral rationalization strategies to reduce their perceived responsibility for environmental damage than those whose moral identity is not activated, where *moral rationalization* refers to the cognitive process that people use to convince themselves that their behavior does not violate moral standards (Tsang, 2002). Research on the relationship between moral identity and moral rationalization suggested that, when people's moral identity is activated, their moral self-standards are heightened and moral self-regulatory mechanisms are salient (Stone & Cooper, 2001). As a result, having moral identity decreases individuals' tendency to use moral rationalization strategies to reduce their responsibility for unethical behavior (Chowdhury & Fernando, 2014), or to use moral rationalization strategies to justify wars (Aquino et al., 2007). In addition, the negative relationship between moral identity and unethical decisions is mediated by moral disengagement (one of the moral rationalization strategies; Detert, Treviño, & Sweitzer, 2008). As discussed earlier, environmental deterioration is by nature an outcome of collective action, since almost everyone routinely engages in activities that somewhat damage the environment (Bandura, 1991). Because of this, it is not so obvious to see the negative consequence of one's own non-eco-friendly behavior, and one person's feeling of responsibility for environmental damage can be easily diffused.

2.3. Moral identity, perceived responsibility, and green consumption tendency

We posit that consumers whose moral identity is activated (vs. those whose moral identity is not activated) have a greater tendency to engage in green consumption because of perceived responsibility for environmental damage. The validity of this hypothesis depends on the relation between perceived responsibility for environmental damage and green consumption. We propose that these variables are related for two theoretical reasons.

People whose moral identity is activated (vs. not activated) are more likely to be concerned about whether their behavior has impact on others' welfare. They tend to exert more effort on altruistic behavior, and are more likely to refrain from immoral behavior and punish immoral behavior in a moral way (Aquino et al., 2007, Reed et al., 2016). So we believe that people whose moral identity is activated are more likely to realize the relationship between their behavior and the environmental deterioration than those whose moral identity is not activated. According to the moral norm activation theory, an altruistic behavior is more likely to occur when two conditions are met: (1) the individual believes that particular conditions pose threats to others' welfare (awareness of adverse consequences), and (2) the individual can avert those consequences (ascription of responsibility to self; Schwartz, 1968). A consumer who feels perceived responsibility for environmental damage meets these two conditions. As a result, if a person feels responsible for environmental damage, that person has a greater tendency to engage in green consumption.

The relationship between responsibility for environmental damage and green consumption is also supported by the moral rationalization theory. As discussed earlier, people who feel (vs. do not feel) responsible for environmental damage are less likely to use moral rationalization strategies to shrink from their responsibility. Moral rationalization can deactivate moral self-regulation, thus enabling people to behave in immoral ways, such as behaving aggressively or making unethical decisions (Detert et al., 2008). If people do not use moral rationalization to justify their non-eco-friendly behavior, they have a greater tendency to engage in green consumption. Hence we propose:

> **H1.** Individuals whose moral identity is activated have a greater tendency to engage in green consumption than those whose moral identity is not activated.

> **H2.** The relationship between moral identity and green consumption tendency is mediated by perceived responsibility for environmental damage.

2.4. Factors that undermine perceived responsibility for environmental damage

To better understand the role of perceived responsibility for environmental damage, we also examine theoretical moderators that can change the relationship between moral identity and green consumption tendency. According to our responsibility account, when perceived responsibility for environmental damage is heightened (compared to a control condition in which perceived responsibility is unchanged), consumers whose moral identity is not activated tend to engage in green consumption. However, the green consumption tendency of individuals whose moral identity is activated remains unchanged, because their perceived responsibility for environmental damage is already high and cannot be further increases (the ceiling effect). Taken together, if consumers feel responsible for environmental damage, they will have high levels of green consumption tendency, no matter whether their moral identity is activated or not. As a result, the effect of moral identity on green consumption tendency will be attenuated. Formally, we have:

> **H3.** The effect of moral identity on green consumption tendency is moderated by perceived responsibility for environmental damage, such that the effect of moral identity

will be attenuated when perceived responsibility for environmental damage is heightened (compared to a control condition in which perceived responsibility is unchanged).

In addition, moral identity may also not enhance consumers' green consumption tendency, if the situational factor reduces their perceived responsibility for environmental damage. Specifically, when responsibility for environmental damage is situationally reduced (compared to a control condition in which perceived responsibility is unchanged), even consumers whose moral identity is activated are less likely to engage in green consumption. Thus, if consumers do not feel responsible for environmental damage, they will have low levels of green consumption tendency, no matter whether their moral identity is activated or not.

Locus of control on environmental damage is one such factor that can reduce consumers' perceived responsibility for environmental damage, defined as the degree to which individuals believe environmental damage is controlled by consumers or by external sources (Rotter, 1990). According to attribution theory, locus of control can influence individuals' perceived responsibility for an event (Tsiros, Mittal & Ross Jr, 2004). Those who believe an event is controlled by external forces (vs. by themselves) feel less perceived responsibility for that event (Weiner, 2000). Since environmental damage can be attributed to industrial production (which is out of the control of ordinary consumers) or to personal and household consumption (which is controlled by consumers), locus of control on environmental damage can set up an important boundary condition for the effect of moral identity on green consumption. Specifically, we propose that, if environmental damage is caused by external forces (industrial production in this case), consumers' perceived responsibility for environmental damage is reduced. In such situations, even individuals whose moral identity is activated will have low levels of green consumption tendency. However, the green consumption tendency of individuals whose moral identity is not activated remains unchanged, because their perceived responsibility for environmental damage is already low and cannot be further reduced (the floor effect). Although not studied in the green consumption context, prior research shows that if an individual does not feel perceived responsibility for another person's dilemma, the individual will not help that person (Schwartz & David, 1976). Similarly, Lee and associates (2014) found that moral identity decreases donations when the cause of the recipients' plight is themselves. Formally, we have:

> **H4.** The effect of moral identity on green consumption tendency is moderated by locus of control on environmental damage, such that the effect of moral identity will only be present when environmental damage is attributed to consumers, and will be eliminated when environmental damage is attributed to external forces.

We tested our hypothesized effects with five studies. Given that previous research has shown mixed findings on the relationship between moral identity and green consumption, the purpose of the first two studies is to show that moral identity in general has a positive effect on consumers' tendency to engage in green consumption. Specifically, in study 1, we used individual-difference measures to reveal that there is a positive association between moral identity and green consumption behavior. In study 2, we replicated the findings of study 1 in a product choice context, using a moral identity prime. Extending the first two studies, study 3 exhibited the same pattern of results through a behavioral measure of product choice, and further demonstrated that a key process underlying the effect of moral identity on green consumption tendency is perceived

responsibility for environmental damage. In study 4, we directly manipulated responsibility for environmental damage and showed that when responsibility for environmental damage is heightened, individuals are likely to have high levels of green consumption tendency, despite their levels of moral identity. In study 5, we tested the moderating role of locus of control on environmental damage (air pollution caused by industrial production vs. by personal consumption) and demonstrated that, when environmental damage is caused by industrial production, individuals are likely to have low levels of green consumption tendency, no matter whether their moral identity is activated or not.

3. Study 1

The purpose of this study is to use individual-difference measures to assess the overall relationship between moral identity and green consumption behavior in both the United States and China, the two countries with the largest consumption power in the world. Despite contextual differences across these nations, we expect that the relationship between moral identity and green consumption is a universally held phenomenon and that moral identity is positively associated with green consumption behavior in both countries. In this and all future studies, sample sizes were pre-determined to exceed the minimum requirements for testing a medium effect size at 80% power for a significance level of $p < .05$.[1]

3.1. Method

Recruited through online panels (WJX in China and M-Turk in the U.S.), 259 Chinese (148 females; $M_{age} = 32.01$, SD = 6.32) and 282 Americans (159 females; $M_{age} = 37.07$, SD = 11.43) took part in this study in exchange for a small monetary compensation. WJX is a Chinese version of M-Turk and is the most widely used data collection platform in China. Two versions of the questionnaire, one in English and the other in Chinese, were developed. The back translation approach was used to ensure idiomatic equivalence of the Chinese and English versions. Because green consumption can be a sensitive topic, all information remained anonymous, and no information related to identity (e.g., name, address) was collected.

Participants were told that they would complete two unrelated tasks. In the first task, we measured green consumption using Roberts and Bacon's (1997) 11-item Ecologically Conscious Consumer Behavior scale, which focuses on other-benefit green consumption behavior ($\alpha = 0.84$; see Appendix A for the actual items used in the survey). In the second task, we measured moral identity using the five-item Internalization subscale of Aquino and Reed's (2002) Self-Importance of Moral Identity scale ($\alpha = 0.96$; see Appendix A). This scale listed nine moral traits (e.g., caring, compassionate, and kind), and we asked participants to respond to five statements regarding those traits (1 = *strongly disagree*; 7 = *strongly agree*). To control for potential social desirability bias, we used Reynolds's (1982) 13-item short form of the Marlowe-Crowne Social Desirability scale. Participants indicated whether each statement truly reflected their situation (0 = *true*; 1 = *false*). Items were summed to form the measure, with higher scores indicating greater levels of social desirability. Finally, we measured participants' gender (0 = *male*; 1 = *female*), age, and financial situation ("*How do you feel about your current financial situation?*" 1 = *extremely bad*; 7 = *extremely good*).

3.2. Results

As expected, our factor analysis on the combined sample yielded two distinct factors (i.e., moral identity and green consumption behavior), which jointly explained 70.1% of the variance in our data. The extracted factors had adequate reliabilities, with both Cronbach's alphas above the 0.70 threshold. Subsequent analyses on separate samples of Chinese and Americans also confirmed the factor structure and the reliability of the measures.

To test **H1**, we created composite scores of moral identity and green consumption behavior by averaging the ratings on the evaluative attributes of these constructs. A regression analysis on green consumption behavior, using moral identity as the independent variable, and social desirability bias, gender, age, and financial situation as covariates, revealed that green consumption behavior was significantly associated with moral identity ($\beta = 0.23$, $t(535) = 5.94$, $p < .001$), social desirability bias ($\beta = 0.28$, $t(535) = 6.87$, $p < .001$), age ($\beta = -0.16$, $t(535) = -4.13$, $p < .001$), and financial situation ($\beta = 0.16$, $t(535) = 3.97$, $p < .001$), but not with gender ($p = .43$). Multicollinearity was deemed not a severe threat to the validity of our findings, because all VIFs were lower than 3.3. Separate analyses on the Chinese and the U.S. samples yielded similar results. Therefore, **H1** was supported in both cultures.

3.3. Discussion

Study 1 confirmed a positive relationship between individuals' moral identity and their green consumption behavior. This pattern exists in both China and the U.S. Using individual-difference measures, study 1 suggests that moral identity and green consumption are related. However, study 1 has a major limitation: the analysis is correlational by nature, with no evidence on the causal direction. To overcome this issue, we manipulated moral identity in the next study. Further, we used a decision choice to measure green consumption tendency to enhance the generalizability of our findings.

4. Study 2

4.1. Method

One hundred and sixty-two people in the United States (105 females; $M_{age} = 37.99$, SD $= 12.24$) were recruited through M-Turk to participate in this study in exchange for a small monetary compensation. Participants were told that they would complete two unrelated tasks: (1) a handwriting task, and (2) a product choice task. The handwriting task was used to manipulate the salience of moral identity (activated vs. not).

Following previous research (Aquino et al., 2007, Reed et al., 2016), in the moral-identity-activated condition, we told participants that the purpose of the task was to examine how different types of self-image affect the way people tell stories about themselves. They were provided with nine words about the traits that are commonly associated with being a moral person (e.g., caring, fair, and kind; Aquino & Reed, 2002), and asked to write a story or a few stories about themselves using each word at least once. In the moral-identity-not-activated condition, participants were told that the purpose of the task was to examine how people relate to

the objects in the surroundings when telling stories about themselves. They were provided with nine words about common objects (e.g., desk, car, and book), and asked to write a story or a few stories about themselves using each word at least once. After writing their stories, participants completed a manipulation check for moral identity, using the question "*How much does the story you wrote in the handwriting task reflect how you see yourself as: (1) a member of an organization, (2) a moral person, and (3) safety conscious?*" (1 = *not at all*; 7 = *very much so*).

After the handwriting task, participants completed an ostensibly unrelated survey of product choice. In this part, all participants were asked to imagine a scenario in which they were planning holiday travel and needed a backpack. There were two options for them to choose from: Backpack A was more stylish and durable, while Backpack B was more eco-friendly (see Appendix B for details). Participants were asked to make a choice between Backpacks A and B (0 = *Backpack A*; 1 = *Backpack B*). As a manipulation check, participants further indicated the relative degree between these two backpacks along the following two dimensions: (1) being more eco-friendly, and (2) being more durable (1 = *definitely Backpack A*; 7 = *definitely Backpack B*). Finally, participants responded to demographic questions, including gender, age, and whether they were born in the U.S. (0 = *no*; 1 = *yes*).

4.2. Results

Manipulation Checks. As expected, participants in the moral-identity-activated condition ($M = 5.88$) thought their stories were more reflective of themselves as moral people compared to those in the moral-identity-not-activated condition ($M = 3.91$; $t(154) = 7.75$, $p < .001$). However, the extent to which participants saw themselves as members of an organization, or safety conscious did not differ across these two conditions (p's > 0.29). These results indicated that our manipulation of moral identity was effective.

In addition, Backpack B was perceived to be more eco-friendly than Backpack A, as the average score ($M = 6.56$) was greater than the mid-point ($M = 4.0$; $t(161) = 33.48$, $p < .001$), whereas Backpack B was perceived to be less durable than Backpack A, since the average score along this dimension ($M = 1.50$) was smaller than the mid-point ($M = 4.0$; $t(161) = -31.29$, $p < .001$).

Choice of the Eco-friendly Option. A logistic regression analysis on the choice of Backpack B, using moral identity as the independent variable, and demographic variables as covariates, revealed a significant effect of moral identity ($b = 0.87$, Wald $\chi^2 = 5.51$, $p = .019$). Consistent with our expectations, 36.36% of those in the moral-identity-activated group chose Backpack B, compared with 21.18% in the moral-identity-not-activated group. Gender, age, and U.S.-born had no effect on the backpack choice (p's > 0.09).

4.3. Discussion

Replicating study 1's findings in a different context, we showed in study 2 that moral-identity-activated consumers have a greater tendency to choose the eco-friendly (vs. conventional) option than moral-identity-not-activated consumers. We speculated that the effect of moral identity on green consumption tendency is mediated by perceived responsibility for environmental damage. While we did not examine this proposed mediation effect in study 2, we aimed to test the

mediating role of responsibility for environmental damage in the next study. In addition, we captured participants actual choices in study 3 to enhance the generalizability of our findings.

5. Study 3

5.1. Method

Sixty-five undergraduate students (25 females; $M_{age} = 23.95$, $SD = 3.93$) from a major university in the U.S. participated in the study in exchange for a paper notebook (see Appendix C for pictures of the options). They completed two unrelated tasks: (1) a handwriting task and (2) a short survey, before taking the notebook of their choice as compensation for their participation. We used a handwriting task similar to that in study 2 to manipulate the salience of moral identity (activated vs. not), with some adaptation to fit the student population. Specifically, the cover story stated that this task was to investigate students' handwriting styles. Participants received nine words, and wrote one or a few stories about themselves that used each word at least once. In the moral-identity-activated condition, the nine words were the traits that people commonly associate with being a moral person (e.g., caring, fair, and kind; Aquino & Reed, 2002). In the moral-identity-not-activated condition, the nine words were positive traits unrelated to morality (e.g., polite, and happy). These words were used by previous research in a similar prime (Aquino et al., 2007, Reed et al., 2016). Using positive words in the moral-identity-not-activated condition helps rule out positivity of words as a possible alternative explanation of our findings. After writing their stories, participants completed a manipulation check, using the question "*How much does the story you wrote in the handwriting task reflect how you see yourself as: (1) a student, (2) a member of an organization, (3) a moral person, and (4) safety conscious*?" (1 = *not at all*; 7 = *very much so*). Subsequently, participants filled out a short survey, which contained a six-item measure of perceived responsibility for environmental damage adapted from previous research (Peloza et al., 2013; see Appendix A for the actual items), and demographics (gender and age).

After completing these two tasks, participants took the notebook of their choice as compensation for their participation. They chose from two options with the same price: Option 1 (Five Star notebook) was a conventional notebook with 100 sheets at the size of $11 \times 9.8 \times 0.8$ inch, whereas Option 2 (TOPS second nature notebook) was an eco-friendly notebook with 80 sheets at the size of $9.5 \times 6 \times 0.2$ inch. To keep the cover story more real and minimize any potential demand effect, participants made their choice of notebook and took it away after having submitted their survey. As a result, in the survey, there was no manipulation check question on perceived environmental friendliness of the notebooks. To validate the choice options regarding perceived environmental friendliness, we conducted a pretest with 59 undergraduate students from the same university. The results confirmed that Option 2 was perceived to be more eco-friendly than Option 1, as the average score ($M = 6.63$) was greater than the mid-point ($M = 4.0$; $t(58) = 19.55$, $p < .001$). Also, Option 2 was perceived to have less pages ($M = 1.12$) and smaller size of sheets ($M = 1.08$) than Option 1, with the average scores of these two dimensions being significantly lower than the mid-point ($M = 4.0$; number of pages: $t(58) = -41.92$, $p < .001$; size of sheets: $t(58) = -66.50$, $p < .001$).

5.2. Results

Manipulation Check. Compared with participants in the moral-identity-not-activated condition ($M = 4.47$), those in the moral-identity-activated condition indicated that their stories were more reflective of how they saw themselves as moral people ($M = 5.82$; $t(48) = 3.26$, $p < .01$). However, the extent to which participants saw themselves as students, members of an organization, or safety conscious did not differ across moral identity activated and non-activated conditions (p's > 0.45). Therefore, moral identity was manipulated successfully.

Choice of the Eco-friendly Notebook. Consistent with **H1**, a logistic regression on the choice of Option 2 (the eco-friendly notebook), using moral identity as the independent variable, and demographics as covariates, revealed significant effects of moral identity ($b = 1.54$, Wald $\chi^2 = 7.51$, $p = .006$). Consistent with our expectations, a greater percentage of people in the moral-identity-activated group (66.67%) chose Option 2, compared to 34.38% in the moral-identity-not-activated group. Gender and age had no effect on the notebook choice (p's > 0.11).

Mediation Analysis. To test whether the relationship between moral identity and green consumption tendency was mediated by perceived responsibility for environmental damage (**H2**), we conducted a mediation analysis using the PROCESS macro (Model 4, $n = 5000$; Hayes, 2013) with moral identity as the independent variable, responsibility for environmental damage as the mediator, and gender and age as covariates. The results indicated that the indirect effect of moral identity on the choice of eco-friendly notebook was positive (1.12) and significant (95% CI, 0.21 to 2.68, excluded zero). These results supported **H2**.

5.3. Discussion

Using an actual choice, in study 3 we replicated the findings of previous studies and demonstrated the mediating role of perceived responsibility for environmental damage. As expected, consumers whose moral identity is activated had a greater tendency to choose the eco-friendly option than did those whose moral identity is not activated, which was driven by their greater degree of perceived responsibility for environmental damage.

If our responsibility-based account is valid, when perceived responsibility for environmental damage is heightened (compared to a control condition in which perceived responsibility is unchanged), even those whose moral identity is not activated are likely to engage in green consumption. As a result, the effect of moral identity on green consumption tendency is diminished. We tested this possibility in study 4 through directly manipulating responsibility for environmental damage.

6. Study 4

6.1. Method

Study 4 featured a 2 (moral identity: activated vs. not activated) × 2 (responsibility for environmental damage: unchanged vs. heightened) between-subjects design. One hundred and

sixty-six American adults (90 females; $M_{age} = 36.93$, SD = 13.44) were recruited from M-Turk for a small monetary payment.

The study consisted of four parts, presented as unrelated studies with separate introduction pages. In the first part, we manipulated moral identity through the same handwriting task as in study 2, along with the manipulation check questions. In the second part, we manipulated responsibility for environmental damage through a reading task. Participants were randomly assigned to either a high responsibility-for-environmental-damage condition or a control (responsibility-unchanged) condition. In both conditions, participants read a brief article from the *Wall Street Journal*, which described statistics about how much an average American wastes: "*An average American throws away more than 7 pounds of garbage a day. That's 102 tons in a lifetime.*" In the high responsibility-for-environmental-damage condition, the news ends with the statement, "*So, EACH OF US IS RESPONSIBLE FOR ENVIRONMENTAL DAMAGE!*" This statement was not shown to the participants in the control condition. After reading the article, participants in the heightened responsibility-for-environmental-damage [responsibility-unchanged] condition were asked to list the three things they had wasted the most in their daily lives [the three words that came to their mind at that moment].

Subsequently, in an ostensibly different task, participants were exposed to a consumer decision-making scenario, and asked to imagine that they wanted to purchase some batteries and had narrowed down their consideration set to two options: Option A was stronger and more durable than Option B, with a life span two to three times longer; however, Option B was eco-friendly, made of recyclable materials not harmful to the environment. Participants made the choice between these two options. To validate the choice options' perceived environmental friendliness, a pretest was conducted among 56 respondents. Results showed that, consistent with our manipulation, Option B was perceived to be more eco-friendly than Option A, as the average score ($M = 5.50$) was greater than the mid-point ($M = 4.0$; $t (55) = 8.24$, $p < .001$), whereas Option B was perceived to be less durable than Option A, since the average score along this dimension ($M = 2.55$) was smaller than the mid-point ($M = 4.0$; $t (55) = -9.75$, $p < .001$).

Finally, in the fourth part, participants answered a short survey, which contained the same measures of perceived responsibility for environmental damage and demographics as in study 3.

6.2. Results

Manipulation Check. Compared to participants in the moral-identity-not-activated condition ($M = 4.60$), those in the moral-identity-activated condition indicated that their stories were more reflective of how they saw themselves as moral people ($M = 6.06$; $t (153) = 6.25$, $p < .001$). However, the extent to which participants saw themselves as members of an organization or safety conscious did not differ across moral-identity-activated and moral-identity-not-activated conditions (p's > 0.55). These results showed that moral identity was manipulated successfully.

Choice of the Eco-friendly Option. A logistic regression analysis on choice (0 = *Option A*, 1 = *Option B*), using moral identity (0 = *not activated*, 1 = *activated*), manipulated responsibility-for-environmental-damage (0 = *control*, 1 = *heightened*), and the interaction between the two as independent variables, revealed a significant effect of moral identity ($b = 1.14$, Wald

$\chi^2 = 6.10$, $p = .014$), a significant effect of manipulated responsibility-for-environmental-damage ($b = 1.11$, Wald $\chi^2 = 5.71$, $p = .017$), and more importantly, a significant interaction effect ($b = -1.39$, Wald $\chi^2 = 4.51$, $p = .034$).

Consistent with the findings in previous studies, in the control (i.e., responsibility-unchanged) condition, participants preferred the eco-friendly battery more when moral identity was activated (69.8%), compared to when it was not activated (42.5%; $b = 1.14$, Wald $\chi^2 = 6.10$, $p = .014$).

Supporting our proposed mechanism, in the responsibility-for-environmental-damage heightened condition, participants in the moral-identity-activated (63.4%) and moral-identity-not-activated (69.0%) conditions did not differ in their choice of the eco-friendly option ($b = -0.25$, Wald $\chi^2 = 0.29$, $p = .588$), supporting **H3**. Notably, moral-identity-not-activated participants in the responsibility-heightened condition (69.0%) had a significantly higher percentage of choosing the eco-friendly battery than those in the responsibility-unchanged condition (42.5%; $b = 1.11$, Wald $\chi^2 = 5.71$, $p = .017$). These results are presented in Fig. 1.
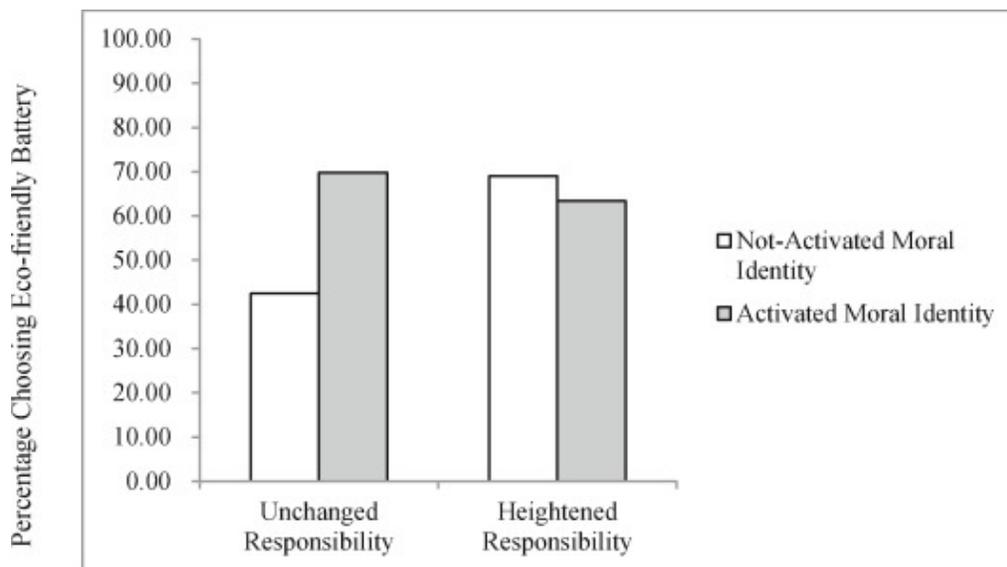

Fig. 1. Choice of the eco-friendly battery as a function of moral identity and manipulated responsibility-for-environmental-damage (Study4).

Moderated Mediation Analysis. According to our theory, when responsibility for environmental damage is unchanged, moral identity increases green consumption tendency through increasing perceived responsibility for environmental damage; however, when responsibility for environmental damage is heightened, moral identity will not affect green consumption tendency as both moral-identity-activated and moral-identity-not-activated consumers tend to have high levels of perceived responsibility for environmental damage and thus high levels of green consumption tendency. To test the process, a moderated mediation analysis (PROCESS model 7; Hayes, 2013) using 5000 samples was used. The moderated mediation analysis included moral identity as the independent variable, manipulated responsibility-for-environmental-damage as the moderator, perceived responsibility-for-environmental-damage as the mediator, and product choice as the dependent variable. Results revealed that the conditional indirect effect through perceived responsibility-for-environmental-damage was significant only when the manipulated

responsibility-for-environmental-damage was unchanged ($b = 0.63$; 95% CI, 0.15 to 1.36 excluded zero). When manipulated responsibility-for-environmental-damage was heightened, the mediation effect was not significant ($b = -0.13$; 95% CI, -0.58 to 0.32 included zero). These results provided additional evidence on our proposed mechanism.

6.3. Discussion

In line with the findings of earlier studies, when responsibility for environmental damage is unchanged, consumers whose moral identity is activated have a greater tendency to choose the eco-friendly battery than those whose moral identity is not activated. In contrast, when responsibility for environmental damage is heightened, both moral-identity-activated and moral-identity-not-activated consumers do not differ in their choice of the eco-friendly option. These results suggest that when people feel responsible for environmental damage, even if their moral identity is not activated, they are more likely to engage in green consumption, compared to those in the responsibility-unchanged condition.

Extending study 4, in study 5 we manipulated responsibility for environmental damage in a more natural setting. According to **H₄**, for those whose moral identity is activated, their tendency to engage in green consumption will be lower when responsibility for environmental damage is low (vs. high). We tested this hypothesis in the context of preference for public transportation (vs. driving one's own car), while manipulating the locus of pollution to be out of ordinary consumers' control (industrial production in this case) or under their control (i.e., consumers' automobile exhaust). Relative to automobile exhaust, when consumers believe air pollution is caused by industrial production, they are less likely to feel responsible for environmental damage. Therefore, we propose that, when consumers believe air pollution is caused by industrial production, moral identity will not affect the likelihood of using public transportation, but when consumers believe air pollution is caused by automobile exhaust, moral identity affects the likelihood of using public transportation, as shown in earlier studies. We tested these effects in study 5.

7. Study 5

7.1. Method

This study featured a 2 (moral identity centrality: low vs. high) × 2 (locus of pollution: industrial production vs. automobile exhaust) mixed design, with moral identity being measured and locus of pollution being manipulated. One hundred and eighty-three people (114 females; $M_{\text{agerange}} = 20–39$) recruited from the same Chinese online panel as in study 1 participated in exchange for a small monetary compensation. Participants were asked to complete two unrelated tasks: (1) a reading task and (2) a personality survey.

The reading task was used to manipulate locus of pollution. All participants read an article about the causes of air pollution. In the industrial pollution [automobile exhaust] condition, the article stated that 80% of air pollution is caused by industrial production [automobile exhaust]. After the manipulation of locus-of-pollution, participants indicated their likelihood of using more public transportation in two items ($\alpha = 0.89$): (1) *How likely are you going to use more public*

transportation in the future? (1 = *very unlikely*; 7 = *very likely*); and (2) *How sure are you going to use more public transportation in the future?* (1 = *very unsure*; 7 = *very sure*). To rule out severity of air pollution as an alternative explanation for our findings, we also measured perceived severity of air pollution with another two items ($\alpha = 0.88$): (1) *I think air pollution is very severe*; and (2) *I think air pollution has an impact on my life*, anchored at 1 = *strongly disagree* and 7 = *strongly agree*.

In the personality survey, participants were told that we wanted to know their personality. On this pretense, we measured moral identity using the same five items as used in study 1 ($\alpha = 0.76$).

7.2. Results

Likelihood of Using More Public Transportation. A regression analysis on the likelihood of using more public transportation, treating mean-centered moral identity, locus of pollution (−1 = *industrial production*, 1 = *automobile exhaust*), and the interaction term of these two variables as predictors, revealed that the likelihood of using more public transportation was significantly related to moral identity ($\beta = 0.16$, $t\,(179) = 2.34$, $p = .020$), locus of pollution ($\beta = 0.29$, $t\,(179) = 4.25$, $p < .001$), and the interaction term ($\beta = 0.17$, $t\,(179) = 2.44$, $p = .016$).

To better understand this interaction, we conducted a simple slope analysis. Supporting **H4**, the results showed that when locus of pollution was automobile exhaust, moral identity was significantly associated with the likelihood of using public transportation ($\beta = 0.33$, $t\,(179) = 3.49$, $p = .001$). However, when locus of pollution was industrial pollution, the relationship between moral identity and the likelihood of using public transportation was not significant ($\beta = -.01$, $t\,(179) = -0.07$, $p > .94$). These results are presented in Fig. 2.
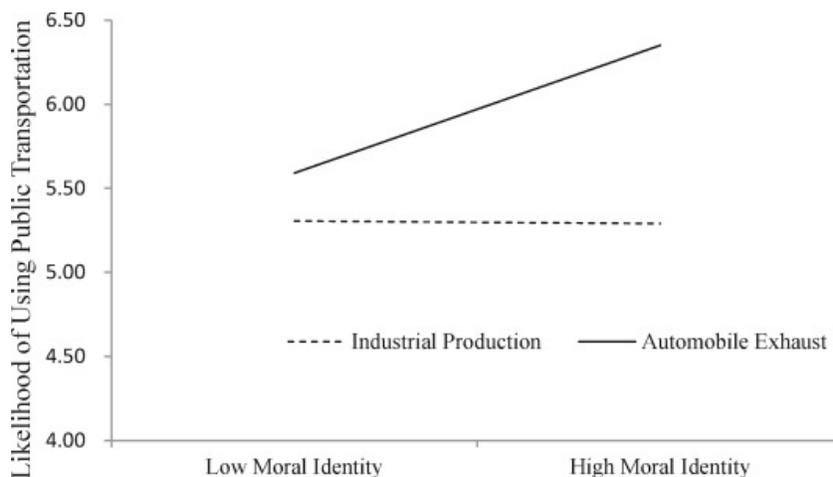

Fig. 2. Likelihood of using public transportation as a function of moral identity and locus-of-pollution (study 5).

Severity of Air Pollution as an Alternative Explanation. A regression analysis on air pollution severity, using moral identity, locus-of-pollution, and the interaction of these two variables as predictors, showed that air pollution severity was not related to moral identity ($\beta = 0.11$, $t\,(179) = 1.53$, $p = .13$), locus of pollution ($\beta = -0.03$, $t\,(179) = -0.38$, $p = .70$), or the

interaction between these two variables ($\beta = 0.06$, $t\,(179) = 0.76$, $p = .45$). Therefore, severity of air pollution was unlikely an alternative explanation for our findings.

7.3. Discussion

In study 5 we showed that when environmental damage is attributed to consumers (automobile exhaust), moral identity is associated with green consumption tendency, but when environmental damage is attributed to an external force (industrial production in this case), moral identity and green consumption are not related. These findings lend additional support for our proposed effects.

8. General discussion

The purpose of this research was to examine the relation between moral identity and green consumption tendency, and a key mechanism underlying this relationship. With five studies we tested the core thesis that consumers whose moral identity is activated (vs. not activated) have a greater tendency to engage in green consumption, because they feel greater perceived responsibility for environmental damage. In study 1, we examined the association between moral identity and green consumption behavior in both China and the U.S. using individual-difference measures. In a product choice context, study 2 replicated study 1's findings through priming moral identity. Extending the first two studies, study 3 showed the mediating role of responsibility for environmental damage. Study 4 directly manipulated responsibility for environmental damage and revealed that, when responsibility for environmental damage was heightened (compared to a control condition in which perceived responsibility was unchanged), even consumers whose moral identity was not activated were more likely to engage in green consumption. Therefore, the effect of moral identity on green consumption tendency was diminished. Study 5 examined the moderating role of locus of control on environmental damage, and showed that, for the consumers whose moral identity was activated, their tendency to engage in green consumption was lower when perceived responsibility for environmental damage was reduced (compared to a control condition in which perceived responsibility was unchanged), thereby reducing the effect of moral identity on green consumption tendency.

8.1. Theoretical contributions

Our findings offer contributions to the literature in two significant ways. First, our research provides plausible explanations for the inconsistent findings in the literature, with respect to the effect of moral identity on green consumption. Karmarkar and Bollinger (2015), for example, found that moral identity increases individuals' pro-environmental behavior. However, Crimston et al. (2016) showed no significant relationship between moral identity and green consumption beliefs and behavior. Furthermore, Sachdeva et al. (2009) reported a negative association between moral identity and pro-environmental beliefs and behavior. Our research suggests that situational factors that increase or reduce individuals' perceived responsibility for environmental damage may be a reason that causes such inconsistencies.

Second, we contribute to the literature on moral identity and green consumption by identifying a novel mechanism that explains how moral identity influences green consumption. Prior research

has shown that the psychological distance between the helper and the beneficiary is the key mechanism underlying the effect of moral identity on altruistic behaviors (Winterich et al., 2009). Considering that the environmental benefit of green consumption is not so obvious to consumers, and the beneficiaries of green consumption usually do not confine to a particular person or group, we show that perceived responsibility for environmental damage is the key to understand how moral identity affects green consumption. By identifying this new mechanism, this research advances our understanding about under what circumstances moral-identity-activated people do not prefer green consumption, and how to increase the green consumption inclination of moral-identity-not-activated people.

8.2. Practical implications

Apart from the theoretical contributions, the findings of this paper also have some significant practical implications. As environmental problems are getting worse, how to encourage consumers to engage in green consumption is an urgent issue. Our studies show that marketers and public policy makers can enhance consumers' green consumption tendency by situationally activating their moral identity. An advertisement may be used to achieve this goal, as most consumers hold a base level of morality that can be readily activated through the use of ad appeals (Choi & Winterich, 2013). According to Choi and Winterich (2013), "even for consumers for whom moral traits are not chronically active, a relatively subtle prime in an advertisement could activate a consumer's thoughts regarding moral identity, making this identity more relevant than other identities, even if only temporarily" (p. 107). In addition, the marketplace abounds in situational contingencies that help activate consumers' moral identity, such as reading the news of the Ice Bucket Challenge, and knowing about others people's moral behavior. In our studies, moral activation significantly increased individuals' tendency to engage in green consumption.

Our findings also provide insights to managers and public policy makers on (1) how to drive moral-identity-not-activated people to engage in green consumption, and/or (2) how to minimize the likelihood of moral-identity-activated people not engaging in green consumption. The key issue is their perceived responsibility for environmental damage. Two approaches may be used to achieve this goal. The first is to use communication appeals (e.g., statistics on how their daily activities may bring damage to the environment). In this way, their responsibility for environmental damage is likely to be heightened, as shown in our study 4. The second approach is to reduce consumers' opportunity to diffuse their responsibility for environmental damage. As a common moral rationalization strategy, diffusion of responsibility is a main obstacle of moral regulation (Bandura, Barbaranelli, & Caprara, 1996). It is also the main cause that people do not feel responsible for environmental damage. In the context of environmental damage, diffusion of responsibility means that, when others are perceived to be accountable for environmental damage, a person is less likely to take the responsibility, although that person is really a source for such damages. Ad appeals can be used to reduce consumers' diffusion of responsibility.

8.3. Limitations and directions for future research

The current research has several limitations. First, most of our studies used product choice as a measure of green consumption tendency. Choosing eco-friendly products only involves financial

sacrifice, but does not require much effort into the consumption itself (Schultz & Oskamp, 1996). Although study 5 alleviates the concern to some extent, we do not know whether our findings can extend to other high-effort green consumption behavior. Second, many green consumption in everyday life is not a one-time behavior. But due to the constraints of data access, our studies focused only on one-time green consumption. Future research could explore the temporal effect of moral identity on green consumption. Finally, study 4 showed that, when responsibility for environmental damage was heightened, even people whose moral identity was not activated were likely to engage in green consumption. Given that there are many ways to situationally activate individuals' perceived responsibility for environmental damage, future researchers may explore these approaches that could enhance perceived responsibility for environmental damage in a more subtle way.

Acknowledgments

Appendix A. Measures of Study 1 and Study 3.

Scales and Items Used in Study 1
Moral Identity (1 = *strongly disagree*; 7 = *strongly agree*; α = .84)
It would make me feel good to be a person who has these characteristics.
Being someone who has these characteristics is an important part of who I am.
I would be ashamed to be a person who had these characteristics. (R)
Having these characteristics is not really important to me. (R)
I strongly desire to have these characteristics.
Green Consumption Behavior (1 = *never true*; 7 = *always true*; α = .96)
When there is a choice, I always choose that product which contributes to the least amount of pollution.
If I understand the potential damage to the environment that some products can cause, I do not purchase those products.
I have switched products for ecological reasons.
I make every effort to buy paper products made from recycled paper.
I have convinced members of my family or friends not to buy some products which are harmful to the environment.
I have purchased products because they cause less pollution.
When I purchase products, I always make a conscious effort to buy those products that are low in pollutants.
When I have a choice between two equal products, I always purchase the one which is less harmful to other people and the environment.
I will not buy a product if the company which sells it is ecologically irresponsible.
I try to buy only products that can be recycled.
Whenever possible, I buy products packaged in reusable containers.
Items Used in Study 3
Perceived Responsibility for Environmental Damage (1 = *strongly disagree*; 7 = *strongly agree*; α = .77)
At this moment, I feel some of my behavior could have negative impact on the environment.
At this moment, I feel some of my behavior has the potential to damage the environment.
At this moment, I think some of my behavior could affect the environment.
At this moment, I feel I have my own share of responsibility for environmental damage.
At this moment, I am willing to do what I can to contribute to the solution of environmental problems.
At this moment, I believe I have the responsibility for environmental protection.

Backpack A: Ultra-Strength

North Face Ultra-Strength Backpack ($64)

- Contains eight different storage compartments for maximum versatility

- Stylish design crafted with water-resistant coating

- Solid construction lasts twice as long as the next leading brand on the market

Backpack B: Eco-Life

North Face Eco-Life Backpack ($64)

- Made from 100% organic fibers which are biodegradable and recyclable

- Utilitarian design minimizes waste in the construction process

- Comes with instructions on how to recycle the backpack when you are done with it

Five Star spiral notebook

- Interior sheets consist of high quality paper which resists ink bleed
- 100 sheets per book
- $11 \times 9.8 \times 0.8$ inch sheets
- Six colors to choose from
- $5.00

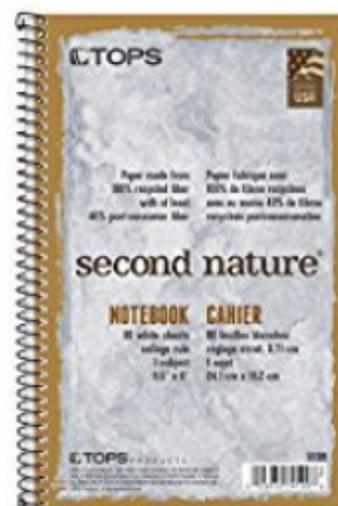### Tops second nature notebook

- Interior sheets consist of 100% recycled paper which is environmentally friendly
- 80 sheets per book
- $9.5 \times 6 \times 0.2$ inch sheets
- Grey is the only color available
- $5.00

Five Star spiral notebook	TOPS second nature notebook

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