Anthropomorphism's Influence on Consumer Involvement in Sustainability

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Abstract

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Across two chapters, this dissertation reviews the literature of sustainability appeals, anthropomorphism, and explores the influence anthropomorphism has on sustainability appeals and downstream marketing consequences. Chapter 1 reviews research on sustainability appeals and identifies message-centric and consumer-centric cues that drive sustainable behavior. In doing so, inconsistencies in extant findings are articulated and anthropomorphism is offered as an explanation for how to reconcile these inconsistencies. Through a detailed review of anthropomorphism, four common underlying mechanisms – empathy, anticipatory guilt, connectedness to nature, and green trust – are highlighted as crucial to explore when considering anthropomorphism's positive influence on consumer sustainable practices and brands. Chapter 2 utilizes a managerial test of anthropomorphism appeals and tests the relative influence of manipulating specific dimensions of anthropomorphism. Specifically, an ad test of four experimental ads (pure control vs. baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt) was run on a popular social media platform, Facebook. Results from this field test help identify which appeal combinations are relatively stronger in eliciting consumer engagement in sustainability. In total, this dissertation provides a framework by which to understand the various drivers of anthropomorphism's beneficial impact on sustainability marketing and sheds light onto the most effective communication strategies managers may use to successfully increase consumer engagement.

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Dedicated to

my father, Dr. P.R. Mukund

and

my mother, Dr. Vanditha Mukund

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CHAPTER 1. HUMANIZING SUSTAINABILITY

"I want us to reflect on this day as indeed we should be reflecting on every day; that our disrespect to the environment has led to some major problems…We're destroying Mother Earth so fast." – Jane Goodall

Scientists have found evidence that human activity over the last fifty years is the leading cause of climate change and the earth's deterioration (climate.nasa.gov/causes/). Climate change can be observed through natural decline such as glacier shrinkage, plant and animal range shifts, extinction, and extreme weather patterns. Other effects such as loss of sea ice, rising sea levels, and longer, more intense heat waves are predicted to occur with increased frequency in the future. Although the desire to help the planet exists in society, individuals are often not aware of how simple everyday choices (e.g., fast fashion, single use plastics, meat consumption, etc.) contributes to environmental pollution (Schlossberg, 2019).

To help address climate change, sustainability initiatives have been implemented at national scales, such as India's pledge to go single-use plastic free by 2022 (India Times, 2019). At a consumer level, nonprofit organizations and policy makers constantly seek effective strategies when designing appeals to educate consumers about such issues and drive sustainable human behavior change. Appeals' effectiveness relies on both cues within the advertising appeal itself and on the consumer's internal cognitive and emotional response to the appeal. Message-centric cues – elements of the appeal strategically crafted to signal a certain mindset in the viewer –influence consumer response to sustainability appeals by highlighting particular beneficiaries in the appeal (Kang and Sung, 2021; Edinger-Schons et al. 2018; Song and Kim,

2019), implying that such activities are "normal" to engage in (Goldstein et al. 2008; Rettie et al. 2012), and framing messages as a loss versus a gain (White et al. 2011; Shao et al. 2020). Consumer-centric cues – signals elicited within the individual, at times based on reactions to message-centric cues, – drive consumer reaction to sustainability appeals by increasing the resonance of the appeal. Common consumer-centric cues include an array of emotions such as felt empathy (Zhang et al. 2019), anticipatory guilt (Peloza et al. 2013), pride (Septianto et al. 2018), gratitude (Septianto et al. 2020), fear (Chen, 2016; Lee et al. 2017), and sadness (Schwartz and Loewenstein, 2017; Meng and Trudel, 2017). Consumer-centric cues can also include trait connection to nature (Mayer et al. 2009; Tam, 2022), consumer evaluations of sustainable brands and products (Kong et al. 2021; Diehl et al. 2016), and individual differences such as gender (Brough et al. 2016) and whether an individual has a collectivistic or individualistic mindset (McCarty and Shrum, 2001). When reviewing sustainability research, it is apparent that the influence of these cues on behavioral change is inconsistent. For example, Kim et al. (2021) suggests that framing nature as the beneficiary of action is more effective than framing the self as a beneficiary of action whereas Palomo-Velez et al. (2020) observes the reverse and Choi and Lee (2020) observe no consistent differences between the frames. With respect to guilt, Peloza and colleagues (2013) suggest that subtler cues of self-accountability are more effective than explicit guilt appeals in encouraging ethical consumption and that consumers prefer products that focus on ethical attributes over self-benefits. Yet, Chang (2012) finds that guilt appeals are effective when communicating self-benefits to those with weak environmental consciousness and environment benefits to those with high environmental consciousness.

The introduction of anthropomorphism can help explain many inconsistent results in sustainability marketing. Anthropomorphism refers to imbuing humanlike qualities onto animals

or nature (Epley et al. 2007) and has been shown to have beneficial effects on outcomes ranging from animal welfare to nature conservation (Williams et al. 2021). Appeals that use anthropomorphism often humanize nature as "Mother Nature" or "Mother Earth" and ask humans to care for her. In a notable example of this, the United Nations now recognizes April 22nd as International Mother Earth Day (un.org/en/observances/earth-day).

Advertising appeals have utilized anthropomorphism through visual cues, such as presenting products with eyes and facial expressions (Tong et al. 2020) or through first-person language (i.e., a product "speaking" directly to the audience, Ahn et al. 2014). Although the use of anthropomorphism has spanned several marketing topic areas, interest in its use within sustainable consumer behavior specifically has increased. As examples, emerging research questions include how humanizing nonhuman sources can affect consumer participation in corporate social responsibility (CSR) initiatives (Ahn and Lee, 2021) as well as consumer empathy toward and preference for unattractive produce (Chen et al. 2021).

Although evidence exists that anthropomorphism can facilitate sustainable behavior, the relative influence of the various mechanisms through which anthropomorphism works has not been examined in real-life managerial contexts. As a result, it is unclear which of anthropomorphism's driving mechanisms is most effective at encouraging actual consumer engagement in sustainable behaviors. It is important to confirm whether the literature-identified strategies do indeed have positive impact on actual consumer behavior and if they can exert stronger influence above and beyond baseline anthropomorphism. Doing so can provide insight for nonprofit organizations and policy makers in understanding how best to communicate and encourage sustainable efforts in consumers. The above mentioned theoretic gaps and the lack of a bridge between theory and real-life applications suggests that research should determine the

actual magnitudes of the mechanisms suggested by theory and their effects on anthropomorphism's influence on sustainable behavior. Answers to these questions will provide invaluable knowledge practitioners and behavioral researchers alike.

Two major contributions arise by studying the intersection of sustainability and anthropomorphism: 1) anthropomorphism can explain why inconsistent results exist in the effectiveness of sustainability appeals on sustainable behavior and 2) identifying common mechanisms that drive anthropomorphism's effect on sustainable behavior allows for a methodical test of anthropomorphism dimensions that are most effective in encouraging sustainable behavior. A common strategy used in sustainability advertisements is to humanize the entity. For example, the World Wide Fund for Nature (WWF) frequently features animals in postures similar to humans (e.g., a polar bear covering its eyes with its paws) in appeals communicating wildlife protection (see Table 4 for notable ad campaigns in this domain). Yet, it is unclear if this method or particular elements of this method is effective in increasing consumer involvement in sustainability. This research systematically explores which of many highly discussed appeal mechanisms in literature are most effective in increasing sustainable consumer practices. Chapter 1 provides a detailed review of sustainability appeals, anthropomorphism's ability to reconcile inconsistent findings within research on sustainability appeals, and identifies common mechanisms suggested by literature to explain anthropomorphism's influence on increased sustainable consumer behavior and marketing outcomes. Possible methods to test the relative influence of these mechanisms are discussed in Chapter 1's conclusion and motivate the empirical research conducted in Chapter 2. Chapter 2 explores whether common underlying factors of anthropomorphism further influence the effects of baseline anthropomorphism in appeals focused on encouraging consumer involvement in sustainability.

LITERATURE REVIEW

Sustainability

Sustainability – commonly thought of in terms of the environment – defines actions and behavior in avoidance with ecological destruction (Morelli, 2011). In marketing, sustainability marketing consists of three key areas: 1) auxiliary sustainability – the effect of sustainable products such as those that reuse materials and are themselves recyclable, 2) reformative sustainability – promotion of sustainable lifestyles and behavior, and 3) transformative sustainability – changing public policies, institution and norms, and critical reflection (Kemper and Ballantine, 2019). These facets of sustainability marketing have received increased interest in recent years including a greater push for transformative consumer research (Mick, 2006; Davis et al. 2016). A major focus of past literature focuses on consumer and societal well-being (Davis and Pechmann, 2013) and opportunities for consumer research and public policy (Prothero et al. 2011; Iyer and Reczek, 2017). Researchers have also considered a "theoretical toolbox" for marketing research on sustainability (Connelly et al. 2011) and how to normalize green behaviors (Rettie et al. 2012).

It is evident that researchers agree that sustainability marketing is important (McDonagh and Prothero, 2014). By exploring this area, marketing research can benefit the greater good (Mende and Scott, 2021). The majority of extant sustainable consumer research focuses on advertising appeal types and their effects on consumer behavior. Past frameworks have suggested many different motivations that may push consumers toward sustainable consumption (White et al. 2019; White et al. 2020; Habib et al. 2021).

Sustainability appeals employ various cues to encourage individuals to engage in sustainable behavior. In the present review of literature, cues were identified as either message-centric or consumer-centric and were then dissected further into subcategories (Table 1). Message-centric cues relate to certain aspects of the appeals themselves such as how the information is framed and who benefits from sustainable behavior. In total, four message-centric cues were identified: the beneficiary of the sustainable behavior, social norms, framing according to prospect and construal-level theories, and framing based on regulatory focus. Consumer-centric cues pertain to specific feelings an individual may experience or certain personality traits of an individual that can ultimately drive sustainable action. In total, seven consumer-centric cues were identified: empathy, guilt, other positive affect (pride and gratitude), other negative affect (fear and sadness), nature connectedness, brand/product evaluations, and individual differences. The following sections highlight the subcategories and research findings identified for message-centric and consumer-centric cues specific to sustainability (Table 2 provides a detailed table version of the literature review).

Message-Centric Cues

Beneficiary of the Appeal

The focus of a sustainability appeal is often based on who will benefit from the encouraged action. Research has compared the effects of appeals based on whether the self or another (e.g., nature) is the beneficiary and how this may encourage various green behaviors and evaluations. For example, Kang and Sung (2021) observed that when an appeal highlighted the environmental benefits of a brand's corporate social responsibility (CSR) initiative, consumers

evaluated the company more favorably because its motive for CSR was seen as public-serving. Focusing on nature as the beneficiary also encourages greater green purchase intentions. Relatedly, Edinger-Schons and colleagues (2018) observed that adding an extrinsic motivation (i.e., purchasing the product to save money) to an existing intrinsic motivation (i.e., purchasing the product to help the environment reduced consumer preference for sustainable products.) However, the authors note that for those with low involvement with sustainable consumption, a joint motivation appeal can increase the intrinsic attributions for using a sustainable product and increase sustainable product preferences.

Others find that the level of detail in the messaging can also influence which beneficiary is preferred in an appeal. Jeager and Weber (2020) recommend appeals that highlight environmental benefits with concrete message framing whereas Yang and colleagues (2015) observe that an abstract appeal is better when paired with benefits for others than with benefits to the self. Both abstract and concrete messaging are less effective when benefits to the self are highlighted. In a similar vein, focusing on societal benefits leads to greater altruistic and egoistic warmth, ultimately leading to increased purchase intentions for green apparel (Song and Kim, 2019).

Taken together, appeals that focus on others, including the environment, are generally favored over those that focus on the self. For example, after believing that they have violated ethical standards, consumers are more likely to support an unrelated environmental campaign when the appeal highlights that the actions benefit others (Kim et al. 2021). However, research has found that highlighting the self as the beneficiary is preferred after experiencing social exclusion (Yu and Han, 2021) and in private (vs. public) settings (Green and Peloza, 2014). Additionally, highlighting consequences of one's own kin versus consequences to the

environment is more effective in encouraging collecting and recycling used paper (Palomo-Vélez et al. 2020). Still other research failed to observe conclusive results regarding which beneficiary is most effective to highlight (Choi and Lee, 2020; Kesenheimer and Greitemeyer, 2020). These inconsistencies may be due to consumers reactions to one's own circumstances in connection to the beneficiary in the appeal. For example, when individuals are battling their own negative experiences such as social exclusion (Yu and Han, 2021) or threats to kin (Palomo-Vélez et al. 2020), they choose options that alleviate personal negativity by focusing on appeals that highlight benefits to the self. When in private settings, focus will naturally be geared more towards the self and in such cases individuals prefer self-focused appeals (Green and Peloza, 2014). In situations where one's own circumstances are not negatively impacted individuals are able to focus on others; appeals focused on others are then more persuasive in increasing sustainable behavior.

Social Norms

Normalizing green behavior is particularly important in encouraging individuals to adopt sustainable behavior (Rettie et al. 2012). In their famous field work, Goldstein and colleagues (2008) found that descriptive norms (describing the typical behavior of a group) and, specifically, provincial norms (norms based on behaviors of others who were in the exact same scenarios as the consumers) were more effective than injunctive appeals (describing behavior one should partake in) in reusing hotel towels and engaging in an environmental conservation program. To further optimize the use of descriptive norm appeals, subsequent research finds that descriptive norms in public service announcements are most effective when paired with text and visual stimuli (Poškus et al. 2019) and that descriptive norms have better fit with promotion as

opposed to prevention focus (Melnyk et al. 2013). Identifying under what circumstances descriptive norms are most effective is helpful in encouraging individuals to believe the behavior is not only common but reflective of what is done within a given ingroup.

A variety of reference groups may be used in sustainability appeals to increase sustainable behavior. Congruency in appeal messaging with one's political ideology and ingroup behavior is most effective in increasing recycling behavior for both conservative and liberal consumers (Kidwell et al. 2013). Interestingly, if notified that environmental behavior is greater from a dissociative group, individuals are motivated by competition to increase recycling behaviors for their own ingroup (White and Simpson, 2013). In this case, though the descriptive norms are cited from a dissociative group, presumably these individuals believe their ingroup's behavior should be at a competitively higher rate that the dissociative group. With this comparison of groups, the process of increasing recycling behavior may stem from individuals' own beliefs of "normal" ingroup behavior and raising personal behavior to meet that norm. Given these findings, it is evident that highlighting the normalcy of environmental behaviors such as in one's ingroup and in particular physical settings can increase sustainable behavior in consumers.

Prospect and Construal-Level Theories

Appeals that highlight the positive gains versus the negative losses are perceived differently depending on what construal level is activated in an individual. Construal level refers to the psychological distance in which situations are framed and whether these are conceived of from an abstract (e.g., higher level/greater psychological distance) or concrete (e.g., lower level/smaller psychological distance; Trope and Liberman 2010). For example, appeals with loss

messages (i.e., focus on what you will lose if you don't recycle) when paired with a concrete mindset (i.e., specific steps on how to participate in recycling) and appeals with gain messages (i.e., focus on the positive outcomes of recycling) when paired with an abstract mindset (i.e., why it is good for the environment and community) are more effective in encouraging recycling intentions (White et al. 2011). The authors of this research attribute their findings to a serial mediation of processing fluency and efficacy. In these scenarios, the mindset activated dictates which appeal will be most effective in actual recycling behavior. In other research, gain-framed messages as opposed to loss-framed messages were more effective for low-involvement consumers in increasing attitudes towards a sustainable ad and intentions to take part in responsible tourism behavior (Yoon et al. 2019). Loss-framed messages may be better suited for those individuals who are highly involved in sustainable behavior and have a greater commitment to environmental conservation.

Regulatory Focus

Based on the thought that individuals seek pleasure and avoid pain, regulatory focus theory (Higgins, 1996, as cited in Crowe and Higgins, 1997) states that individuals' focus can be aligned with either "promotion (i.e., a concern with advancement, growth, and accomplishment)" or "prevention (i.e., a concern with protection, safety, responsibility)" (Crowe and Higgins, 1997). An appeal can also activate prevention or promotion focus in consumers which can subsequently influence engagement in sustainable behavior intentions and evaluations. Prevention focus is activated when assessing a company's sustainable practices (Bullard and Manchanda, 2013). Thus, sustainable products with prevention frames (i.e., focus on protection, security, and responsibility) as opposed to promotion frames (i.e., focus on attainment,

achievement, and advancement) are better perceived by consumers. This framing increases evaluations of green products versus conventional products (Bullard and Manchanda, 2013). Similarly, Ku and colleagues (2012) questioned how self-regulatory focus may influence consumer responses to advertisements that feature green or nongreen product appeals. The authors find that prevention-focused individuals are persuaded more by appeals about green product attributes whereas promotion-focused individuals are persuaded more by appeals about nongreen product attributes.

Consumer-Centric Cues

Along with specific dimensions used in sustainability appeals, the internal reactions of individuals elicited by these appeals as well as one's own inherent traits ultimately influence whether sustainable behavior is adopted. Consumer-centric cues identified within this review pertain to a variety of emotions, trait connection to nature, attitudes towards sustainable brands and products, and individual differences. The following sections provide further details of these cues.

Empathy

Empathic concern – the concern derived from empathy for the sake of others – is defined as an "other-oriented emotional response elicited by and congruent with the perceived welfare of someone in need" that can produce "altruistic motivation" to reduce the needs of the observed individual (Batson et al. 2015). In their review, Batson and colleagues (2015) emphasize that empathy and empathic concern focus on feeling for another rather than feeling as the other individual feels as a response to the observed individual's suffering. The authors describe

empathic concern not as a singular discrete emotion but as “a whole constellation” including elements of sympathy and compassion. Other research suggests that, given its multifaceted nature, empathy can be further broken down into two sub-dimensions: tenderness (with elements of warmth) and sympathy (Wang et al. 2017).

Feelings of empathy affect the type of helping behavior an individual offers to a sustainable cause. Zhang and colleagues (2019) observed that warm ad appeals encourage time donation which is driven by social connectedness. The authors randomly assigned participants to either a warm or competent appeal and presented participants with either an opportunity to donate their time or their money. The findings from this research suggest that under warm appeal conditions, individuals are more likely to donate their time which is driven by social connectedness. In contrast, under competent appeal conditions, individuals are more likely to donate their money which is driven by competitive orientation. Given that warmth is an element of empathy and refers to the tenderness aspect of the construct, the researcher’s observations align with empathy literature. Empathic concern may encourage individuals to donate personal time, arguably more of a personal and effortful investment than a single act of donating money. The findings from this research provide a clear example of the effect of dimensions of empathy on specific donation intentions. Extending this, a large correlational study observed that a relationship between personality traits of agreeableness and openness and a connection to nature is mediated by empathy, specifically perspective taking and empathic concern (Di Fabio and Kenny, 2021). The authors note that, because empathy is more malleable than other personality traits, empathy could be useful tool in increasing nature connection and valuing the environment. Therefore, empathy can be a useful construct in encouraging sustainable behavior.

Guilt

Guilt, a negative, self-conscious emotion, is elicited from the appraisal of negative outcomes to specific actions (Han et al. 2014). When an individual believes to have committed a moral violation, the individual focuses on methods to reduce guilt through retribution of some kind (Chang, 2012). For example, after reflecting on the detrimental effects of plastic pollution on the environment, one could experience guilt for inconsistently engaging in recycling behaviors. This individual may then pay greater attention to recycling opportunities in day-to-day actions and may express a greater commitment to recycling in general. Depending on when one experiences or anticipates experiencing guilt delineates specific forms of this negative, self-conscious emotion. Reactive guilt is "aroused after a factual violation of a social norm or ethical principle" (Renner et al. 2013). Anticipatory guilt refers to the concern of experiencing guilt in the future based on possible future violations (Renner et al. 2013; see also Ahn et al. 2014).

Guilt appeals are commonly recommended as an effective tool in encouraging prosocial behavior (Wonneberger, 2018; Renner et al. 2013). Some appeals may elicit guilt within the appeal itself (Rowe et al. 2019) and offer opportunities for the individual to engage in sustainable activity to attenuate the experienced guilt (e.g., calling out an individual's past behavior using disposable chopsticks and its effect on the environment while promoting sustainable green chopsticks product for future use; Chang, 2012). Others may signal to the consumer that engaging in particular sustainable activities will help avoid future guilt (e.g., appeals that explain proper composting behavior; anticipatory guilt mediates effect in anthropomorphized conditions, Ahn et al. 2014). However, the level of guilt elicited in an appeal can differentially influence how consumers respond. Peloza and colleagues (2013) observed that consumers prefer products

based on ethical attributes as opposed to self-benefit attributes when self-accountability is activated. The authors find that combining ethical appeals with explicit guilt-inducing messages can backfire and lead to reactance, resulting in anger and irritability. The authors suggest that subtler cues of self-accountability instead of explicit guilt appeals are more effective in increasing consumer purchase intentions of environmental products and that this effect is driven by anticipatory guilt. Though these papers observe that guilt can drive sustainable behavior with others as the focal beneficiaries, Chang (2014) observed that guilt is mitigated by egoistic as opposed to altruistic appeals. The researcher suggests that this is due to affective forecasting in that donating will lead to happiness. In a similar vein, (Chang, 2012) observed that the effectiveness of guilt appeals in green advertising depends on the issue proximity (i.e., high proximity in which the issues pertain to the self or low proximity wherein the issues pertain to the environment) and individuals' levels of environmental consciousness. For those with weak environmental consciousness, guilt appeals are effective when high proximity issues are highlighted (e.g., non-green products harmful to one's own health); when low proximity issues are presented, guilt appeals provide no added benefit compared to non-guilt appeals. For those with strong environmental consciousness, guilt appeals that highlight low proximity issues are effective (e.g., non-green products harmful to the planet); when high proximity issues are highlighted these individuals become suspicious of the appeal and its claims and the guilt appeal backfires. Taken together, these papers suggest that consumers will engage in sustainable activities if they believe doing so will either help diminish current feelings of guilt or circumvent future feelings of guilt.

Guilt's effectiveness in sustainability appeals has been compared to the effectiveness of other emotions, such as shame. Baek and Yoon (2017) compared guilt and shame in appeals to

observe how each influenced consumer willingness to engage in pro-environmental behavior. Their findings suggest that guilt paired with a gain-framed message and shame paired with a loss-framed message are equally effective in encouraging pro-environmental behavior. These findings align with previous research that observes that guilt is best paired with a gain-framed message and shame is best paired with a loss-framed message when encouraging a decrease in undesirable behavior (Duhachek et al. 2012; Achar et al. 2017).

Positive Affect – Pride and Gratitude

Positive emotions, specifically pride and gratitude, have also been found to influence sustainable behavior. Pride is a positive emotion that increases self-esteem (Tracy and Robins, 2007) and is experienced based on an accomplishment or success (Septianto et al. 2018). Gratitude, another positive emotion, typically arises "in response to the receipt of a benefit that has resulted from an intentional act by another person" (Tam, 2022). These emotions are capable of influencing perceptions of and willingness to partake in sustainable behavior.

Pride can be experienced both in relation to self-accomplishment (self-pride) and when experiencing pride for someone else (vicarious pride). Research has found that self-pride paired with a promotion-framed message increases volunteering intentions, driven by a competitive mindset. In contrast, vicarious pride paired with a prevention-framed message increases volunteering intentions, driven by a collaborative mindset (Septianto et al. 2018). When comparing pride and gratitude in a luxury brand's sustainability appeals, both increase sharing intentions of the appeal on social media but are driven by different mechanisms. Pride appeals increase sharing intentions based on the perceived brand luxury and status attainment motives whereas gratitude appeals increase sharing intentions based perceived brand sustainability and

affiliation seeking motives (Septianto et al. 2021a). Finally, the type of gratitude elicited in consumers can also impact sustainable behavior adoption. Gratitude for having (vs. not having) paired with a loss-framed message (vs. gain-framed) message encourages greater intentions to reduce food waste (Septianto et al. 2020). The authors observe that processing fluency underlies this effect, one that is unique to gratitude and not general positive affect. Taken together, these papers suggest that positive emotions such as pride and gratitude can influence sustainable behavior when these emotions are focused on others (e.g., vicarious pride and gratitude driven by affiliation seeking motives).

Other papers also compare the impact of pride versus guilt on sustainable behavior. Antonetti and Maklan (2013) observed that both emotions increase perceived consumer effectiveness and convince consumers that their actions influence sustainability outcomes. Rowe and colleagues (2019) questioned how recalled pride and guilt influence sustainable purchase intentions. The authors suggest that, compared to a neutral recall, recalling pride related to past sustainable behavior increases sustainable purchase intentions. This effect is mediated by anticipated pride in engaging in future sustainable behavior and anticipated guilt if the future behavior is unsustainable. This effect is not observed for guilt.

Negative Affect – Fear and Sadness

Aside from guilt, other negative emotion appeals have been studied in the realm of sustainability. Fear is a negative emotion that arises from internal or external events that signal danger to an individual (Izard, 2013). Arising from high uncertainty and low personal control (Smith and Ellsworth, 1985), experiencing fear elicits risk-aversion (Lerner and Keltner, 2001). Sadness, another negative emotion, is evoked when an individual has strong appraisals that a

negative situation is outside of personal control (Smith and Ellsworth, 1985; Ellsworth and Smith, 1988). Sadness is linked to loss of some kind and an individual's experience of sadness generally lasts for a few seconds but can in some cases last several hours (Bonanno et al. 2008). Bonanno and colleagues (2008) state that because emotions are proximal, coping responses for emotions like sadness are short-term and are focused on changing the immediate psychological or physical states of the individual.

Mixed results surface with respect to fear's influence on sustainable behavior. Shin and colleagues (2017) observed that fear in appeals has a negative impact on attitude towards the appeal and featured product whereas Skurka and colleagues (2018) observed that, compared to no emotion, both fear and humor appeals elicit higher climate change activism intentions. Additionally, in cases of global, but not local, environmental issues, fear can increase attention, positive attitudes, and behavioral intentions. For local environmental issues, hope is more effective than fear (Lee et al. 2017).

This discrepancy in fear's effect on sustainable behavior may be based on the level of fear elicited from the appeal and consumers' subsequent reactions. Chen (2016) observed that individuals who read about a low-fear appeal elicited higher levels of felt fear and greater intentions to engage in pro-environmental behaviors than those who read about a high-fear appeal. For instances in which the fearful issue is distant to the consumer (Lee et al. 2017), or the actual appeal features lower levels of fear, fear may be an effective strategy for encouraging sustainable behavior. Individuals may perceive local environmental issues to have greater personal risk than global environmental issues, causing the fear appeal to backfire.

Researchers have also questioned how sadness elicited from an appeal may influence sustainable behavior. Schwartz and Loewenstein (2017) observed that videos that induce sadness

garner higher donations to an environmental organization than a control video. However, this effect exists only if the opportunity to donate is presented immediately after the affective stimulus; the effect from sadness diminishes after a time delayed opportunity to donate. Both in the lab and in the field, Meng and Trudel (2017) provide supporting evidence to the immediate effect of sadness on recycling behavior. Placing frowning emoticons on trash cans reduced paper thrown in trash cans by diverting the paper to recycling cans. For both fear and sadness, it is clear that these emotions require specific environments and levels of arousal to be effective in promoting sustainable behavior.

Nature Connectedness

Being in the presence of nature can have profound effects on the self. Specific to nature conservation, appealing to connectedness to nature (CTN) is effective in increasing sustainable behavior. CTN refers to the feeling of being emotionally connected to the natural world (Mayer and Frantz, 2004). Traditionally considered an individual difference measure, CTN addresses the "extent to which an individual includes nature within his/her cognitive representation of self" (Schultz, 2002, as cited in Mayer and Frantz, 2004). Though connection to nature can be tested using a variety of tools and scales (see Tam 2013), a popular scale to measure CTN comes from Mayer and Frantz (2004) in which the authors create a 14-item scale with items such as "I often feel a sense of oneness with the natural world around me", "I think of the natural world as a community to which I belong", and "I have a deep understanding of how my actions affect the natural world" (see Appendix for full scale).

Past research suggests that CTN is associated with personal benefits such as psychological well-being, meaningfulness, and vitality (Cervinka et al. 2011). Exposure to nature

(vs. an urban setting) increases CTN and leads to positive affect and the ability to reflect on a personal life problem (Mayer et al. 2009). Mayer and colleagues (2009) observed these effects to be more profound after an individual had been physically immersed in a natural setting as opposed to watching a video about nature.

An individual's perceived relationship and relative status with nature can influence subsequent pro-environmental behavior intentions (Restall and Conrad, 2015). Focusing on oneself and entitlement decreases CTN, but only for those with low pro-environmental attitudes (Frantz et al. 2005). On the other hand, individuals who morally prioritize nature over outgroup members assign greater mental capacities to animals as compared to other groups of marginalized humans (Rottman et al. 2021). Tam (2022) observed that gratitude to nature, associated with CTN, increases environmental activism support, pro-environmental behavior, and actual donation behavior.

Moreover, connection to nature during formative years of childhood may have a lasting impact on individuals. Having greater contact with nature during one's childhood is associated with greater contact as an adult and is also associated with CTN and pro-environmental behaviors (Rosa et al. 2018). Similarly, Barrera-Hernández and colleagues (2020) observed that greater CTN in children is associated with greater sustainable behaviors including pro-environmental behavior and greater perceived happiness.

Product/Brand Evaluations

How an individual perceives a brand or product featured in an appeal can influence subsequent green behavior intentions. Genuine green behavior is necessary for brands to have a positive reputation with consumers (de Jong et al. 2020). Indeed, greenwashing shares a negative

relationship with green trust due to consumer confusion and perceived risk (Chen and Chang, 2013a). Therefore, brands that can genuinely and effectively communicate their authenticity and credibility in sustainability domains are perceived more favorably by consumers.

At the core of a consumer's evaluation of a brand's credibility is the level of trust a consumer has with the brand. Kong and colleagues (2021) questioned the link between communication about a brand's sustainability and its impact on eWOM (i.e., word of mouth on the Internet) and purchase intentions. The authors presented mockups of social media posts featuring either a luxury or nonluxury brand and different dimensions of sustainability featured in the post (control vs. cultural vs. economic vs. environmental vs. social) with trust as an added moderator. The authors found that sustainable communication in social posts are most effective for nonluxury brands in cultural settings that feature high sustainability awareness which in turn leads to greater purchase intentions and likelihood to share information though eWOM. Similarly, a cross-cultural study suggests that higher perceived degrees of humane orientation in CSR ads are associated with positive evaluations of the ads (Diehl et al. 2016). Consumers are more likely to determine that the advertisers are socially responsible. Specific to product advertising, consumers prefer traditional green advertisements to green demarketing advertisements – i.e., calling for reduced category consumption to help the environment (Reich and Soule, 2016). This effect is driven by consumers' ad evaluations and belief that the company possesses genuine environmental concern. The opposite pattern is observed for advertisements focused on institutional contexts. This suggests that brands that present green and sustainable efforts signal trustworthiness to consumers ultimately leading to positive brand evaluations and green purchase intentions.

Along with manipulation studies, observations from a large sample study (Kronthal-Sacco et al. 2019) as well as scanner data (Choi et al. 2018) provide additional support regarding how companies can benefit from conveying sustainability features in company profiles. Specifically, in a sample from 2013-2018, approximately 50% of the growth in consumer packaged goods stemmed from sustainability-marketed products largely from mainstream brands that introduced sustainability messages within the sample's span of time (Kronthal-Sacco et al. 2019). Product labels that feature cause-related marketing is associated with greater financial performance. Interestingly, when such product labels are in featured advertising, the effect of cause-related marketing weakens (Choi et al. 2018). Given the results of other findings presented in this section and the importance of a brand's credibility in its sustainability claims, this reduced effect may be due to the lack of authenticity of claims made for products that are clearly in featured advertisements to boost product sales. Indeed, Choi and colleagues (2018) mention in their paper's conclusion that consumers may "have a hard time associating large-scale conglomerates with sustainability". Therefore, the trustworthiness of a brand may be a strong consumer-centric cue to influence subsequent brand and product evaluations as well as participation in sustainable activities with a brand.

Individual Differences

Several individual differences can also impact the reaction an individual may have towards an appeal and the extent to which the individual may participate in sustainable behavior. Brough and colleagues (2016) provide an extensive study of gender differences with sustainable consumption. The authors observe that the concept of "greenness" and femininity are cognitively linked; therefore, those who participate in green behaviors are stereotyped as more feminine by

others and by themselves. Effective strategies to encourage men to engage in green behaviors include using masculine rather than conventional green branding as well as affirming masculinity in green behaviors. Additionally, consumers respond to emotional and rational sustainability appeals differently based on rational, emotional, and utilitarian orientations (Kim et al. 2020). Value orientations (i.e., individualism, collectivism, and locus of control) and economic status influence consumers' environmental beliefs and behavioral intentions. McCarty and Shrum (2001) observe that individualism and economic status are associated with beliefs about recycling's inconvenience whereas collectivism and locus of control are associated with beliefs about recycling's importance.

Anthropomorphism: An Answer to Sustainability Literature's Inconsistencies

The preceding review identifies a variety of message-centric and consumer-centric cues elicited by sustainability appeals which have been found to influence consumer engagement in sustainable behavior. Within message-centric cues, four subcategories were identified: the beneficiary of the sustainable behavior, social norms described in the appeal, framing based on prospect and construal-level theories, and framing based on regulatory focus. Within consumer-centric cues, seven subcategories were identified: empathy, guilt, other positive affect (pride and gratitude), other negative affect (fear and sadness), nature connectedness, brand and product evaluations, and individual differences. Though general themes were observed within these subcategories, inconsistencies in the results indicate that further exploration within these cues is required. It is possible that an additional construct could help rectify these inconsistencies. For example, could a third factor help explain when and why highlighting the self versus another is most effective in encouraging sustainable behavior or when guilt is more or less effective at

increasing compliance with sustainable calls to action? Might an additional construct identify situations under which the positive effects of sustainability appeals could be further amplified? This dissertation offers anthropomorphism as the unique construct that can explain and resolve these inconsistencies.

Anthropomorphism is defined as "imbuing real or imagined behavior of nonhuman agents with humanlike characteristics, motivations, intentions, or emotions" (Epley et al. 2007). Individuals anthropomorphize an entity or object when 1) "anthropocentric" knowledge – using human knowledge to map onto nonhuman entities – is available and contextually relevant, 2) they are driven by effectance motivation – the motivation to resolve uncertainty and increase predictability (White, 1959, as cited in Epley et al. 2008), and 3) they are lacking social connection to other human individuals (Epley et al. 2007).

Though individual differences can influence the extent to which one anthropomorphizes (Waytz et al. 2010a; Waytz et al. 2010b), extant literature finds that anthropomorphism can be effectively manipulated. Anthropomorphism can be manipulated through facial expressions and body similarity (De Bondt et al. 2018; Guido et al. 2019) as well as through focus on mind and language (Waytz et al. 2014; Schroeder and Epley, 2016). Specific to consumer marketing and brands, anthropomorphism has been studied extensively and found to produce beneficial outcomes. Anthropomorphism can have positive effects on a consumer's interpretation of a brand including positive consumer-brand interactions with liked brands (Aggarwal and Mcgill, 2012), brand love (Rauschnabel and Ahuvia, 2014), and positive consumer-brand relationships (Wan and Aggarwal, 2015). Anthropomorphism also positively impacts consumer preferences for products (Wen Wan et al. 2017) and, under certain circumstances, brand spokescharacters (Chang et al. 2021).

These aspects of anthropomorphism serve as the basis to resolve the cited discrepancies within sustainability appeals. For an example within message-centric cues, Kim and colleagues (2021) observed that focusing on benefits for others from personal sustainable behavior was most effective. Similarly, a focus on nature as opposed to the self has positive effects on CSR evaluations (Kang and Sung, 2021) and green purchase intentions (Edinger-Schons et al. 2018; Jaeger and Weber, 2020; Yang et al. 2015). However, Palomo-Vélez et al. (2020) and Schorn et al. (2022) suggest that focusing on one's own benefits is most effective in encouraging pro-environmental behavior. Further, socially excluded individuals prefer appeals featuring the self as the beneficiary (Yu and Han, 2021) as well as those in private vs. public settings (Green and Peloza, 2014). However, anthropomorphism would predict that altruistic appeals focused on others are best in encouraging green intentions (Wang et al. 2020). Though Yu and Han (2021) observed that socially excluded individuals prefer appeals that focus on personal benefits, anthropomorphism would suggest that socially excluded individuals would prefer appeals in which another anthropomorphized entity (as opposed to the self) is the beneficiary of sustainable efforts. Providing anthropomorphized elements can mitigate feelings of social exclusion by offering individuals the opportunity to connect with the humanized appeal. This effect is driven by the third motivation cited by Epley and colleagues (2007): humans anthropomorphize nonhuman entities to meet their needs for social connection.

Within consumer-centric cues, Peloza and colleagues (2013) observed that ethical attributes rather than self-benefits are preferred when self-accountability rather than explicit guilt is activated, mediated by anticipatory guilt. Explicit guilt can backfire due to consumer reactance. As such, the authors suggest using subtle cues of self-accountability rather than explicit guilt. Chang (2012) also observed that for those individuals with strong environmental

consciousness, guilt appeals under certain conditions (i.e., when the appeal focused on high proximity issues to the self as opposed to low proximity issues focused on the environment) backfired in encouraging green purchases. It is understandable that high levels of guilt could lead to reactance and that subtler cues may fare better in encouraging sustainable behavior. However, when anticipatory guilt is elicited from the appeal, work has found that anthropomorphic cues encourages sustainable behavior. For example, anthropomorphism can cause anticipatory guilt to encourage conservation behavior and greater compliance with social cause campaigns (Ahn et al. 2014) as well as reduced meat consumption (Wang and Basso, 2019). This effect may be linked to Epley's second stated motivation for anthropomorphism: our need for control in threatening situations. Humanizing an entity provides greater control over the threatening situation, such as situations of felt or anticipated guilt, and may then allow the mental capacity to process and avoid guilt through sustainable behavior.

Consumer willingness to engage in green product consumption increases when the consumer believes the company authentically cares about sustainability and that the brand will follow through on its promises. For product advertising, green marketing is preferred over green demarketing advertising – i.e., calling for reduced category consumption to help the environment – because brands are perceived to have genuine concern for the environment (Reich and Soule, 2016). However green demarketing advertising is most effective for institutional contexts. Similarly, Choi et al. (2018) observed that marketing labels that highlight sustainable or other cause-related features improve sales. However, this effect does not hold when such strategies are used in advertising, likely because they undercut the firm's perceived authenticity (Choi et al. 2018).

Anthropomorphism could help increase perceived trust in brand actions. For example, sustainable brands are often perceived to possess warmth, an inherently human trait (Septianto et al. 2021b). Utilizing anthropomorphism could amplify this perceived warmth and subsequent trust in the brand and its sustainable efforts. Anthropomorphized brands and products are perceived as environmentally friendly (Joshi and Kronrod, 2020), credible (Tong et al. 2020), desirable (Han et al. 2019), and are more generally favored over non-anthropomorphized brands (Laksmidewi and Soelasih, 2019). This in turn increases brand preference, green purchases intentions, and attitudes towards cause-related marketing. These examples support the present dissertation's focus on the intersection of anthropomorphism and sustainability.

COMMON DRIVING DIMENSIONS OF ANTHROPOMORPHISM

Given anthropomorphism's influence on sustainable behavior, a detailed review of the intersection between anthropomorphism and sustainability is imperative. Indeed, calls to identify the consequences of anthropomorphism on consumer research (Epley, 2018) as well as using consumer research for the sake of understanding sustainability behavior (Mende and Scott, 2021) has been put forth in recent years. The current paper presents a detailed review of anthropomorphism's influence on sustainability marketing with the goal of identifying common driving dimensions of anthropomorphism's effect on sustainability.

Papers were identified using advanced searches on Google Scholar and Web of Science and were located in publications that included keywords such as "anthropomorphism", "human", "sustainability", "green", "appeals", "advertising", and "consumer". In total, an initial 55 publications produced between 2001 and 2021 were located across multiple disciplines. These

spanned multiple academic journals, conference proceedings, and books, including publications from *Journal of Consumer Research*, *Journal of Consumer Psychology*, *Journal of the Academy of Marketing Science*, *Journal of Marketing*, *Journal of Advertising*, *Journal of Business Research*, *Journal of Marketing Management*, *Journal of Personality and Social Psychology*, *Sustainability*, *Psychology & Marketing*, and *Journal of Public Policy & Marketing*. The overarching content themes of these publications were largely downstream marketing outcomes focused on animal welfare (e.g., reduced meat consumption, see Wang and Basso, 2019) and nature conservation (e.g., complying with environmental conservation campaign, see Ahn et al. 2014).

From these papers, four common dimensions that drive anthropomorphism's effect on sustainable outcomes were identified: empathy, anticipatory guilt, connectedness to nature and green trust. Other common methodological themes such as social norms and framing were observed however these papers did not consider these constructs as explanations to their observed effects; rather, these constructs were suggested as moderators to the main effects (Table 3 provides a review of 38 papers focused specifically on anthropomorphism's presence in sustainability appeals organized by message-centric cues and consumer-centric cues). Some papers did not discuss mechanisms or did not provide clear detail of methodology. Though these papers considered similar topics of interest, they were not included in the main categorization of underlying mechanisms.

It is important to mention that in the current review of the literature, one review paper was identified that focuses on anthropomorphism of nature (considers anthropomorphism of nature elements and animals) and pro-environmental variables (Williams et al. 2021). Williams and colleagues state that theirs is the first systematic review to address the hypothesis that a

significant association exists between anthropomorphism of nature and pro-environmental variables and that anthropomorphism plays a beneficial causal role. The review considers 25 studies (18 correlational and seven experimental), possible mediators between anthropomorphism and pro-environmental variables, and offers Theory of Planned Behavior (TPB; Ajzen, 1991, as cited by Williams et al. 2021) as an overarching theory to explain the findings, though it is not empirically tested. The authors highlight specific variables of TPB (e.g., attitude toward behavior, self-efficacy, behavioral intention, and actual behavior) applicable to the reviewed papers. The authors also mention that mediators observed such as empathy, nature connectedness, and environmental guilt may also be considered within TPB, however the "piecemeal treatment" of the variables within the reviewed papers does not allow for the theory to be properly examined and would require simultaneous inclusion of these constructs in a single model for testing.

Though Williams and colleagues (2021) contribute to literature by offering a novel review of the intersection of anthropomorphism of nature and pro-environmental variables, its major limitations are three-fold: 1) the review looks at mainly correlational papers and only a handful of experimental papers wherein no actual behavioral outcomes are utilized, 2) the authors have not tested different mediators and relative influence of these mediators (specifically empathy, connectedness to nature, and guilt, though Williams and colleagues identify this as a possible avenue for future research), and 3) the papers reviewed do not seem to have conclusive evidence of anthropomorphism's effect when manipulated. Further, though some of the papers considered in this review contain studies that have a measure for intentions to use green products, an emphasis and thorough analysis of anthropomorphism and sustainability's influence on marketing and consumer outcomes is absent in this review.

In contrast, the current review of the literature is focused on anthropomorphism's influence on evaluations and downstream consequences for brands, actual behavior, and consumer willingness to adopt sustainable practices. Though some of these mediators could be classified within TPB, the current essay does not limit the focus to TPB. Additionally, Williams et al. (2021) mentions mixed results across the reviewed papers giving further motivation to investigate the influence of these constructs on marketing outcomes. The following section describes the common drivers of anthropomorphism on sustainable behavior in greater detail.

Empathy

A trusted mechanism to drive anthropomorphism's effect on sustainable behavior is empathy. Research observes that empathy can be elicited when either animals or nature is humanized. Presenting pictures in which animals are in humanlike postures accompanied by text describing a story about the animal with names, relationship, and emotional feelings of the wildlife (vs. normal state postures and humanized text removed from content) increases participants' empathy and decreases wildlife product consumption intentions (Yue et al. 2021). Viewing an animal's "portrait" as opposed to no image increases empathy (Whitley et al. 2021); those with greater tendencies to anthropomorphize express greater empathic concern and reduced meat consumption, particularly in females (Niemyjska et al. 2018). Similarly, females view animals that are phylogenetically closer to humans with greater empathy (Prguda and Neumann, 2014). With respect to nature, viewing a tree as humanlike heightens perceptions that the tree can feel pain and is alive (Gebhard et al. 2003). Presenting a sad face is more effective with green issues in closer proximity; happy faces are more effective when green issues are distant (Chang et al. 2018). Tam (2013) suggests that Dispositional Empathy with Nature (DEN) is correlated

with trait anthropomorphism and is ultimately associated with greater concern about the environment and conservation behaviors. A distinct empathy from empathy for humans, Tam also observes that DEN is higher in females and respondents who feel closer to nature.

Many papers operationalized empathy as either warmth or sympathy. Of those that focused on warmth, past research found that when CSR initiatives for utilitarian products such as trash bags are humanized with smiling faces and limbs and are presented by anthropomorphized brand messages, consumers report greater buying pleasure mediated by warmth (Jeong and Kim, 2021). Further, for those consumers with higher self-brand congruity, the positive effect of anthropomorphized brand messages on buying pleasure is sequentially mediated by social connections and warmth (Jeong and Kim, 2021). Similarly, Koo et al. (2019) observed that visuals that humanized old produce (i.e., an overripe banana wearing a sunhat and sitting in a beach chair or presenting a cucumber in the shape of a smile using slices as eyes and a full cucumber as the mouth) increased product evaluations and purchase intentions, mediated by feelings of warmth towards the produce.

Though not specifically defined as warmth, Cooremans and Geuens (2019) found that anthropomorphizing "ugly" produce with eyes, a mouth, and arms elicits a positive affective response which in turns leads to greater purchase intentions and actual purchasing behavior, specifically for those consumers with low environmental concern. In a similar vein, perceiving greater warmth in anthropomorphized money (studies asked participants to imagine their money had come to life or to imagine the personality that the money would have) promotes greater intention to help others and larger charitable donations (Zhou et al. 2019). Though the underlying mechanism was not specifically tested, consumers who were asked to think about their cars in terms of warm anthropomorphic terms (vs. model attributes) were less willing to replace their

cars (Chandler and Schwartz, 2010), perhaps suggesting a way to encourage sustainable consumption and continued use of current products.

Along with warmth, empathy was also considered similarly to sympathy. Specifically, research considered the sympathy consumers may feel towards a victimized messenger. These papers anthropomorphized elements of nature, such as a tree (Zhu et al. 2019; Ketron and Naletich, 2019) or the world (Ketron and Naletich, 2019; Ahn and Lee, 2021), as well as inanimate objects such as a cardboard box (Ketron and Naletich, 2019) in their appeals. When the messenger's facial expression was sad, it evoked a savior effect in the observer perceiving the messenger to be a victim and thus evoking sympathy for the victim (Ketron and Naletelich, 2019). This led consumers to partake in greater sustainable behavior such a using less pumps of soap and towels when washing their hands, influencing the number of fibers chosen in a product, and choosing eco-friendly shipping choices. In contrast, when the facial expression of the messenger was happy, the messenger was perceived to be a marketing agent, reducing the observer's willingness to participate in sustainable efforts. Ahn and Lee (2021) also observed that when a cartoon image of the world is presented with a sad face it is perceived as a victim and participants are more likely to participant in CSR initiatives when participation efforts are high. When the cartoon world was presented with a happy face is it perceived as a marketing agent and so high participation efforts negatively affect CSR participation.

Elements of empathy can encourage helping behaviors (Batson et al. 2015). When a natural element such as a river is described as a child, it is perceived as weak and requires help, eliciting a greater sense of responsibility towards the entity especially for those who feel they are in a greater position of power, which ultimately increases conservation intentions (Zhu et al. 2019). Anthropomorphizing unattractive produce can also arouse empathy and lead to greater

consumer willingness to purchase the produce (Chen et al. 2021). Chen and colleagues based their findings on the "empathy-helping two-stage model" (Coke et al. 1978), which states that identifying another's needy situation elicits empathy and leads to increased helping behavior. The researchers observed that presenting humanized unattractive produce through first-person language as well as facial expressions increased consumer purchase intentions and that this effect was mediated by empathy.

When exploring outcomes of these papers, many focused on encouraging consumption of older or unattractive produce (Koo et al. 2019; Cooremans and Geuens 2019; Chen et al. 2021). Others were interested in how the level of anthropomorphism could affect consumer involvement in CSR initiatives (Jeong and Kim, 2021), charitable giving behavior (Zhou et al. 2019), and reluctance to part with an old possession (Chandler and Schwarz, 2010). Clearly, a large amount of research has focused on empathy (and elements of empathic concern) as a driver of anthropomorphism's beneficial effect on sustainability. Given the many sub-dimensions and facets of this emotion (Batson et al. 2015), it is important to include empathy in further testing.

Proposition 1: Sustainability appeals containing anthropomorphic cues highlighting empathy increase sustainable behavior and intentions.

Anticipatory Guilt

Specific types of guilt, namely reactive guilt and anticipatory guilt, were observed as underlying mechanisms in anthropomorphism's influence on sustainable marketing. Guilt appeals are commonly suggested as an effective tool in encouraging general prosocial behavior

(Wonneberger, 2018; Renner et al. 2013). Taking this a step further allows one to examine exactly how guilt influences sustainable outcomes.

Reactive guilt refers to guilt "aroused after a factual violation of a social norm or ethical principle" (Renner et al. 2013). Anticipatory guilt refers to the concern of experiencing guilt in the future based on possible future violations (Renner et al. 2013; see also Ahn et al. 2014). With respect to anthropomorphism, past research suggests that guilt – arguably reactive, though not termed as such – of eating and harming animals mediates the influence anthropomorphism has on reduced meat consumption for consumers with low commitment to eating meat (Kim and Yoon, 2020). Additionally, those with greater trait measures of anthropomorphism of nature have greater feelings of environmental guilt which in turn was connected to greater pro-environmental intentions and behavior (Tam, 2019). However, when the two types of guilt are compared with one another, anticipatory guilt appeals are more effective than reactive guilt appeals in encouraging prosocial behavior in general (Renner et al. 2013). Therefore, the subsequent focus in this section is on anticipatory guilt rather than reactive guilt as an important underlying mechanism.

Anticipatory guilt and its effects have been widely studied in the domain of sustainability. For example, in the presence of others (vs. alone), ethical appeals are more effective than self-benefit appeals in encouraging ethical product choices based on avoidance of anticipatory guilt (Peloza et al. 2013). Opt-out as opposed to opt-in policies for using green services are more effective in consumer compliance with sustainable behavior due to increased anticipatory guilt (Theotokis and Manganari, 2015). Other research has considered anticipatory guilt's effect on produce choice as well as tradeoffs between sustainability and functional product performance (Luchs et al. 2012). Anticipatory guilt can be an effective tool to encourage green behavior in

children as well; presenting messages that focus on the loss of animals (vs. landscapes) due to climate change leads to higher empathy which in turn results in stronger anticipatory guilt and greater pro-environmental behavior intentions (Pearce et al. 2021). What's more, anticipatory guilt partly drives the longitudinal effects of consumer compliance with recycling behavior (Antonetti et al. 2018).

At this point, it is clear that anticipatory guilt is a promising mechanism to consider not only for prosocial behavior in general but also for specific sustainable outcomes. Diving deeper, past literature suggests that anticipatory guilt can explain anthropomorphism's influence on the adoption of sustainable behavior. Ahn and colleagues (2014) questioned how humanizing social causes could influence compliance with the social cause and offer anticipatory guilt as the driver of this effect. The authors test their predictions across three studies with differing anthropomorphic characters such as an image of a humanized lightbulb with facial features asking for compliance with energy conservation (Ahn et al. 2014; Study 1), an image of a crying trashcan asking for proper composting behavior (Ahn et al. 2014; Study 2), and a field study that featured a poster with a humanized tree asking to be saved through donations to an associated nonprofit organization (Ahn et al. 2014; Study 3). Across the three studies the authors observe a robust main effect that anthropomorphism of the appeal increases compliance with the associated social cause. Specific to Study 2, the authors measure levels of anticipatory guilt participants believe they would feel if they did not comply with the campaign. The authors find that anticipatory guilt does indeed mediate the overarching effect.

Wang and Basso (2019) predicted anticipatory guilt (in a serial mediation with attitudes towards meat) as the underlying mechanism for anthropomorphism's effect on less favorable attitudes to meat consumption. The authors anthropomorphize animals typically eaten for their

meat using the metaphor, “animals are friends”, based on the idea that when animals are humanized individuals see them as friends rather than simply pieces of meat on a plate. Indeed, anthropomorphism decreased consumer intentions to purchase meat products and was mediated by increased feelings of anticipatory guilt and subsequent attitudes towards meat. Across different studies, this effect held only for certain animals. The authors reason this may be due to certain animals’ lay associations with terms that could be contradictory to the friendship metaphor that inspired the studies.

This section highlights that anticipatory guilt is a viable common mechanism used in prosocial and sustainable contexts. In appeals, and especially those focused on social cause campaigns (Ahn et al. 2014), it is perhaps more informative to address anticipatory guilt from future noncompliance regarding a single cause than addressing reactive guilt that could vary based on multiple past actions a consumer may have participated in that either adds or takes away from their felt guilt. Based on these findings, anticipatory guilt is identified as another driving dimension for anthropomorphism.

Proposition 2: Sustainability appeals containing anthropomorphic cues highlighting anticipatory guilt increase sustainable behavior and intentions.

Connectedness to Nature

Some individuals inherently feel a closer connection to nature than others. For example, individuals who morally prioritize nature over outgroup members attribute greater mental capacities to animals (Rottman et al. 2011). Interestingly, though many individuals view themselves as part of nature, natural environments are thought of as separate from any human or

human involvement (Vining et al. 2008). That is, nature is its own entity. Distinguishing this separation lends well to the ability to anthropomorphize nature.

Research by Tam et al. (2013) considered the effects of anthropomorphizing nature on sustainability. This paper has been widely cited to motivate other sustainable research outside of the marketing domain. In their paper, the authors conduct three studies that test their main effect of nature anthropomorphism on conservation behavior and offer Connectedness to Nature (CTN) as the underlying mechanism of this effect. Anthropomorphism of nature (i.e., "Mr. Nature) was manipulated in various ways across the studies such as by drawing a poster of the world with humanlike features and reading an article with anthropomorphic language. CTN was measured using the established Connectedness to Nature Scale by Mayer and Frantz (2004).

The authors measure what they define as "public" and "private" conservation behavior as outcome measures. Public behavior was measured by participants' interest in supporting environmental movements and novel indicators of measuring national environmental performance. Private behavior was measured by participants' intentions to use four new green products (e.g., biodegradable trash bags, phosphate-free detergents) by answering two questions ("How much do you want to try this product?" and "How much do you want to tell your friends and family about this product?") on 5-pt Likert scales (1 = not at all, 5 = very much). The results of these three studies suggest that anthropomorphism of nature leads to conservation behavior, driven by CTN. Though the results in this paper are compelling and touch upon marketing outcomes, the authors do not disclose any additional details on how the green products were presented to the participants (e.g., was a picture shown with description of product, was a specific brand associated with the product, was the product real or fictitious).

The research by Tam and colleagues has sparked recent interest in testing anthropomorphism of nature and its effects on sustainable outcomes further. For example, anthropomorphic appeals are more effective in encouraging conservation behavior for individuals with higher needs for effectance or social connection (Tam, 2015). Focusing on CTN as a viable underlying mechanism, Liu et al. (2019) observed similar and stronger effects than Tam et al. (2013) when nature was anthropomorphized as "Mother Nature", mediated by CTN. What's more, individuals who experience moral elevation (experiencing emotions such as feeling moved, touched, and inspired that are typically associated with humans) with nature experience greater CTN and some evidence of greater pro-environmental intentions (Moreton et al. 2019). Given these findings, CTN is identified as yet another driving dimension of anthropomorphism, specific to nature.

Proposition 3: Sustainability appeals containing anthropomorphic cues highlighting CTN increase sustainable behavior and intentions.

Green Trust

A review of sustainability literature earlier in this chapter observed a common trend with respect to consumer evaluations of brands with sustainable characteristics: trust. The level of "green trust" in a brand – that is, consumer trust in a brand's credibility regarding green matters and high environmental performance (Chen, 2010) – can explain anthropomorphism's effect on sustainable consumption (Tong et al. 2020). Originally suggested as a partial mediator (along with green satisfaction) to explain a green brand image's effect on green brand equity, green trust can be measured by asking consumers the levels to which they feel the brand's conservation

reputation is reliable, the brand's conservation performance is dependable, the brand's conservation claims are trustworthy, as well as whether the brand's concerns meet consumers' expectations and if the brand keeps promises and commitments for nature conservation (Chen, 2010).

Tong and colleagues (2020) questioned if green trust could be the underlying driver to anthropomorphism's effect on green product purchase intentions. The authors tested whether presenting anthropomorphized green products such as an eco-friendly laundry detergent or printer with or without the use of eyes would increase positive green product purchase intentions. Results suggest that the effectiveness of anthropomorphic strategies with eyes on green product purchase intentions is mediated by green trust (Tong et al. 2020, Study 1). The authors then included facial expression type (happy vs. sad) as a potential moderator and observed that green trust mediated the effects of sad expressions but not happy expressions on green product purchase intentions (Tong et al. 2020, Study 3).

It is important to question what such trust might mean for both brand and consumer. For the brand, having the ability to express itself trustworthy and credible is important in hopes of increasing brand equity with consumers (Chen, 2010). For the green-conscious consumer, reassurance that one's purchasing decisions are positively aligned with the environment and avoid "green perceived risk" – risk of negative environmental consequences involved with purchase behavior (Chen and Chang, 2013b) – is of utmost importance. The inclusion of anthropomorphism helps to strengthen evaluations of brand traits associated with trust including perceptions of being environmentally friendly (Joshi and Kronrod, 2020) and credible (Tong et al. 2020). What's more, anthropomorphism increases brand desirability (Han et al. 2019) and general favorability (Laksmidewi and Soelasih, 2019) which in turn increases brand preference,

green purchases, and attitudes towards cause-related marketing. Taken together, these papers present the clear influence anthropomorphism has on subsequent brand evaluations and sustainable outcomes, with green trust driving this effect.

Proposition 4: Sustainability appeals containing anthropomorphic cues highlighting green trust increase sustainable behavior and intentions.

GENERAL DISCUSSION

The need for a focus on sustainability in marketing is important to both brands and consumers. Brands, particularly nonprofits, wish to effectively communicate to consumers and encourage sustainable consumption. Present-day consumers actively seek brands that commit to environmental sustainability (Lai, 2021).

A common method used in sustainability appeals involves highlighting humanlike traits in nonhuman messengers such as elements of nature and animals. For example, the World Wide Fund for Nature (WWF) presents ads that features animals who "speak" through text phrased in first-person language asking the reader to stop wildlife crime or forests in the shape of decaying human lungs asking the reader to stand up against deforestation (www.worldwildlife.org). The use of anthropomorphism, imbuing humanlike attributes to nonhuman entities (Epley et al. 2007), is at the forefront of these ads. What's more, past research has established that anthropomorphism is beneficial in encouraging prosocial behavior, inclusive of participation in sustainable consumption and participation in social causes (Koo et al. 2019; Ketron and Naletelich, 2019; Tong et al. 2020; Ahn et al. 2014; Tam et al. 2013). However, despite recent

efforts to review and consolidate the findings from this research (Williams et al. 2021), it remains unclear what the common underlying mechanisms are that drive anthropomorphism's effect specific to sustainability marketing.

The purpose of this chapter was to provide an extensive review of the effect of anthropomorphism on encouraging sustainable marketing outcomes and the common underlying mechanisms driving this effect. In doing so, the contribution of this chapter is three-fold: 1) provides a deep and relevant review of sustainability appeals categorized by message-centric and consumer-centric cues, 2) examines anthropomorphism's presence in sustainability appeals and identifies four common driving dimensions – empathy, anticipatory guilt, Connectedness to Nature (CTN), and green trust, and 3) provides a theoretical foundation for testing these underlying dimensions further. Several inconsistencies were highlighted in the review of sustainability appeals. Anthropomorphism is offered as a remedy for these discrepancies. For message-centric cues, inconsistencies lie in the fact that anthropomorphism can turn off or moderate certain effects serving as a boundary condition. For consumer-centric cues, these cues were many times identified as mediators in sustainability appeals. A manipulation of anthropomorphism should influence these cues.

Calls for more research focused on sustainability marketing (Mende and Scott, 2021) and a greater understanding of the role anthropomorphism plays in encouraging sustainable marketing outcomes (Epley, 2018) have recently emerged. Given the use of humanizing nonhuman messengers in nonprofit appeals (Epley et al. 2008; see also Table 4 for notable ad campaigns utilizing anthropomorphism), the present research is pertinent not only to theory but to managerial application. As is evidenced in this review, four common underlying mechanisms explain anthropomorphism's beneficial influence on sustainability marketing. Clearly then,

anthropomorphism is capable of leading to many different outcomes, including empathy, anticipatory guilt, CTN, and green trust. However, a limitation to this review is in not knowing the relative influence of each dimension to further drive the main effect of anthropomorphism and its subsequent managerial implications.

To address this, Chapter 2 will systematically test the relative influence of the dimensions of anthropomorphism highlighted in Chapter 1. Given the relevance to managerial implications, it is important to conduct this test to not only observe effects in a controlled environment but also in a real-world setting. Inconsistencies exist between attitudes towards sustainability and actual engagement in sustainable behavior (Prothero et al. 2011). Further, recent calls for research have been put forth for brands that are "good citizens" pushing corporate social responsibility initiatives (Taylor, 2018). For these brands, testing the influence of effective tools for sustainability messages, support for charitable organization and social causes, and responsible corporate practices is extremely beneficial. Therefore, the test of relative influence will be conducted on Facebook, a social media platform with an extremely large user base and sophisticated advertising capabilities. It is important to note that this test cannot examine the constructs as mediators. Rather, to conduct this test in a real-world context requires stimuli that lean heavily into one of the four specific underlying factors of anthropomorphism. In doing so, the results of this test can observe which of these dimensions drives anthropomorphism's effect on sustainable consumption most. The results from Chapter 2 will not only add to theoretical underpinnings of this research but will provide actual managerial implications for brands, particularly those that are nonprofit. This valuable insight can shed light on whether the constructs commonly observed in theory actually translate to effective marketing strategies for nonprofit managers.

CHAPTER 2. THE RELATIVE INFLUENCES OF ANTHROPOMORPHIC SUSTAINABILITY APPEALS

Chapter 2 tests the relative influence of the common underlying factors of anthropomorphism highlighted in Chapter 1 – namely empathy, anticipatory guilt, Connectedness to Nature (CTN) and green trust – on real-world involvement in sustainable behavior. Study 1 tests the effects of anthropomorphism's underlying factors on responses to real nonprofit organizations. Study 2 employs a real-world ad test run on Facebook using stimuli created to test incremental changes that these various factors of anthropomorphism may make above and beyond general anthropomorphism effectiveness. In doing so, this research sheds light on the relative influence of these various appeal strategies suggested by literature and any actual managerial implications. As such, this research informs both literature as well as organizations and public policy makers on what dimensions of anthropomorphism can effectively increase sustainable consumption.

CONCEPTUAL REVIEW

Sustainability Appeals

Extant work has considered how sustainability appeals can influence sustainable consumption. This work has found that appeals can influence a variety of sustainable behavior including reactions to CSR initiatives (Kang and Sung, 2021), compliance with community efforts for sustainability (White and Simpson, 2013), sharing information about sustainability (Kong et al. 2021), adoption of personal sustainable and pro-environmental behavior (Tam, 2022), and green purchase intentions (Peloza et al. 2013). The review of sustainability appeals in

Chapter 1 classified characteristics of sustainability appeals according to whether message-centric cues or consumer-centric cues were explored (Tables 1 and 2).

Within message-centric cues, research has observed how specific strategies that optimize particular aspects of the appeal (e.g., messaging, visuals, etc.) influence subsequent sustainable behavior intentions. For example, differences in interest to engage in sustainable efforts exist based on whether the beneficiary of the action is the self or another – often nature (Kang and Sung, 2021; Edinger-Schons et al. 2018; Jaeger and Weber, 2020; Yang et al. 2015). Descriptive and provincial norms are more effective in encouraging sustainable behavior than injunctive appeals (Goldstein et al. 2008; Kavvouris et al. 2020; Ryoo et al. 2017). Framing can also influence sustainable behavior adoption; negative and loss framed messages are best paired with concrete mindsets or near-future perspectives whereas positive and gain framed messages are best paired with abstract mindsets and distant-future perspectives (White et al. 2011; Shao et al. 2020). Sustainable products with prevention focused messaging are better perceived than when paired with promotion focused messaging (Bullard and Manchanda, 2013) and green products are more persuasive when individuals are prevention focused (Ku et al. 2012).

Consumer-centric cues commonly examined emotions – empathy, guilt, pride, gratitude, fear, and sadness – as well as connection to nature, brand and product evaluations, and individual differences. Empathy can encourage time donation (Zhang et al. 2019) and individuals may comply with sustainability appeals to avoid or attenuate feelings of guilt (Rowe et al. 2019). Though both pride and gratitude can increase sustainable behavior, the effects are driven by different mechanisms. Individuals who experience pride have intentions to purchase sustainable products based on status attainment motives (Septianto et al. 2021a) or a competitive mindset (Septianto et al. 2018) whereas experiencing gratitude increases sustainable intentions based on

affiliation seeking motives (Septianto et al. 2021a). Fear and sadness can also be effective tools for increasing pro-environmental behavior. However, the positive effects of fear appeals occur at a particular threshold (Chen, 2016) and opportunities to participate in pro-environmental behavior must be offered immediately after experiencing sadness, as the effects wear off quickly (Schwartz and Loewenstein, 2017; Meng and Trudel, 2017; see also Bonanno et al. 2008). Apart from emotions, feeling a connection to nature increases pro-environmental behavior and support of environmental activism (Tam, 2022) as well as personal psychological benefits (Cervinka et al. 2011; Mayer et al. 2009). Consumer evaluations of sustainable brands and products elicit positive brand attitudes (Kong et al. 2021) and sustainability claims and cause-related marketing labels can also greatly improve product sales (Kronthal-Sacco et al. 2019; Choi et al. 2018). It is also important to note that some individual differences are commonly cited that influence adoption of sustainable behavior. The level of collectivism, individualism, and locus of control influences interests in environmental initiatives (McCarty and Shrum, 2001). Women are more likely to engage in sustainable behavior than men (Johnson et al. 2021), though Brough and colleagues (2016) suggest effective strategies to encourage men to also partake in sustainable activities.

Anthropomorphism's Contribution to Sustainability Appeals

Importantly, Chapter 1's extensive review of sustainability appeals identified clear inconsistencies across papers as to what appeal elements are most effective in encouraging sustainable behavior. This review also uncovered unique opportunities wherein the positive effects of appeals could be further amplified. Specifically, introducing anthropomorphism as a variable can help remedy inconsistencies and amplify current findings. Anthropomorphism is the

process of "imbuing real or imagined behavior of nonhuman agents with humanlike characteristics, motivations, intentions, or emotions" (Epley et al. 2007). To highlight these characteristics, two examples are provided below.

How might anthropomorphism explain inconsistencies in past literature? Many researchers agree that appeals depicting another entity – such as nature – as the beneficiary are more effective than appeals depicting the self as the beneficiary in encouraging sustainable purchase intentions (Edinger-Schons et al. 2018; Jaeger and Weber, 2020; Yang et al. 2015) and positive evaluations of companies' corporate social responsibility initiatives (Kang and Sung, 2021). However, when individuals feel socially excluded, appeals that highlight the self as the beneficiary are more effective (Yu and Han, 2021). Anthropomorphism can explain this discrepancy based on one of the tenets for anthropomorphizing nonhuman objects: the need for social connection. The socially excluded individuals in Yu and Han's (2021) research chose sustainability appeals with the self as the beneficiary based on their current experiences of social exclusion. However, anthropomorphism would predict that if a humanized nature appeal were presented to these individuals, the individuals would prefer such an appeal because of its ability to alleviate feelings of social exclusion. The appeal would then in turn likely lead to greater sustainable intentions.

How might anthropomorphism amplify existing effects? Connectedness to Nature (CTN) refers to the extent to which an individual feels at one with the surrounding natural world (Mayer and Frantz, 2004). Exposure to nature increases CTN and ultimately leads to positive affect (Mayer et al. 2009) and psychological wellbeing (Cervinka et al. 2011). Gratitude to nature can increase pro-environmental behavior and environmental activism support (Tam, 2022). On the flipside, for those with low pro-environmental attitude, focusing on oneself and entitlement

decreases CTN (Frantz et al. 2005). The question that then arises is: what can further help increase feelings connectedness to nature and subsequent sustainable behavior? Tam and colleagues (2013) observed that anthropomorphizing nature as "Mr. Nature" increased feelings of CTN and ultimately led to greater pro-environmental behaviors and intentions, including interest in green products and support of environmentalism initiatives. Liu et al. (2019) replicated this main effect and observed the effects to be stronger when nature was anthropomorphized with female attributes as opposed to male attributes.

Current Research

Given the inconsistencies presented in previous sections of this dissertation, anthropomorphism provides a clear contribution to strengthening the effectiveness of sustainability appeals. Chapter 1 highlighted four common dimensions of anthropomorphism that drive this positive effect on sustainable behavior – empathy, anticipatory guilt, CTN, and green trust – and provided a review of these dimensions with justification of testing the following four propositions:

Proposition 1: Sustainability appeals containing anthropomorphic cues highlighting empathy increase sustainable behavior and intentions.

Proposition 2: Sustainability appeals containing anthropomorphic cues highlighting anticipatory guilt increase sustainable behavior and intentions.

Proposition 3: Sustainability appeals containing anthropomorphic cues highlighting CTN increase sustainable behavior and intentions.

Proposition 4: Sustainability appeals containing anthropomorphic cues highlighting green trust increase sustainable behavior and intentions.

To the best of the author's knowledge, no prior research has tested the relative influence of these dimensions; that is, past literature has considered these dimensions individually. To determine which underlying factors of anthropomorphism may be most effective to utilize in sustainability appeals, the focus of Chapter 2 is to test if anthropomorphic appeals that highlight underlying factors of anthropomorphism are more effective than appeals that use baseline anthropomorphism in encouraging sustainable behavior.

Testing the relative influence of these dimensions is particularly pertinent to study in real-world contexts. Doing so provides contribution to theory as well as managerial implications. There is a call for more research to explore marketing in relation to "environmental problems" for both theoretical contribution (McDonagh and Prothero, 2014) and for practice (Taylor, 2018) with a special emphasis on the study of sustainability (Davis et al. 2016). Furthermore, anthropomorphism is visibly used in ad campaigns by organizations such as the World Wide Fund for Nature and the United Nations (see Table 4 for a list of notable ad campaigns featuring anthropomorphism). Identifying which underlying factors of anthropomorphism are most effective in amplifying anthropomorphism appeals and encouraging greater sustainable consumption, above and beyond the baseline effects of anthropomorphism, can help nonprofits

and managers construct more effective anthropomorphism appeals. Therefore, the formal research question presented in this chapter is:

What is the relative influence of anthropomorphism in conjunction with its driving dimensions on consumer involvement with sustainability?

This research question was explored using a lab study as well as through a large ad set test on Facebook. Taken together, these two studies provide evidence for interest in supporting sustainable nonprofit organizations and real-world consumer advertising engagement. Though the literature has considered the common driving dimensions as mediators between anthropomorphism and sustainable behavior, the nature of the Facebook test does not allow measurements of mediation. Thus, another way to test the underlying factors of anthropomorphism is to create different stimuli that lean heavily into specific elements of the construct. Doing so allows a unique test to determine which driving factor or factors may further amplify anthropomorphism's effect on sustainable consumption beyond the baseline anthropomorphism effects. The following section describes the process of creating sustainability appeals using different underlying factors of anthropomorphism and the final set of stimuli used in Chapter 2's studies.

TESTING DIMENSIONS OF ANTHROPOMORPHISM

Ad mockups were created to test the different underlying factors of anthropomorphism identified in Chapter 1 (for an overview of all pretests, please see Table 5). To incorporate

anthropomorphic cues in these appeals, the ad mockups were inspired by actual ad campaigns used by nonprofit organizations (please see Appendix for full details of all the pretests). These appeals humanize either animals or nature using visuals and text, methods recognized in research to be effective tools in anthropomorphizing nonhuman entities (Tam et al. 2013; Ahn et al. 2014; Kim and Yoon, 2020). A choice exists in what entity to anthropomorphize for the appeal. Past literature suggests that positive attitudes and intentions to help anthropomorphized animals are species dependent (Prguda and Neumann, 2014; Osinski et al. 2019) and that charismatic animals – animals perceived as more similar to humans and therefore are presumed to have higher cognitive complexities – are easier to humanize than non-charismatic animals (e.g., a dog is easier to humanize than a spider; Chan, 2012). Therefore, for animals that are inherently anthropomorphized (e.g., elephants, tigers, panda bears) more so than others, manipulating certain driving factors of anthropomorphism above and beyond baseline anthropomorphism may be extremely difficult, if not impossible. Given that elements of nature, such as trees, do not portray the same humanlike features as charismatic animals, it follows that manipulating elements of nature may be more conducive to testing the relative influence of various anthropomorphic appeals.

Based on the review in Chapter 1, four common drivers of anthropomorphism were initially planned for empirical testing. However, multiple rounds of pretesting found manipulations of CTN and green trust were unsuccessful (see Appendices G, H, and M for details). CTN is traditionally considered an individual difference (Mayer and Frantz, 2004). Additionally, green trust is related to the credibility of a brand (Chen, 2010), something that presumably takes time and consistent communication to establish with consumers. Thus, effectively manipulating green trust would be difficult. These constructs are more difficult to successfully manipulate in an

appeal compared to emotions (e.g., empathy and guilt) which can be instantaneously elicited with visual and textual stimuli. The manipulations of empathy and anticipatory guilt have greater reliability and consistency than green trust and CTN (Appendices G, H, and M). Therefore, conditions of green trust and CTN were dropped from the final test.

A final full pretest was conducted with appeal conditions of pure control, baseline anthropomorphism, anthropomorphism plus empathy, and anthropomorphism plus anticipatory guilt (see Appendix N for full details on pretest design and results). A One-Way ANOVA with planned contrasts observed no significant differences in empathy and anticipatory guilt between the pure control and baseline anthropomorphism conditions, though the levels of empathy and anticipatory guilt for the baseline anthropomorphism condition were directionally greater than the levels for the pure control condition. This indicates that manipulating underlying dimensions of empathy and anticipatory guilt requires highlighting specific cues of these dimensions within the appeal as was employed in the anthropomorphism plus empathy and anthropomorphism plus anticipatory guilt conditions, respectively. The anthropomorphism plus empathy condition elicited significantly greater empathy when compared to the pure control condition and marginally greater empathy when compared to the baseline anthropomorphism condition as well as the anthropomorphism plus anticipatory guilt condition. The anthropomorphism plus anticipatory guilt condition elicited significantly greater anticipatory guilt when compared to the pure control and marginally greater anticipatory guilt when compared to the baseline anthropomorphism condition.

It is important to note that the anthropomorphism plus empathy condition also elicited significantly greater anticipatory guilt than the pure control condition and the difference in anticipatory guilt between the anthropomorphism plus empathy and anthropomorphism plus

anticipatory guilt conditions was not significant. These results do not support the desired manipulation checks. However, of all the conditions, the mean value of anticipatory guilt was directionally greatest in the anthropomorphism plus anticipatory guilt condition. Therefore, the final set of stimuli from this pretest (Figure 1) was used as the basis for Studies 1 and 2.

Pure Control Condition

Baseline Anthropomorphism Condition

Empathy Condition

Anticipatory Guilt Condition

Figure 1. Final stimuli set

STUDY 1 – ANTHROPOMORPHISM'S EFFECT ON CONSUMER SUPPORT FOR SUSTAINABILITY NONPROFITS

The purpose of this study was to test the relative influence of anthropomorphic sustainability appeals on consumer support towards a real sustainable nonprofit organization, The Nature Conservancy. This study was conducted in a controlled lab environment. The contribution of this study is threefold. First, it provides an initial test of the relative influence of the four appeals in a controlled lab environment, providing high internal validity. Second, it measures the effects of the appeals on actual supportive behavior towards a nonprofit organization. Third, it studies the differences in support between real nonprofit organizations associated with sustainability (i.e., The Nature Conservancy) and not associated with sustainability (i.e., Habitat for Humanity). In other words, the test explores whether appeals can increase support to the focal cause over support to a familiar non-sustainability non-profit. One hundred and eighty-five participants (47% female, age ranged from 18 to 38 years, M_{age} = 20.77, SD_{age} = 2.49) were recruited through the Marketing and International Business undergraduate subject pool at the Foster School of Business at the University of Washington in exchange for partial course credit. No participants were removed from the analysis of this study.

Pretest

A major contribution of Study 1 was the use of real nonprofit sustainability organizations in its stimuli and the collection of behavioral responses to both sustainability-focused and non-sustainability-focused non-profit organizations. A pretest was conducted in a classroom setting to determine which nonprofits are measured similarly on familiarity and donation likelihood.

Thirty-seven undergraduate students from the same population as the experimental test were recruited. In this pretest, three nature-related nonprofit organizations – World Wide Fund for Nature (WWF), Sierra Club, and The Nature Conservancy – and three nonprofit organizations unrelated to nature – United Way, Habitat for Humanity, and Boys and Girls Club – were pretested and measured on familiarity and donation likelihood.

Participants were presented with a one-sided paper survey that asked two questions (See Appendix O.2 for full details). The questions listed the six nonprofit organizations in a randomized order (two versions of the survey were distributed with names of the nonprofit organizations presented in reversed order in an attempt to present the nonprofit organizations' names in a counterbalanced order. The first question asked participants to indicate their familiarity with each nonprofit organization (5-pt. Likert item; 1 = not at all familiar, 5 = extremely familiar). The second question asked, if the participants had a few dollars that they were planning to donate to a nonprofit organization, how likely they would be to donate to each of the six organizations (5-pt. Likert item, 1 = extremely unlikely, 5 = extremely likely).

Nonprofits were compared for significant differences in familiarity and donation likelihood using a series of paired *t*-tests. The results observed significant differences in donation likelihood between WWF and United Way, Habitat for Humanity, and Boys and Girls Club. Similarly, the results observed significant differences in donation likelihood between Sierra Club and United Way, Habitat for Humanity, and Boys and Girls Club. Therefore, these pairings were excluded from further consideration (see Appendix O.3 for details).

No significant difference in donation likelihood was observed between The Nature Conservancy and Habitat for Humanity (M_{TNC} = 2.95, SD_{TNC} = 1.37 vs. M_{HFH} = 3.30, SD_{HFH} = 1.37; $t(36) = -1.46$, $p = 0.151$) or between The Nature Conservancy and Boys and Girls Club

(M_{TNC} = 2.95, SD_{TNC} = 1.37 vs. M_{BGC} = 3.32, SD_{BGC} = 1.18; $t(36)$ = -1.26, p = 0.217). Familiarity with The Nature Conservancy was significantly lower than familiarity for either Habitat for Humanity (M_{TNC} = 1.56, SD_{TNC} = 1.03 vs. M_{HFH} = 3.11, SD_{HFH} = 1.64; $t(35)$ = -1.56, $p < 0.001$) or Boys and Girls Club (M_{TNC} = 1.56, SD_{TNC} = 1.03 vs. M_{BGC} = 3.81, SD_{BGC} = 1.24; $t(35)$ = -2.25, $p < 0.001$). Given that the difference between familiarity ratings was less between The Nature Conservancy and Habitat for Humanity than between The Nature Conservancy and Boys and Girls Club, the pairing of The Nature Conservancy and Habitat for Humanity was selected to use for stimuli in Study 1. Although the initial hope was to have two nonprofit organizations rated with similar familiarity levels, The Nature Conservancy's directionally lower familiarity and donation scores can potentially provide an interesting managerial implication: if participants in Study 1 choose to donate more to The Nature Conservancy than to Habitat for Humanity after viewing an anthropomorphic appeal, the result can legitimately conclude that the effect is not due to familiarity or prior associations with the nonprofit organization. Moreover, this pair of organizations was held constant across condition, so this baseline difference in familiarity should not interact with manipulations.

Method

Study 1 was a pure control + 3 (baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt) between-subjects design. The study was completed in conjunction with an unrelated set of studies in the subject pool. Data collection was completed over the course of three weeks. Participants read an informed consent form that stated that the purpose of the research was to study consumer evaluations of appeals. Participants read that they would be randomly assigned to an appeal and would then be asked to provide

evaluations of the appeal as well as general opinions, consumer preferences, and demographic information using a set of questionnaires. Participants were also informed that, due to the nature of the study, not all study purposes could be explained prior to study participation and that a full debrief would occur after completing the study.

Participants were randomly assigned to view one of the four sustainability appeals ostensibly from The Nature Conservancy – pure control, baseline anthropomorphism, anthropomorphism plus empathy, or anthropomorphism plus anticipatory guilt. Participants were then informed that the researchers would be contributing $5 per participant to charities and would allocate contributions based on participant preferences. Using a slider form, participants were asked to allocate the $5 however they preferred to The Nature Conservancy and Habit for Humanity (names of the nonprofit organizations were presented in a counterbalanced order). Participants could allocate the entire $5 towards one of the nonprofit organizations and $0 towards the other or divide the $5 in any proportion they wished. This served as a behavioral measure of relative support towards a nonprofit organization dedicated to sustainability and a nonprofit organization dedicated to goals outside of sustainability, respectively. Following this measure participants were asked, “If you had a few dollars that you were planning to donate to a nonprofit organization, how likely would you be to make a donation to The Nature Conservancy?” (5-pt. Likert item, 1 = extremely unlikely, 5 = extremely likely).

Following this set of dependent measures, participants completed measures of familiarity with each nonprofit organization, personal environmentalism, and a series of demographic items. Familiarity was assessed on a 5-pt. Likert item scale (anchored with 1 = not familiar at all, extremely familiar; names of the nonprofit organizations were presented in a counterbalanced order). Given that personal environmentalism can influence reactions to sustainability appeals

(Cooremans and Geuens, 2019), a subscale from the Personal/Internal Environmentalism scale (Banerjee and McKeage, 1994; see Appendix O.2 for details) was completed by participants as a possible control variable. Finally, participants provided their age and gender, read a debriefing statement, and completed the study. The debriefing statement told participants that the nonprofit organizations mentioned in the study were not actually affiliated with the study. However, the amount of money allocated to each nonprofit would be donated on behalf of the subject pool participants.

Results

Prior to conducting the main statistical analyses, factor and reliability analyses were conducted for the Environmentalism Subscale. Items 4 and 7 were reverse-coded and factor analysis was run using varimax rotation. All items loaded onto a single factor with high reliability ($\alpha = 0.87$). Based on this result, the items were averaged into a single variable to be used later as a possible control variable for trait environmentalism (see Appendix O.3 for details).

Money Allocation to The Nature Conservancy

As an initial exploration, a One-Way ANOVA was conducted to test for differences across ad types on money allocation to The Nature Conservancy. Results found no significant differences across groups ($F(3,181) = 1.78$, $p = 0.153$). However, Tukey's HSD for multiple comparisons found that those who viewed the empathy ad allocated marginally more money to The Nature Conservancy than those who viewed the anticipatory guilt ad ($M_{EMPATHY} = 2.86$, $SD_{EMPATHY} = 1.14$ vs. $M_{GUILT} = 2.29$, $SD_{GUILT} = 1.28$; $q = 0.57$, $SE = 0.25$, $p = 0.102$. Though not

significant in difference, it is interesting that those who viewed the empathy ad allocated the most money to the sustainability nonprofit and those who viewed the anticipatory guilt ad allocated the least money to the sustainability nonprofit. Average money allocations from individuals who viewed the pure control ($M_{CONTROL}$ = 2.62, $SD_{CONTROL}$ = 1.12) and baseline anthropomorphism ads ($M_{BASELINE}$ = 2.61, $SD_{BASELINE}$ = 1.21) were almost identical (see Figure 2 for a visual depiction of means across ad type).

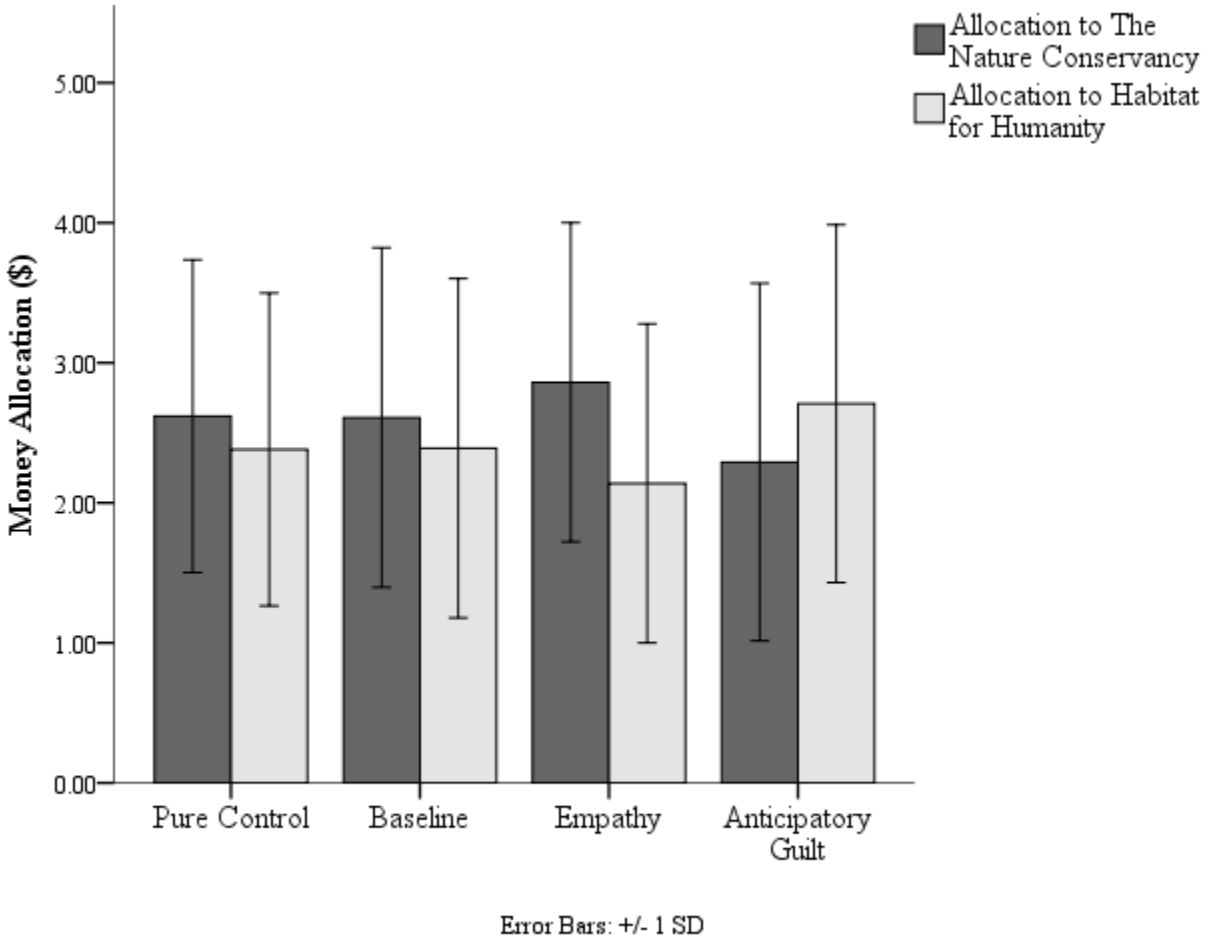

Figure 2. Donation allocations for nonprofit organizations across appeals

Because parts of the data failed tests of homogeneity of regression slopes, testing for covariance was conducted using multiple linear regression (as opposed to ANCOVA). Multiple

linear regression with sequential predictor entry was used to predict money allocation across the two nonprofit organizations. Block 1 contained three effect-coded variables for ad type with pure control as the reference group. Block 2 contained the three effect-coded groups with four covariates (gender using effect-coded variables and standardized scores of familiarity with the two nonprofits and trait environmentalism) and Block 3 contained all interaction terms between each effect-coded group and the covariates (see Appendix O.3 for details).

Results showed that ad type, which comprised of the first block, did not account for significant variation ($R^2 = 0.01$ ($R^2_{adjusted} < 0.01$), $F(3,181) = 1.78$, $p = 0.153$). However, it is worth noting that when compared to average money allocations across all ad conditions, participants who viewed the anticipatory guilt ad allocated significantly less money to The Nature Conservancy ($M_{GUILT} = 2.29$, $SD_{GUILT} = 1.28$; $B = -0.30$, $SE = 0.15$, $t = -2.01$, $p = 0.046$) and participants who viewed the empathy ad allocated marginally more to the Nature Conservancy ($M_{EMPATHY} = 2.86$, $SD_{EMPATHY} = 1.14$; $B = 0.27$, $SE = 0.15$, $t = 1.76$, $p = 0.081$).

When including covariates of gender, familiarity with the two nonprofits, and trait environmentalism (Block 2), the main effects of ad group type and the control variables did account for significant variance in money allocation ($R^2 = 0.11$, $F_{Change}(5,176) = 4.40$, $p = 0.001$; $R^2_{Total} = 0.14$, $R^2_{Adjusted} = 0.10$). The effect of empathy compared to the mean across all groups was significant ($B = 0.29$, $SE = 0.15$, $t = 1.98$, $p = 0.050$) and the effect of anticipatory guilt compared to the mean across all groups was marginally significant ($B = -0.27$, $SE = 0.15$, $t = -1.86$, $p = 0.065$). Significant main effects for familiarity with the nonprofit organizations and a marginal main effect for trait environmentalism were also observed suggesting that greater familiarity with The Nature Conservancy increases money allocation to The Nature Conservancy, greater familiarity with Habitat for Humanity decreases money allocation to The

Nature Conservancy, and greater trait environmentalism increases money allocation to The Nature Conservancy (see Appendix O.3 for details).

When interaction terms between ad type and covariates were included (Block 3), the interaction terms accounted for an additional 7% of variance in money allocation to The Nature Conservancy beyond the main effects though this effect was not significant ($R^2_{Change} = 0.07$, $F_{Change}(13,163) = 1.10$, $p = 0.365$; $R^2_{Total} = 0.21$, and $R^2_{Adjusted} = 0.10$). The average allocation of money to The Nature Conservancy was \$2.63, ($SE = 0.39$), holding all other variables constant ($t(163) = 6.73$, $p < 0.001$). Additionally, anticipatory guilt uniquely predicted lowered money allocation to The Nature Conservancy with marginal statistical significance, with anticipatory guilt having an estimated \$0.50 lower money allocation than the pure control, holding all else constant, ($B = -0.25$, $SE = 0.15$, $t = -1.69$, $p = 0.092$). Familiarity with The Nature Conservancy and familiarity with Habitat for Humanity also uniquely predicted money allocation to The Nature Conservancy. Specifically, for every standard deviation increase in familiarity with The Nature Conservancy, money allocation was predicted to increase by \$0.35, holding all else constant. In contrast, for every standard deviation increase in familiarity with Habitat for Humanity, money allocation was predicted to decrease by \$0.41, holding all else constant. The unique prediction of trait environmentalism on money allocation to The Nature Conservancy was marginally significant ($B = 0.15$, $SE = 0.09$, $t = 1.70$, $p = 0.092$). Interestingly, a significant interaction was observed when comparing differences between the effect-coded variable for empathy and familiarity with The Nature Conservancy on money allocation to the nonprofit ($B = -0.43$, $SE = 0.16$, $t = -2.70$, $p = 0.008$). To understand the interaction, predicted values were plotted for each group across three levels of familiarity with The Nature Conservancy (Figure 3).

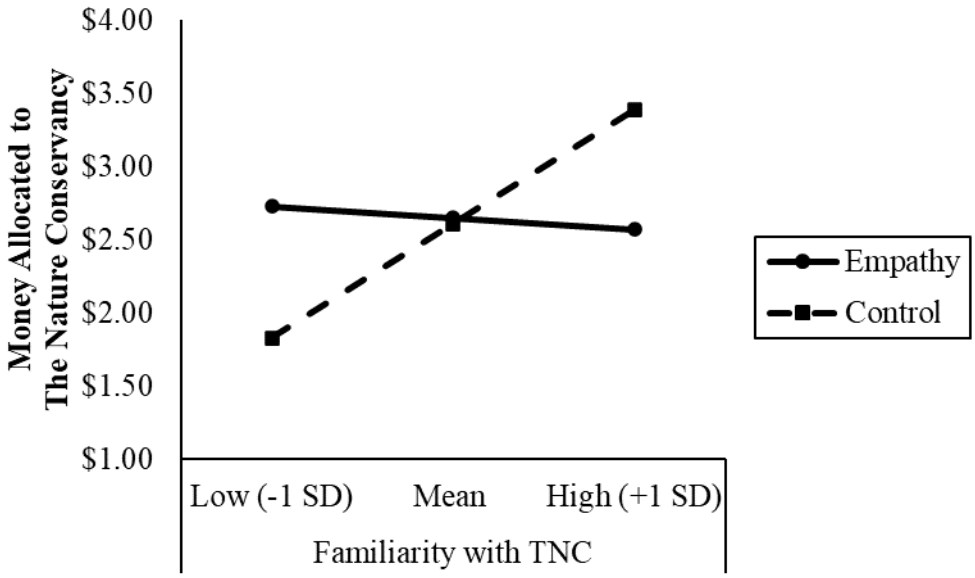

Figure 3. Predicted Money Allocation for Empathy and Control Groups by Familiarity Level

As depicted in Figure 3, the interaction was disordinal with the difference stemming from varied predicted values for the pure control ad across familiarity levels with the nonprofit. Interestingly, regardless of familiarity with The Nature Conservancy, those who viewed the empathy ad had predicted values of similar amounts of money allocation, holding all else constant. At one standard deviation below average familiarity with The Nature Conservancy, individuals who viewed the pure control ad had a predicted money allocation $0.90 lower than individuals who viewed the empathy ad, holding all else constant. At one standard deviation above average familiarity with The Nature Conservancy, individuals who viewed the pure control ad had a predicted money allocation $0.82 higher than those who viewed the empathy ad, holding all else constant.

Additionally, a marginal interaction was observed between the effect-coded variable for anticipatory guilt and familiarity with The Nature Conservancy ($B = 0.34$, $SE = 0.18$, $t = 1.90$, p

= 0.059). Again, to understand the interaction more clearly, predicted values were plotted for each group across three levels of familiarity with The Nature Conservancy (Figure 4).

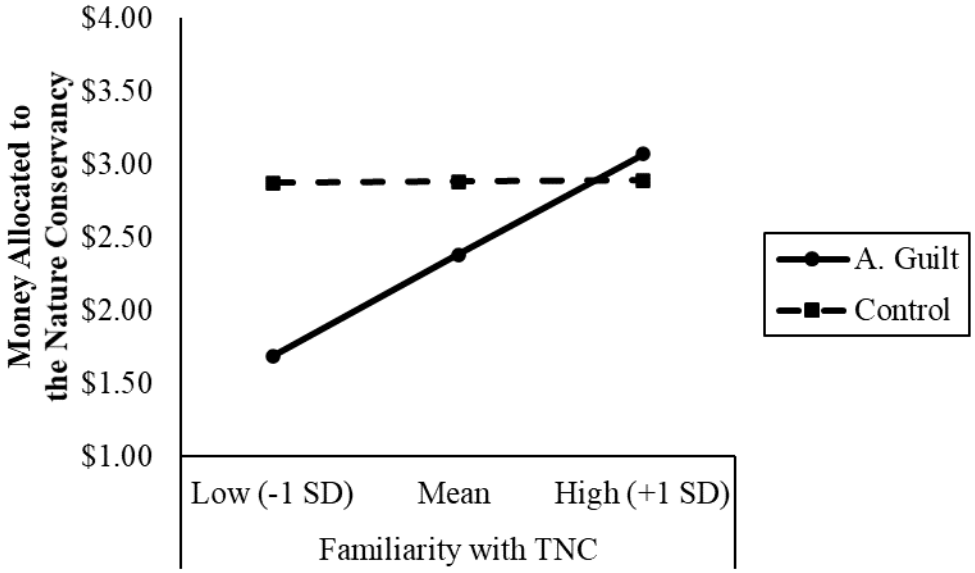

Figure 4. Predicted Money Allocation for Anticipatory Guilt and Control Groups by Familiarity Level

As depicted in Figure 4, the interaction was ordinal suggesting that, when viewing the anticipatory guilt ad, those with lower familiarity with The Nature Conservancy have predicted values to allocate noticeably less money to the nonprofit than those with higher familiarity with The Nature Conservancy, holding all else constant. Specifically, at one standard deviation below the average familiarity with The Nature Conservancy, individuals who viewed the anticipatory guilt ad had a predicted money allocation of $1.18 lower than those who viewed the pure control ad, holding all else constant. In contrast, at one standard deviation higher than average familiarity with The Nature Conservancy, the difference in money allocation between the anticipatory guilt and pure control ads was minimal (difference of $0.18).

Donation Likelihood

A One-Way ANOVA with Tukey HSD multiple comparisons was conducted to observe differences across ad groups on donation likelihood to the Nature Conservancy. Multiple linear regression with sequential predictor entry was also used to test for possible effects from covariates and interaction terms. No significant differences were observed for specific ad types compared to the average across groups (see Appendix O.3 for details).

Discussion

The findings from Study 1 shed light onto which anthropomorphic appeals are most effective in encouraging actual behavior in support of real sustainable nonprofit organizations. The empathy appeal was marginally more effective than average in encouraging money allocation towards The Nature Conservancy. In contrast, the anticipatory guilt appeal was significantly less effective than average in encouraging money allocation towards The Nature Conservancy. Across levels of familiarity with the sustainability nonprofit, predicted values of money allocation from those who viewed the empathy appeal are consistent. In contrast, predicted values for money allocation after viewing the pure control ad were higher for those with higher familiarity with The Nature Conservancy than for those with lower familiarity. This seems logical, as one may donate more money to causes one is more familiar with even if the appeal contains no additional messaging or calls to action. It is important to question why consistent levels of empathy are observed across familiarity levels with the sustainability nonprofit. Given that the anthropomorphized entity in the stimuli was a part of a tree, this entity could be considered non-charismatic. Past research suggests that non-charismatic entities that are anthropomorphized with a focus on the ability to suffer or experience pain can elicit empathy

(Chan, 2012) and that empathy can elicit helping behavior (Batson et al. 2015). However, when given the option to donate time or money, empathy encourages time donations over money donations (Zhang et al. 2019), likely because donating time provides a greater opportunity to show concern for another and personally provide help than a single-time donation of money. The current study did not measure time donation as an additional outcome variable. Those who viewed the empathy ad may have wished to express their empathic concern by helping in some way. Given that the only option available was to allocate money to the cause, these individuals consistently allocated similar amounts of money regardless of their familiarity with the cause.

Interestingly, of all the appeals, the anticipatory guilt appeal elicited the lowest money allocation to The Nature Conservancy. This finding speaks to the mixed results that past literature has grappled with. Anthropomorphized appeals can elicit anticipatory guilt which then increases compliance with social cause campaigns (Ahn et al. 2014). Yet, appeals featuring explicit guilt can backfire with past literature suggesting that subtler cues of self-accountability are more effective, driven by anticipatory guilt (Peloza et al. 2013). The anticipatory guilt appeal used in Study 1 focused on the avoidance of future felt guilt, aligned with past anthropomorphism literature. However, the appeal itself may have unintentionally elicited explicit guilt, leading to reactance to opportunities to support the sustainable nonprofit organization. This is likely, especially given the marginal interaction of the appeal across levels of familiarity with the sustainability nonprofit. For those with less familiarity with The Nature Conservancy, reading an anticipatory guilt appeal was likely met with greater reactance and therefore backfired with lower amounts of money allocated to the cause.

Donation behavior in the baseline anthropomorphism condition did not differ from that in the pure control condition. At first glance, this runs counter to both the positive effects of

anthropomorphism on pro-social behaviors in the literature and a previous pretest in this dissertation that found that exposure to anthropomorphism appeals increased sustainability-driven behavioral intentions (Pretest 6, please see Appendix F for details). The absence of an effect of anthropomorphism in this case may be due to the use of an actual behavior, rather than an intention, as the main outcome variable (i.e., money allocation). Past research has demonstrated that actual behavior is harder to influence than intentions (White et al. 2019), which further supports the possibility that baseline anthropomorphism may require highlighting additional underlying factors of the construct.

With respect to donation likelihood of one's own money, this measure was presented to participants after the donation allocation form for the two nonprofit organizations. It is possible that since participants were told they had been given $5 for the sake of allocating to the nonprofit organizations as per their preferences, the effects of the appeals on donation behavior diminished following this activity. Therefore, the effects of the appeals may not have lasted up to the measure of donation likelihood of one's own money.

Study 1 also considered the influence of other variables known in the literature to influence consumer adoption of sustainable behavior such as gender (Brough et al. 2016) and general concern for the environment (Cooremans and Geuens, 2019). A marginal main effect of environmentalism was observed. Not surprisingly, those with greater trait environmentalism allocate more money to a sustainable nonprofit than to another nonprofit unrelated to sustainability. This study did not find that gender effects support for a sustainable nonprofit. Though past literature has observed gender effects on involvement in sustainability (Brough et al. 2016), the focal outcome variables in this study pertain to money allocations to nonprofits as opposed to personal sustainable behavior. Additionally, the results imply significant main effects

of familiarity with nonprofits on money allocation behavior. Again, not surprisingly, the more familiar an individual is with a given nonprofit, the more the individual allocates money to the nonprofit. Given the small sample size of this study and that the population was made up of undergraduate students, future research can test if the effects of the different ad stimuli hold true to the public with a larger and representative sample and if these effects hold true to general involvement in sustainability.

Study 1 tested the relative influence of anthropomorphic sustainability appeals on actual donation behavior in a controlled lab environment. The findings suggest that highlighting cues for empathy with an anthropomorphized entity increases money allocations to the associated sustainability nonprofit. In contrast, highlighting anticipatory guilt with an anthropomorphized entity backfires and decreases money allocations, especially for those unfamiliar with the sustainability nonprofit. Differences between pure control and baseline anthropomorphism conditions were nonsignificant. It is unclear whether these findings will hold in real-world contexts when individuals may not be invested in processing information as deeply as they would be in a controlled lab environment. In such cases, perhaps anticipatory guilt can increase engagement with sustainability by striking a balanced level of elicited anticipatory guilt. In doing so, the appeal can break through digital content clutter with specific calls to action and avoid eliciting levels of anticipatory guilt that cause the effect to backfire. In digital contexts where individuals are constantly exposed to content with limited time to process information, visual cues from baseline anthropomorphism may have a greater effect than visual cues from a pure control condition. To complement Study 1 and its findings, it is important to test the relative influence of these appeals in a real-world context.

The first step in advertising is securing attention and engagement from the viewer. Companies and organizations use digital ad copy testing to determine what advertisements are most effective in reaching consumers. Specific to nonprofit sustainability organizations, it is imperative to identify what combination of appeal elements may elicit greatest interest in sustainability that can ultimately help build a relationship between the nonprofit and the consumer. Doing so will also provide greater understanding regarding the managerial implications of employing anthropomorphic cues in sustainability appeals. To test this, Study 2 will conduct a field test using Facebook's ad platform.

STUDY 2 – ANTICIPATING REAL-WORLD EFFECTS OF ANTHROPOMORPHISM

Nonprofit organizations focused on sustainability often employ anthropomorphic cues in their appeals to increase consumer engagement with their causes (see Table 4 for notable sustainability campaigns that utilize anthropomorphism). The choice to use these cues may be based on past findings that certain elements of anthropomorphism are effective advertising tools or perhaps even on an advertising team's intuition that humanizing a cause helps consumers connect with the cause. Therefore, the purpose of Study 2 was to test real-world response to anthropomorphic sustainability appeals.

Method

Facebook provides a sophisticated advertising platform for companies to advertise to users across Facebook's social media platforms (i.e., Facebook, Instagram, WhatsApp Messenger). Within this platform a user can create advertisements linked to an organization's

Facebook page and measure the performance of each specific ad. The ads manager platform divides an advertising project into three tiers: the ad campaign, the ad set, and the actual ads.

At the campaign level, advertisers must select the overarching metric of interest for the ad campaign, such as traffic to a landing page or conversions of viewers into leads. At the ad set level, the advertiser defines the audience of interest and can choose from a variety of targeting factors including demographic and psychographic variables. The ad set level also asks the advertiser to set a certain budget per day to run the campaign and in some cases the advertiser can choose the bid auction type for the ad. The advertiser must also indicate the length of time the campaign should run for, including specific start and end times. At the ads level, the advertiser creates the number of ads desired to run within the campaign. Typically, ad sets contain about 3-5 ads and can vary on ad type (e.g., images or creatives, videos, and carousel ads). At this level, the advertiser links a landing page for each ad (multiple ads can have the same landing page linked) and can provide additional copy text for the ads.

Once all settings have been finalized, the advertiser may publish the campaign. Once the campaign has launched, Facebook optimizes the daily budget across the ads within the ad set according to its own algorithm. Facebook will push more money into the ads within the ad set that it thinks is most engaging with its users. Facebook also indicates which ads it feels possess below average, average, or above average quality. In this way, Facebook communicates to the advertiser which ads are successful and which are unsuccessful. An array of metrics is also available to the advertiser to compare the ads, including click-through rate (CTR), cost per click (CPC), and unique clicks on an ad.

Creating and Running Ads on Facebook

Before launching the ad campaign, a Facebook page was required to link to the ad campaign. A Facebook page was created for Care for Earth, the organization created to pretest the different anthropomorphic stimuli (see Appendix). The Facebook page included a logo for the brand, a background image of leaves to suit the theme of the page, as well as a brief description that the page was intended for academic research only. The Facebook page also provided a link to the landing page of the ad which also served as a debriefing statement for the study (see Appendix P.1 for all study materials).

In the present study, an ad campaign was created to test the relative influence of the four different ad stimuli used in Study 1 (Figure 1). At the ad set level, a daily budget of $100 (using Facebook's default ad auction setting) for a five-day long campaign was set (total ad budget for the campaign was set to $500; actual final ad budget totaled to $499.96). The campaign was launched at midnight on Day 1 and ended at midnight at the end of Day 5 (technically the very beginning of the following day). One design limitation to this study is that Facebook does not allow the advertiser to control even allocation of daily budget across each of the ads within an ad set. As mentioned above, Facebook uses its own algorithm to push specific amounts of budget into each ad based on each ad's relative performance to other ads within the ad set. Therefore, simply considering the number of impressions is meaningless in interpreting ad effectiveness. Rather, the rate at which viewers are clicking on an ad is key (Paharia, 2020). This is measured using CTR which is calculated by the number link clicks divided by the number of impressions of the ad.

Optimization was set to "link clicks", a standard setting on Facebook used for ad campaigns focused on encouraging website traffic. The target audience for this campaign

consisted of Facebook users currently living in the United States that were 18 years of age or older with no specifications for gender. English was selected as the language of choice. Based on past interests and searching behavior on the platform, it is possible that Facebook may choose to show one of the ads over the others in the ad set if its algorithm believes the user may be more likely to click on that ad. To account for these possibilities, no other target variables were selected within the campaign to ensure that the audience selection was as representative of the general public as possible. Additionally, setting an ad budget such as the one used in this study provides the opportunity for a large sample size to capture a more normal distribution of data. These settings align with settings from past academic research within marketing that has used Facebook's ads manager platform (Hardisty and Weber, 2020). No device type usage was specified, meaning that users could view the ad on their desktops, tablets, or mobile devices.

At the ad level, all settings were held constant across the ads except for the visual creative (see Appendix P.1 for ads and landing page materials). Though Facebook's ad platform can run ads across different social media platforms such as Instagram and WhatsApp Messenger, this set of ads were set to run only on Facebook. This selection was based on Facebook being the largest social media platform in the world with the most diverse user population (Barnhart, 2022). Additionally, to keep the number of possible confounding variables as low as possible, ads appeared only in users' news feeds. Ads were created and formatted for desktop and mobile viewing compatibility. All ads linked back to the same landing page which also served as a debriefing statement for the study. The webpage also provided links to real nonprofit organizations focused on sustainability to provide interested users an opportunity to learn more about ongoing sustainability efforts led by actual organizations. Once all settings were finalized, the ad campaign was published and launched for the scheduled duration of time.

Results

As mentioned in the previous section, though Facebook does not allow the advertiser to evenly allocate money across ads within an ad set, this feature is helpful as it provides the advertiser with an understanding of how ads organically fare on the social media platform and is reflective of how advertisers would evaluate ads in a given ad campaign. Facebook allocates money to the ads within the set that its algorithm deems as most engaging. In the current ad set, the pure control received a noticeably smaller ad budget allocation than the three anthropomorphism ad types (i.e., baseline anthropomorphism, anthropomorphism plus empathy, and anthropomorphism plus anticipatory guilt) and as a result had a much smaller sample size (i.e., number of impressions) than the other three ads. Specifically, the pure control ad collected 849 impressions while the baseline, empathy, and anticipatory guilt ads collected 33,120, 18,329, and 12,478 impressions, respectively (see Appendix P.2 for details). Importantly, Facebook rated the three anthropomorphism ads with "above average" ad quality and did not provide a computed value for the pure control ad, suggesting that Facebook evaluated the pure control ad as less effective than the other three anthropomorphism ads. The empathy ad received an "above average" engagement rating while the baseline anthropomorphism and the anticipatory guilt ads received "average" ratings. Again, a rating was not computed for the pure control ad. Further, a specific test between baseline anthropomorphism and anthropomorphism in conjunction with its underlying drivers is particularly meaningful for this research. Therefore, for completeness, two rounds of analyses were conducted. The first round was run to observe significant click-through rate differences between all four ads with the pure control ad as the reference group. The second round was run to observe significant click-through rate differences between all four ads with the baseline anthropomorphism ad as the reference group. That is, each ad's CTR was tested for

significant differences against the CTRs of the control ad and the baseline anthropomorphism ad, respectively. The following section details these analyses.

Differences in Click-Through Rates Across Ads

Binary logistic regressions were run to test for significant differences in click-through rates (CTR; i.e., the number of link clicks divided by the number of ad impressions) across ad types. Past research that has utilized Facebook testing suggests that comparing CTR levels is key in testing ad effectiveness (Paharia, 2020). For the first round of analysis, three dummy variables were coded for each anthropomorphism ad using the pure control ad as the reference group. For the second round of analysis, three dummy variables were coded for the pure control ad, empathy ad, and anticipatory guilt ad with the baseline anthropomorphism ad as the reference group. Again, this second scenario is particularly meaningful given that it examines the relative influence of anthropomorphic appeals that emphasize underlying factors above and beyond the effect of baseline anthropomorphism on consumer involvement in sustainability.

The results from the binary logistic regression which considered the pure control ad as the reference group observed no significant differences in CTR for any of the anthropomorphism ads when compared to the pure control. A robustness check (i.e., the number of unique clicks divided by ad reach) for completeness found similar results (see Appendix P.2 for details). When the baseline anthropomorphism ad was considered as the reference group, the binary logistic regression suggests that there is no significant difference in CTR between the pure control ad ($CTR_{CONTROL}$ = 1.41%) and the baseline anthropomorphism ad ($CTR_{BASELINE}$ = 1.15%; B = 0.21, SE = 0.30, Wald's $\chi^2(1) = 0.51$, p = 0.474) nor is there a significant difference between the empathy ad ($CTR_{EMPATHY}$ = 1.29%) and the baseline anthropomorphism ad ($CTR_{BASELINE}$ =

1.15%; $B = 0.12$, $SE = 0.09$, Wald's $\chi^2(1) = 2.11$, $p = 0.146$). However, there is a significant difference in CTR between the anticipatory guilt ad ($CTR_{A.\ GUILT} = 1.85\%$) and the baseline anthropomorphism ad ($CTR_{BASELINE} = 1.15\%$; $B = 0.49$, $SE = 0.08$, Wald's $\chi^2(1) = 33.34$, $p < 0.001$). A robustness check for completeness found no significant difference between pure control and baseline anthropomorphism ads ($B = 0.19$, SE = 0.30, $\chi^2(1) = 0.42$, $p = 0.519$). However, a marginal difference was observed between the empathy ad and the baseline anthropomorphism ad ($B = 0.15$, $SE = 0.09$, $\chi^2(1) = 3.18$, $p = 0.074$), and a significant difference between the anticipatory guilt ad and the baseline anthropomorphism ad ($B = 0.54$, $SE = 0.09$, $\chi^2(1) = 40.47$, $p < 0.001$). The results suggest that, when compared to the ad with baseline anthropomorphism, ads with anthropomorphism plus empathy and anthropomorphism plus anticipatory guilt have marginally and significantly greater CTR, respectively.

Discussion

The results from Study 2 provide real-world evidence of anthropomorphism and its underlying factors' influence on sustainability ad engagement. Of the four ads, the pure control ad was rated least in quality as determined by Facebook. Of the anthropomorphism ads, the anticipatory guilt ad had significantly higher CTR than the baseline anthropomorphism ad suggesting that in real-world contexts, cues of anthropomorphism in conjunction with anticipatory guilt are significantly more effective than baseline anthropomorphism in increasing consumer interest in sustainability.

Though not the focal outcome variables of this study, metrics regarding consumer engagement with ads are also worth noting. Given the higher ad quality of the anthropomorphism ads as compared to the pure control ad, it is not surprising that greater

engagement was measured for the anthropomorphism ads. Interestingly though, the empathy ad received the greatest number of comments, likes, shares, and posts of all the ads (see Appendix P.2 for details). These results align with the findings from Study 1 in empathy's ability to garner interest in sustainability above baseline anthropomorphism. Though individuals who viewed the empathy ad had greater engagement with the ad than those who viewed the anticipatory guilt ad, CTR for the anticipatory guilt ad was significantly greater than the baseline anthropomorphism ad. The same cannot be said for the empathy ad. It is possible then that these different underlying factors of anthropomorphism lend to different elements of involvement in sustainability. Cues of empathy may elicit greater conversation to express empathic concern about the negative situation for trees and nature. Cues of anticipatory guilt may encourage consumers to engage in particular actions – i.e., seek more knowledge about engaging in sustainable efforts – as a way to circumvent possible future feelings of guilt. Used together, the two factors can provide multiple and unique benefits to managers wishing to increase involvement in sustainability.

GENERAL DISCUSSION

The purpose of Chapter 2 was to systematically test common underlying factors of anthropomorphism identified from the literature and to determine if these factors in conjunction with anthropomorphism increase consumer involvement in sustainability above and beyond baseline anthropomorphism. Further, Chapter 2 tested these in a controlled environment and in real-world contexts. In doing so, this chapter provides a crucial test of the relative effects of anthropomorphism in real-world contexts and bridges knowledge between theory and managerial practice.

Study 1 tested four ad appeals (pure control, baseline anthropomorphism, anthropomorphism plus empathy, and anthropomorphism plus anticipatory guilt) in a lab setting and measured effects on money allocation choices to a real nonprofit organization focused on sustainability. The results from this study suggest that when an empathy appeal is added to anthropomorphic cues, individuals are likely to allocate marginally more money to the sustainable cause when compared to the average allocation from individuals across all appeals. The amount of money allocated by these individuals is consistent across levels of familiarity with the sustainability nonprofit. Individuals who read an ad with an anticipatory guilt appeal in conjunction with anthropomorphic cues allocate significantly less money to the sustainability cause when compared to the average allocation from individuals across all appeals. This difference is to some extent driven by the level of familiarity with the sustainability nonprofit; after viewing the anticipatory guilt ad, individuals who have lower familiarity with the sustainability nonprofit allocate less money than those with higher familiarity. These results suggest that anticipatory guilt can backfire for those who are less familiar with the cause. For behaviors that signal support for sustainable nonprofit organizations, empathy is more effective than anticipatory guilt in conjunction with anthropomorphic cues. This finding aligns with past findings that empathy encourages helping behaviors (Batson et al. 2015).

Study 2 tested the same four sustainability appeals on Facebook using an ad set testing format. The findings from this study provide a native test of ad engagement for a nature conservation organization created for the purpose of this research. Of the four ads, anticipatory guilt had a significantly higher CTR than baseline anthropomorphism. Additionally, all three anthropomorphism ads were rated with high quality and empathy elicited above average engagement with Facebook users. These findings suggest that different underlying factors of

anthropomorphism provide unique benefits to increasing consumer involvement in sustainability. Empathy when paired with anthropomorphic cues elicits high engagement and reactions from viewers, presumably as a way of showing empathic concern for the cause. Empathy is considered a malleable personality trait helpful in increasing one's connection to nature and in valuing the environment (Di Fabio and Kenny, 2021). Anticipatory guilt when paired with anthropomorphic cues encourages consumers to seek more information about sustainability by clicking on the ad, a behavioral action presumably taken to circumvent possible future feelings of guilt.

Literature has consistently suggested a positive influence of anthropomorphism on sustainable behavior. Often, research has measured behavioral intentions rather than actual behavior. The former is easier to influence than the latter (White et al. 2019). Past research that has measured anthropomorphism's influence on actual sustainable behavior has also tested for drivers of the effect (e.g., anticipatory guilt drives compliance with social cause campaigns; Ahn et al. 2014). Across both studies in this chapter, no differences were observed between the pure control and baseline anthropomorphism conditions. In Study 1, this null effect could be due to measuring actual behavior rather than intentions. In such cases, baseline anthropomorphism appeals may require highlighting additional underlying factors of the construct, as was observed in the anthropomorphism plus empathy condition. Given the vast amount of native content on Facebook and the short amount of time spent consuming individual posts, Study 2's real-world context posed added challenges for ads to garner viewer attention. Facebook caps ad exposure to ensure that users are able to enjoy content primarily from friends and families. As a result, viewers exposed to baseline anthropomorphism may not have registered the call to action to click on the ad from a visual anthropomorphic cue and a single tagline. In such cases, additional information that draws the reader into the ad and allows deeper processing is essential. This was

observed with different positive outcomes for the anthropomorphism plus empathy (greater engagement) and the anthropomorphism plus anticipatory guilt (greater CTR) conditions. These underlying factors of anthropomorphism provided the extra push for consumers to engage with the ad and learn more about sustainability, respectively. The absence of a significant difference between the pure control and baseline anthropomorphism conditions across both studies requires further inspection. Future research regarding this topic is described in the following section.

At first glance, the findings from Studies 1 and 2 may seem inconsistent; Study 1 suggests that empathy is most effective in increasing support for a sustainability nonprofit while Study 2 suggests that anticipatory guilt is most effective in encouraging knowledge regarding sustainability. However, the results complement each other in that empathy along with anthropomorphic cues elicit empathic concern. Such individuals may engage in behavior that expresses empathic concern through charitable behavior (Study 1) or through social engagement about the cause (Study 2). To encourage personal behavior involving sustainability, individuals need to first be interested in the cause. Anthropomorphic appeals that employ empathy are most helpful for such cases. However, these behaviors do not require an individual to reflect on their own personal behavior. Anthropomorphic cues that elicit anticipatory guilt are effective in increasing personal involvement in sustainability. This may be accomplished through information seeking behavior, such as clicking on an ad to learn more about sustainability. Given that the first step to effective advertising is capturing consumer engagement, practitioners may benefit from using anthropomorphic strategies that utilize both empathy and anticipatory guilt to first gather consumer attention and concern about the topic and then provide opportunities to learn more about sustainability, respectively.

Limitations and Future Research

As with all research, this research comes with its limitations. However, these limitations can also inspire future research. Limitations and avenues for future research are described below.

Null Effects of Baseline Anthropomorphism

Given the absent effect of baseline anthropomorphism in the present research, future research can conduct follow-up factorial studies. This can be accomplished in both a lab study and a Facebook study to test if the positive effects of anthropomorphism plus empathy in Study 1 and the positive effects of anthropomorphism plus anticipatory guilt in Study 2 are indeed due to an interaction of the constructs or due to a main effect of empathy and anticipatory guilt, respectively. In the lab, a 2 (anthropomorphism: absent vs. present) x 2 (empathy: absent vs. present) between-subjects design can be employed. Additional dependent measures can also be included to observe for differing levels of influence on sustainable behavior. For example, past research finds that warm appeals encourage donating time rather than money (Zhang et al. 2019). Empathy contains elements of warmth (Wang et al. 2017). Therefore, the proposed study can test for differences in these dependent measures. Given that this is a controlled environment, familiarity with the nonprofit can also be included to test as a potential mediator of the effect.

To test the proposed interaction effect of anthropomorphism and anticipatory guilt in real-world contexts, a 2 (anthropomorphism: absent vs. present) x 2 (anticipatory guilt: absent vs. present) between-subjects design can be employed. Facebook uses sophisticated algorithms to determine which ads are more effective in a given ad set and communicates these results to the advertiser. In Study 2, this was observed with Facebook's evaluation of the pure control ad as compared to the three anthropomorphism ads. This determination in and of itself aligns with

findings from extant research that anthropomorphic cues are beneficial in sustainability appeals (see Table 3 for a review of such findings). However, a potential limitation to Study 2's design was the inability to evenly allocate ad budget across the four ads in the campaign. As a result, sample sizes across the ad groups were not balanced. The proposed study can employ A/B testing on Facebook, which allows budget allocation to be split evenly and easily accommodates 2 x 2 factorial designs.

Boundary Condition of Anthropomorphized Entity

Multiple pretests were conducted in efforts to identify the final ad set used as the basis for stimuli in Studies 1 and 2. Pretests 1 and 2 observed difficulties in manipulating underlying factors of anthropomorphism above and beyond measures of baseline anthropomorphism for charismatic animals (e.g., an elephant; see Appendix for details). These manipulations were eventually successful when humanizing non-charismatic entities, such as elements of nature (i.e., a tree). This suggests a boundary condition to what type of entities are effectively humanized in sustainability appeals. Future research can further test this observation with focused testing on the boundary condition and subsequent outcomes on involvement in sustainability.

Longitudinal Field Observations

Future research can also test the recommended two-step process in increasing sustainable consumption by first employing an anthropomorphism plus empathy appeal to increase consumer concern and engagement in a sustainability cause and then introducing an anthropomorphism plus anticipatory guilt appeal to encourage behavioral change. The longitudinal effects of this two-step strategy is also important to test to determine how often

consumers need reminders to engage in ongoing sustainable efforts. These findings would be particularly helpful for nonprofit organizations in deciding the frequency with which to communicate to consumers. Further, future research could partner with an existing nonprofit organization to provide greater real-world validity to managers and practitioners.

Conclusion

Sustainability appeals require clear and meaningful communication to effectively encourage consumer involvement in sustainable efforts. Anthropomorphic cues in conjunction with underlying factors of empathy and anticipatory guilt can increase consumer interest in sustainability. Importantly, these underlying factors offer unique contributions to increase consumer involvement and lend themselves easily for incorporation in real ad campaigns by nonprofit organizations. It is the hope of the author that this dissertation can inspire a new stream of research within the domains of sustainability and marketing and can provide insightful evidence to practitioners in understanding how to better encourage consumer interest in sustainability.

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Table 1. Motivating Factors for Sustainable Consumption

Message-Centric Cues	Consumer-Centric Cues
Beneficiary	Empathy
Norms	Guilt
Prospect and Construal-Level Theories	Other Positive Affect – Pride and Gratitude
Regulatory Focus	Other Negative Affect – Fear and Sadness
	Nature Connectedness
	Brand/Product Evaluations
	Individual Differences

Table 2. Sustainability Appeals – Literature Review

Message-Centric Cues	Consumer-Centric Cues
Beneficiary • Nature (vs. self) as beneficiary has positive effect on CSR evaluations (Kang and Sung, 2021) and green purchase intentions (Edinger-Schons et al. 2018; Jaeger and Weber, 2020; Yang et al. 2015) • Societal benefits leads to altruistic egoistic warmth, ultimately increasing purchase intentions for green apparel (Song and Kim, 2019) • Self as beneficiary preferred by socially excluded individuals (Yu and Han, 2021) and in private (vs. public) settings (Green and Peloza, 2014) • Mixed results for encouraging pro-environmental behavior and green initiatives (others, Kim et al. 2021; self, Palomo-Vélez et al. 2020; Schorn et al. 2022; inconclusive results, Choi and Lee, 2020; Kesenheimer and Greitemeyer, 2020) **Social Norms** • Descriptive and provincial norms appeals are more effective than injunctive appeals (Goldstein et al. 2008; Kavvouris et al. 2020; Ryoo et al. 2017); descriptive norms most effective with text and visual stimuli (Poškus et al. 2019); have better fit with promotion (vs. prevention) focus (Melnyk et al. 2013) • Positioning green products as "normal" can encourage green behavior (Rettie et al. 2012) • Congruency with political ingroup mindset most effective increasing recycling behavior and subsequent sustainable behavior (Kidwell et al. 2013) • Dissociative groups causes positive behavior based on competitive motives (White and Simpson, 2013) **Prospect and Construal-Level Theories** • Negative loss with concrete mindset and positive gain with abstract mindset encourage recycling intentions (White et al. 2011) • Gain-framed messages effective for low-involvement consumers (Yoon et al. 2019)	**Empathy** • Warm ad appeals encourage time donation driven by social connectedness (Zhang et al. 2019) • Empathy mediates the correlational relationship between agreeableness and openness and connectedness to nature (Di Fabio and Kenny, 2021) **Guilt** • Compliance with sustainable activity to avoid or attenuate situations of guilt (Rowe et al. 2019); usefulness can vary based on proximity of issue and environmental consciousness (Chang, 2012) • Level of guilt used in appeals can have varied effects: consumers prefer products based on ethical attributes (vs. self-benefits) when self-accountability (vs. explicit guilt) is activated, mediated by anticipatory guilt (Peloza et al. 2013) • Guilt paired with a gain-framed message is more persuasive for pro-environmental behavior (Baek and Yoon, 2017) **Other Positive Affect – Pride and Gratitude** • Vicarious pride's effect on sustainability driven by collaborative mindset, self-pride's effect on sustainability driven by competitive mindset (Septianto et al. 2018) • When considering luxury brand's sustainability appeals, pride appeal increases intentions based on status attainment motives, gratitude appeal increases intentions based on affiliation seeking motives (Septianto et al. 2021a) • Gratitude for having (vs. not having) paired with loss-framed (vs. gain-framed) message encourages intentions to reduce food waste (Septianto et al. 2020) • Comparison with guilt with inconsistent results (Antonetti and Maklan, 2013; Rowe et al. 2019)

- Persuasive advertising optimized by loss-framed/near-future perspective and gain-framed/distant-future perspective (Shao et al. 2020)

Regulatory Focus

- Sustainable company practices activate prevention focus in consumers, sustainable products with prevention frame (vs. promotion frame) are perceived better (Bullard and Manchanda, 2013)
- Prevention-focused participants are persuaded by green product attributes, promotion-focused participants are persuaded by nongreen attributes (Ku et al. 2012)

Other Negative Affect – Fear and Sadness

- Fear can be an effective tool for increasing pro-environmental behavior, but only when using low-fear appeals (Chen, 2016) or if the fear-inducing green issue is relatively distant from the consumer (Lee et al. 2017)
- Sadness's influence on pro-environmental behavior wears off quickly; however, sadness can increase sustainable behavior in immediate opportunities to participate (Schwartz and Loewenstein, 2017; Meng and Trudel, 2017)

Nature Connectedness

- Exposure to nature increases connectedness to nature, positive affect, and the ability to reflect on a personal life problem (Mayer et al. 2009); associated with personal benefits of psychological wellbeing, meaningfulness, and vitality (Cervinka et al. 2011)
- Gratitude to nature increases pro-environmental behavior and environmental activism support (Tam, 2022)
- Individuals who morally prioritize nature over outgroup members attribute greater mental capacities to animals (Rottman et al. 2021)
- For those with low pro-environmental attitude, focusing on oneself and entitlement decreases connectedness to nature (Frantz et al. 2005)

Brand/Product Evaluations

- Sustainable brands elicit greater brand attitude which leads to greater intentions to share information via eWOM (Kong et al. 2021); consumers prefer green ads (vs. green demarketing) for product advertising (Reich and Soule, 2016)
- Sustainability claims (Kronthal-Sacco et al. 2019) and cause-related marketing labels (Choi et al. 2018) improve sales of products; humane orientation is a favorable cultural dimension for advertising (Diehl et al. 2016)

Individual Differences

- Gender (Brough et al. 2016), level of collectivism (vs. individualism) and locus of control (McCarty and Shrum, 2001) influence interest to join environmental initiatives,

preference for green products, and recycling behaviors

Table 3. Intersection of Anthropomorphism and Sustainability Appeals – Literature Review

Message-Centric Cues	Consumer-Centric Cues
Beneficiary • For altruistic green products, anthropomorphic images encourage green purchase intentions (Wang et al. 2020) **Social Norms** • Normative gain more effective than normative loss appeals in promoting pro-environmental behavior, amplified by anthropomorphism (Do et al. 2021) **Prospect and Construal-Level Theories** • When coupled with anthropomorphic cues, negatively framed messages are most effective for encouraging effortful pro-environmental behavior (Karpinska-Krakowiak et al. 2020)	**Empathy** • Anthropomorphism leads to greater empathy (Whitley et al. 2021; Prguda and Neumann, 2014), which in turn leads to greater green purchase intentions (Chen et al. 2021; Yue et al. 2021; Chang et al. 2018), conservation behavior (Tam, 2013), reduced meat consumption (Niemyjska et al. 2018), and reluctance to part with older products (Chandler and Schwarz, 2010) • Warmth, an element of empathic concern, when elicited from anthropomorphism leads to greater buying pleasure (Jeong and Kim, 2021), sustainable purchase intentions (Koo et al. 2019; Cooremans and Geuens, 2019), and donation behavior (Zhou et al. 2019) • Anthropomorphized nature portrayed as a victim elicits greater elements of empathy (i.e., sympathy, perceived weakness of victim) and leads to greater intention to participate in CSR campaigns (Ahn and Lee 2021), conservation behavior (Ketron and Naletelich, 2019) and intentions (Zhu et al. 2019) **Anticipatory Guilt** • When anthropomorphism of animals or nature is employed, anticipatory guilt leads to greater conservation behavior and intentions and greater compliance with social cause campaigns (Ahn et al. 2014) as well as reduced meat consumption (Wang and Basso, 2019) **Connectedness to Nature** • When nature is anthropomorphized, connectedness to nature increases pro-environmental behaviors and intentions (Tam et al. 2013; Liu et al. 2019), though mixed results exist regarding immediate intentions to protect nature (Moreton et al. 2019)

Green Trust

- Anthropomorphized brands and products are perceived environmentally friendly (Joshi and Kronrod, 2020), credible (Tong et al. 2020), associated with desirability (Han et al. 2019), and are favored (Laksmidewi and Soelasih, 2019) which increases brand preference, green purchases intentions, and attitudes towards cause-related marketing

Individual Differences

- Sustainability literature with anthropomorphism studies trait anthropomorphism (Conrad et al. 2021; Manfredo et al. 2020; Reavey et al. 2011), religiosity (Miyazaki, 2017), need for effectance/control (Tam, 2014), gender differences in subsequent reduced meat consumption (Johnson et al. 2021) and also in empathy (Tam, 2013; Niemyjska et al. 2018; Prguda and Neumann, 2014)

Table 4. Notable Nonprofit Ad Campaigns Featuring Anthropomorphism

Brand	Campaign	Anthropomorphic Elements	Purpose
World Wide Fund for Nature	Tagline: I am not a… Also contains a small message condemning poaching activities and how animals are killed for human use	Animals: Features charismatic animals with a tagline in the first-person (e.g., elephant: I am not a trinket, tiger: I am not a rug, rhinoceros: I am not medicine)	Stop wildlife crime

World Wide Fund for Nature	Would you care more if I was a… Also contains a short message in small print that the bluefin tuna is being fished to extinction	Animals: Features non-charismatic animal (i.e., bluefin tuna) with a mask of a charismatic animal (i.e., panda, gorilla, rhinoceros) and a first-person tagline	Stop bluefin tuna fishing

World Wide Fund for Nature	What on Earth are we doing to our planet?	Animals: Features charismatic animals (i.e., polar bear, lion, chimpanzee) with their paws/hands over their eyes, portraying a very humanlike posture. The tagline question could be considered coming from the animal itself	Animal protection

Segmento	Humanity and nature are one	Nature: Features a “tree” with the tree trunk and branches actually a weathered human arm and hand holding up tree leaves and the tagline	Click on link to learn about tips for ecotourism in Brazil

World Environment Day (United Nations)	love trees…love nature	Nature: Features a pregnant woman's stomach but made of tree bark with human hands holding the belly, symbolizing Mother Nature Also contains a short message: "Mother Nature too needs care and protection. Show her you care. By caring for her trees."	Forest protection in India

World Wide Fund for Nature	Before it's too late	Nature: Features groups of trees in the shape of human lungs with one of the lungs "decayed" due to deforestation	Stop deforestation

Appendix

Originally, six appeals were created to test the following conditions: a pure control condition in which no anthropomorphic cues were employed, a baseline anthropomorphic condition without the addition of any additional dimension, and conditions for each of the identified common dimensions of anthropomorphism namely, empathy, anticipatory guilt, CTN, and green trust. The following section details the author's process in determining whether an animal or an element of nature should be the anthropomorphized entity of focus in the research appeals (for a full review of all pretests, please see Table 5).

Selection of Anthropomorphized Entity: Animals vs. Nature

Given that many ad campaigns run by real nonprofits have utilized humanized animals, the initial set of stimuli employed an elephant as the anthropomorphized entity. All visuals used for stimuli were obtained from Canva.com. Debriefing statements for pretests and studies acknowledge this fact. All stimuli sets also featured a fictional nonprofit organization, Care for Earth, with a fictional logo created using Canva.com.

The tagline for the first stimuli set was loosely based on the WWF's ad campaign, Stop Wildlife Crime (https://www.worldwildlife.org/ pages/stop-wildlife-crime—5), in which an ad with an elephant is depicted with the tagline, "I am not a trinket" and a short message condemning elephant poaching. The first set of research stimuli featured an elephant with its eyes looking downward to depict a sad expression with the tagline, "I am not a souvenir" for all anthropomorphic conditions with an additional short message for conditions that focused on a particular dimension (e.g., empathy, anticipatory guilt) and "Elephants are not souvenirs" for the pure control condition with no image of an elephant (see Appendix A for full details). Given that the results were inconclusive, different elephant visuals were tested along with an adjusted tagline that read "I am not a souvenir" in anthropomorphic conditions and "Elephants are not souvenirs" in the pure control condition; however, this test yielded largely null results (see Appendix B).

The observations of these pretests, especially of the first pretest with all ad conditions, are likely due to the fact that elephants are considered "charismatic" animals. Charismatic animals are those animals that are perceived as closer in physical similarity to humans (e.g., has clear facial features) and are typically perceived more favorably than non-charismatic animals when anthropomorphized (Connell, 2013). Indeed, past literature has observed that increases in attitudes and behavioral helping intentions towards anthropomorphized animals are species dependent (Prguda and Neumann, 2014; Osinski et al. 2019) and that individuals are more likely to anthropomorphize species that are deemed more closely related to humans (Chan, 2012). Past ad campaigns by WWF have recognized this discrimination across animal species and have used it in its campaigning to stop bluefin tuna fishing, a non-charismatic animal by presenting the fish with masks of charismatic animals such as a panda bear (see Table 4 for details). Thus, for those animals who are more easily anthropomorphized, such as elephants, it may be difficult if not impossible to manipulate specific dimensions of anthropomorphism above and beyond baseline anthropomorphism. Anthropomorphism is suggested to be most useful to elicit empathy towards species considered non-charismatic (Chan, 2012). Given that elements of nature, such as trees, do not portray the same humanlike features as charismatic animals, it follows that manipulating

elements of nature may be more conducive and reliable in testing the relative influence of anthropomorphic appeals.

Pretesting Dimensions for Anthropomorphized Nature

Focusing on trees as an element of nature and stopping deforestation as the sustainable action within the appeals, three different anthropomorphic visuals depicting various parts of a tree (i.e., tree bark with human eye superimposed on top, group of trees in a human lungs formation, tree branch "shaking hands" with human hand) were selected to pretest which is most effective in eliciting anthropomorphic cues (See Appendix C for details). From this set of pretests, the image of tree bark with a superimposed human eye elicited significantly greater anthropomorphism can the other two visuals. However, this visual received lower ad attitude than the tree handshake visual. Additionally, a full pretest with all ad conditions (i.e., pure control vs. baseline anthropomorphism vs. empathy vs. anticipatory guilt vs. CTN vs. green trust) using the tree bark visual yielded null results. This may be due to the fact that the tree branch visual shows an actual element of a tree in an anthropomorphic posture as opposed to a human eye simply superimposed over a part of a tree. Additionally, many lay pictures on the Internet focus on human interaction with elements of nature including tree branches and humans "shaking hands". With respect to the trees in a human lungs formation, this visual presented hundreds of trees in a humanized formation rather than a singular tree in an anthropomorphic posture. Given this, future stimuli used the handshake visual.

The next pretest served as a manipulation check for the handshake visual and also tested the main effect of anthropomorphism on sustainable behavior and intentions (Appendix F). The results from this pretest not only confirmed that the anthropomorphism manipulation was successful but also observed that the anthropomorphism condition elicited significantly greater donation pledges towards Care for Earth and greater intentions to engage in future sustainable grocery shopping, outcomes directly associated with sustainable behavior. Full pretests with all conditions resulted in largely unsuccessful manipulations, apart from a successful anticipatory guilt manipulation (Appendix G). The tagline used in these versions of the stimuli, "Embrace our friends in nature", unintentionally addressed elements of empathy. Given this, subsequent pretests tested different taglines and tested empathy against baseline conditions (Appendices I, J, and K) but with inconclusive results. Further tests of the stimuli with updated phrasing in the messaging of dimension appeals and updated tagline phrasing were conducted (Appendix L).

Once the phrasing of tagline and messaging was finalized, a full pretest was conducted with all six conditions: pure control, baseline anthropomorphism, empathy, anticipatory guilt, CTN and green trust (Appendix M). The results indicate that the CTN and green trust manipulations were unsuccessful. This may be due to the fact that CTN is traditionally considered an individual difference (Mayer and Frantz, 2004). Additionally, green trust is related to the credibility of a brand (Chen, 2010), something that presumably takes extended time to establish with consumers. Such constructs therefore pose more difficulties to successfully manipulate in an appeal as compared to emotions which can be instantaneously elicited with visual and textual stimuli. The manipulations of empathy and anticipatory guilt were believed to have greater reliability and consistency than CTN and green trust. Therefore, conditions of CTN and green trust were dropped from future pretesting.

A final full pretest was conducted with conditions of pure control, baseline anthropomorphism, empathy, and anticipatory guilt. The findings from this pretest observed that all manipulations were successful (Appendices N). This final set of stimuli was used as the basis for the subsequent lab study and Facebook test.

Table 5. List of Pretests[1]

Test Num.	Pretest Type[2]	Purpose	Entity	Conditions	Findings
1	Full Pretest	Manipulation checks and donation behaviors	Animal (elephant)	Pure control vs. baseline vs. empathy vs. anticipatory guilt vs. green trust	Inconclusive results
2	Control vs. Baseline	Pretest most effective visual stimuli to use in subsequent testing	Animal (elephant)	1 (pure control) x 2 (elephant type: 1 vs. 2) x 2 (anthropomorphism: absent vs. present)	Significantly higher ad attitudes for elephant ads compared to pure control; elephant 1 slightly higher than elephant 2; null results for behavioral DVs
3	Control vs. Baseline	Testing which nature visual is considered most anthropomorphic	Nature (eye, lungs, handshake)	Nature eye vs. nature lungs vs. nature handshake	Nature eye perceived most anthropomorphic; lungs dropped
4	Control vs. Baseline	Testing which nature visual is considered most anthropomorphic	Nature (eye, handshake)	2 (entity: tree trunk vs. tree branch) x 2 (anthropomorphism: absent vs. present)	Confirmed manipulation checks for both stimulus types; tree branch ads rated more favorably than tree trunk ads
5	Full Pretest	Manipulation checks of different ad stimuli	Nature (eye)	Pure control vs. baseline vs. empathy vs. anticipatory guilt vs. CTN vs. green trust	Inconclusive results
6	Control vs. Baseline	Testing for anthropomorphism between pure control and baseline anthropomorphism	Nature (handshake)	Pure control vs. baseline	Confirmed anthropomorphism manipulation check; baseline ad yielded significantly higher

[1] Pretests are linked to corresponding sections in Appendix; beginning of each section links back to Table 5
[2] Full pretest refers to all conditions tested in pretest as opposed to pure control vs. baseline anthropomorphism or testing a certain underlying factor (e.g., empathy) against baseline anthropomorphism

		condition; behavioral DVs			donation behavior and marginally higher sustainable shopping intentions than control ad
7	Full Pretest	Manipulation checks of different ad stimuli with minor edits to phrasing	Nature (handshake)	Pure control vs. baseline vs. empathy vs. anticipatory guilt vs. CTN vs. green trust	Inconclusive results for most stimuli; anticipatory guilt manipulation confirmed
8	Full Pretest	Manipulation checks of different ad stimuli with minor edits to phrasing	Nature (handshake)	Pure control vs. baseline vs. empathy vs. anticipatory guilt vs. green trust	Inconclusive results for most stimuli; empathy and anticipatory guilt directionally effective but without significance; green trust marginally greater than pure control and significantly greater than baseline anthropomorphism
9	Empathy Pretest	Manipulation check for empathy condition	Nature (handshake)	Baseline vs. empathy	No significant differences between conditions on measurements of empathy
10	Empathy Pretest	Manipulation check for empathy condition	Nature (handshake)	Baseline vs. empathy	No significant differences between conditions on measurements of empathy
11	Empathy Pretest	Manipulation check for empathy condition	Nature (handshake)	Baseline vs. empathy	No significant differences between conditions on measurements of empathy
12	Control vs. Baseline	Testing for anthropomorphism between pure control and baseline	Nature (handshake)	Pure control vs. baseline	Anthropomorphism manipulation check successful; baseline significantly higher on ad attitude than

		anthropomorphism condition using the updated phrasing			pure control (though both means were high on scale)
13	Full Pretest	Manipulation checks for all conditions	Nature (handshake)	Pure control vs. baseline vs. empathy vs. anticipatory guilt vs. CTN vs. green trust	Empathy and anticipatory guilt manipulations successful; green trust and CTN manipulations not successful; green trust and CTN conditions dropped
14	Full Pretest	Manipulation checks for final chosen conditions (dropped conditions based on previous null effects)	Nature (handshake)	Pure control vs. baseline vs. empathy vs. anticipatory guilt	Manipulation checks for empathy and anticipatory guilt confirmed; final set of stimuli confirmed
15	In-Person	Selecting real nonprofits for Study 1	N/A	Three nature-related nonprofits and three unrelated nonprofits measured on familiarity and donation likelihood	The Nature Conservancy and Habitat for Humanity chosen for pilot study

Appendix A.1: Pretest 1 Method

The purpose of this pretest was to conduct manipulation checks for different versions of anthropomorphic ads and donation behaviors. This pretest employed a 5 (pure control vs. baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt vs. anthropomorphism plus green trust) x single-factor between-subjects design. The appeals were designed to be from a (fictional) brand Care for Earth with an elephant used as the anthropomorphized character in the anthropomorphic conditions. Anthropomorphism was manipulated using first-person (vs. third-person) language and an image of an elephant focused on the face of the animal. Inspired by past literature (Ketron and Naletelich, 2019; Tong et al. 2020; Do et al. 2021), an image was selected in which the elephant's eyes were pointed downward and the elephant appeared to have a "sad" expression. The pretest was run on Turk Prime with total of 361 individuals. After removing six participants due to incomplete participation, $N = 355$ was used in the analysis.

Participants were randomly assigned to view one of the five appeals. After doing so, participants indicated levels of empathy, anticipatory guilt, and green trust toward the fictional brand with measures counterbalanced to avoid issues of effect order. Participants then indicated overall attitude towards the ad. Because the pure control condition did not contain an elephant, the wording of the manipulation check measures varied depending on whether a participant viewed the pure control condition or any anthropomorphic condition of the appeal. For participants who evaluated the pure control ad, wording was focused on elephants in general. For participants who evaluate any anthropomorphic version of the appeal, wording was focused on the specific elephant featured in the appeal.

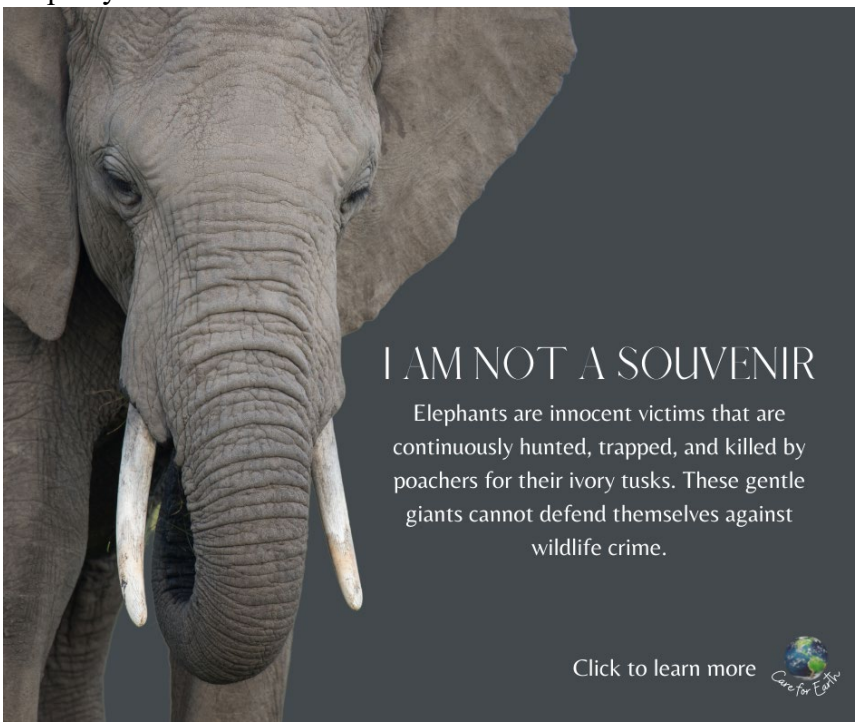
After completing the manipulation check measures, participants were asked a set of three different questions focused on sustainable behavior intentions. This set included indicating the level of importance of choosing companies with corporate social responsibility efforts focused on helping wildlife animals, such as elephants (5-pt. Likert, 1 = not at all important, 5 = extremely important), likelihood of sharing the ad with family and friends (5-pt. Likert, 1 = extremely unlikely, 5 = extremely likely), and percentage of earnings from participating in the study that the participants would be willing to donate to Care for Earth. Finally, participants were asked to answer two demographic questions (age and gender), indicate MTurk ID information, and were then debriefed of the true purpose of the study.

Appendix A.2: Pretest 1 Stimuli

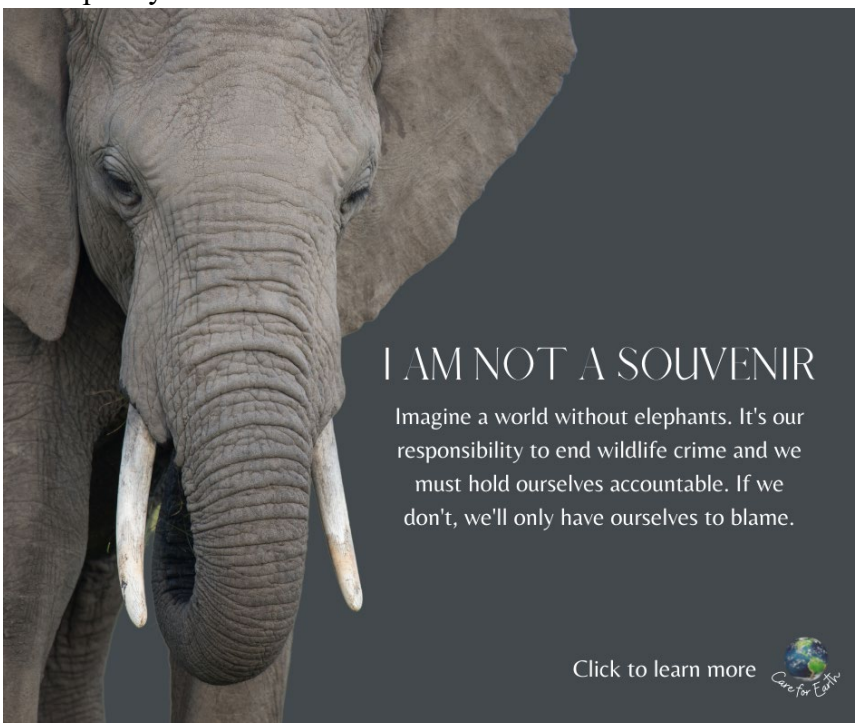
Pure Control

Baseline Anthropomorphism

Empathy



Anticipatory Guilt



Green Trust


I AM NOT A SOUVENIR
Founded in 1970 with an established presence across the world, Care For Earth is a widely accepted wildlife conservation organization committed to the protection of nature and ending wildlife crime.
Click to learn more
Care For Earth

Appendix A.3: Pretest 1 Measures

Sympathy Subscale (adapted from Wang et al. 2017)[3]

To what extent do you feel the following towards elephants (the elephant in the ad)?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Compassionate
2. Moved
3. Sympathetic

Victim Empathy Scale (adapted from Ketron and Naletelich, 2019)[4]

To what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for elephants (the elephant I saw)
2. I want to save elephants (the elephant I saw)
3. I have sympathy for elephants (the elephant I saw)

Warmth Subscale (adapted from Wang et al. 2017)[5]
To what extent do you feel the following towards elephants (the elephant in the ad)?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Tender
2. Warm
3. Softhearted

Green Trust (adapted from Chen, 2010)[6]

To what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Care for Earth's wildlife reputation is generally reliable

[3] Wang, T., Mukhopadhyay, A., & Patrick, V. M. (2017). Getting consumers to recycle NOW! When and why cuteness appeals influence prosocial and sustainable behavior. *Journal of Public Policy & Marketing*, *36*(2), 269-283.
[4] Ketron, S., & Naletelich, K. (2019). Victim or beggar? Anthropomorphic messengers and the savior effect in consumer sustainability behavior. *Journal of Business Research*, *96*, 73-84.
[5] Wang, T., Mukhopadhyay, A., & Patrick, V. M. (2017). Getting consumers to recycle NOW! When and why cuteness appeals influence prosocial and sustainable behavior. *Journal of Public Policy & Marketing*, *36*(2), 269-283.
[6] Chen, Y. S. (2010). The drivers of green brand equity: Green brand image, green satisfaction, and green trust. *Journal of Business ethics*, *93*(2), 307-319.

2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Anticipatory Guilt 1 (adapted from Ahn et al. 2014)[7]

Based on the ad you just viewed, how likely would you feel the following if you did nothing to help elephants (the elephant)?
(9-pt. scale, 1 = extremely unlikely, 9 = extremely likely)

1. Guilt
2. Shame
3. Responsibility
4. Accountability

Anticipatory Guilt 2[8]

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help elephants (the elephant)?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Ad Attitude[9]

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

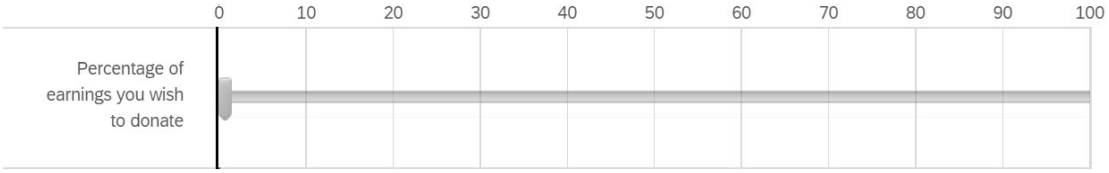
[7] Ahn, H. K., Kim, H. J., & Aggarwal. P. (2014). Helping fellow beings: Anthropomorphized social causes and the role of anticipatory guilt. *Psychological science*, *25*(1), 224-229.
[8] Self-created.
[9] Deshpandé, R., & Stayman, D. M. (1994). A tale of two cities: Distinctiveness theory and advertising effectiveness. *Journal of Marketing Research*, *31*(1), 57-64.

Behavioral Measures[10]

1. How important is it for you to choose companies with corporate social responsibility efforts focused on helping wildlife animals, such as elephants? (5-pt. Likert, 1 = not at all important, 5 = extremely important)

2. How likely are you to share this ad with family and friends? (5-pt. Likert, 1 = extremely unlikely, 5 = extremely likely)

3. The researchers of this study have partnered with Care for Earth to support the protection of elephants by allowing participants to choose to donate a portion of their participation earnings to Care for Earth. Using the slider below, please indicate the percentage of your earnings that you wish to donate.



[10] Self-created.

Appendix A.4: Pretest 1 Results

Factor and reliability analysis:

Variable	Factor (Varimax Rotation)	Reliability (α)
Sympathy Subscale (Combined)	Single	0.95
Victim Empathy (Combined)	Single	0.92
Warmth Subscale (Combined)	Single	0.97
Green Trust (Combined)	Single	0.96
Ad Attitude (Combined)	Two	0.88 (if one index)
Anticipatory Guilt 1 (Combined)	Single	0.94
Anticipatory Guilt 2 (Combined)	Single	0.95

Descriptives:

Ad Type	Sympathy Subscale	Victim Empathy	Warmth Subscale	Green Trust	Ant. Guilt 1	Ant. Guilt 2	Ad Attitude	CSR	Ad Share	Earnings
Pure Control (N = 71)	*M* = 7.41 *SD* = 1.81	*M* = 7.57 *SD* = 1.76	*M* = 7.48 *SD* = 1.71	*M* = 6.71 *SD* = 1.59	*M* = 4.86 *SD* = 2.65	*M* = 5.02 *SD* = 2.69	*M* = 6.65 *SD* = 1.73	*M* = 3.59 *SD* = 1.27	*M* = 2.96 *SD* = 1.46	*M* = 20.80 *SD* = 32.13
Baseline Anthro. (N = 70)	*M* = 7.26 *SD* = 2.20	*M* = 7.29 *SD* = 2.16	*M* = 7.05 *SD* = 2.30	*M* = 6.77 *SD* = 1.72	*M* = 4.58 *SD* = 2.65	*M* = 4.78 *SD* = 2.68	*M* = 6.66 *SD* = 1.94	*M* = 3.23 *SD* = 1.25	*M* = 2.83 *SD* = 1.39	*M* = 21.86 *SD* = 28.69
Empathy (N = 70)	*M* = 7.91 *SD* = 1.63	*M* = 8.06 *SD* = 1.56	*M* = 7.96 *SD* = 1.50	*M* = 7.13 *SD* = 1.54	*M* = 5.08 *SD* = 2.61	*M* = 4.97 *SD* = 2.79	*M* = 7.24 *SD* = 1.35	*M* = 3.56 *SD* = 1.15	*M* = 2.99 *SD* = 1.42	*M* = 21.79 *SD* = 28.85
Green Trust (N = 72)	*M* = 7.78 *SD* = 1.59	*M* = 7.77 *SD* = 1.60	*M* = 7.69 *SD* = 1.64	*M* = 7.26 *SD* = 1.36	*M* = 4.92 *SD* = 2.27	*M* = 5.19 *SD* = 2.35	*M* = 7.35 *SD* = 1.12	*M* = 3.46 *SD* = 1.07	*M* = 3.25 *SD* = 1.20	*M* = 27.57 *SD* = 32.41
Ant. Guilt (N = 72)	*M* = 7.44 *SD* = 1.84	*M* = 7.43 *SD* = 1.84	*M* = 7.46 *SD* = 1.94	*M* = 6.95 *SD* = 1.50	*M* = 4.80 *SD* = 2.62	*M* = 4.95 *SD* = 2.69	*M* = 6.95 *SD* = 1.51	*M* = 3.43 *SD* = 1.31	*M* = 2.81 *SD* = 1.38	*M* = 17.01 *SD* = 27.16

One-Way ANOVA:

Pure Control vs. Anthropomorphism Ads

Planned contrast: Pure control ad should elicit significantly lower levels of empathy, green trust, and anticipatory guilt than the other anthropomorphism ads. Presumably, the pure control would have lower levels of ad attitude and donation behaviors than all the other anthropomorphism ads given the more basic format of the appeal and that past literature suggests that anthropomorphism increases prosocial behavior.

The observed results do not support these expectations; there is no significant difference between the pure control ad and the other anthropomorphism ads on measures of empathy, green trust, and anticipatory guilt. Surprisingly, the pure control ad elicits higher donation behaviors and comparable levels of empathy, green trust, and anticipatory guilt, and ad attitude. Perhaps it is not possible to compare the measures between pure control and the other anthropomorphism conditions as the measures are technically worded differently. Additionally, the stimuli is missing not only the elephant but also contains different wording in the tagline.

Anthropomorphism Ads

For the remainder of the planned contrasts, it is interesting to consider comparisons between the anthropomorphic ad of interest and the other anthropomorphism ads. To do this, planned contrasts were entered such that the absolute value of the ad of interest's negative weighting (-3) was equivalent to the sum of the other positively weighted anthropomorphism ads (three ads weighted +1 each). The pure control was weighted as 0. This implies that the contrast will compare the anthropomorphism ad of interest to all the other anthropomorphism ads (i.e., is the ad of interest different than all the other ads), excluding the pure control from the comparison (the pure control ad is still included in the actual One-Way ANOVA and post-hoc tests).

Baseline Ad vs. Other Anthropomorphism Ads

Planned contrast: The baseline anthropomorphism ad should elicit significantly lower levels of empathy measures, green trust, and anticipatory guilt measures.

Results: The baseline anthropomorphism ad was significantly different than the other anthropomorphism ads on attitude ($t(91.43) = 2.10$, $p = 0.038$). Post hoc tests found that the baseline anthropomorphism ad was marginally lower than the green trust ad on measures of general ad attitude ($I\text{-}J = -0.69$, $SE = 0.26$, $p = 0.061$). The baseline anthropomorphism ad was also significantly different than the other anthropomorphism ads on warmth ($t(94.85) = 2.18$, $p = 0.032$). Post hoc tests found that the baseline ad was marginally lower than the empathy ad on victim empathy measures ($I\text{-}J = -0.77$, $SE = 0.30$, $p = 0.084$) and significantly lower than the empathy ad on measures of the warmth subscale, ($I\text{-}J = -0.90$, $SE = 0.31$, $p = 0.031$).

Empathy Ad vs. Other Anthropomorphism Ads

Planned contrast: The empathy ad should elicit significantly greater levels of sympathy, empathy, and warmth than the other anthropomorphism ads. There is no prediction if this ad is more effective than other anthropomorphism ads in increasing donation behaviors.

Results: The empathy ad scored highest of all ads on all three empathy measures, highest on victim sympathy measure, then warmth, then sympathy. The empathy ad is marginally different from the other anthropomorphism ads on the sympathy subscale ($t(117.75) = -1.96$, $p = 0.052$) and significantly different from the other ads on victim sympathy ($t(121.26) = -2.54$, $p = 0.013$) and warmth ($t(130.18) = -2.48$, $p = 0.012$). As was mentioned in the baseline anthropomorphism results section, post hoc tests found that the empathy ad was marginally higher on victim empathy measures and significantly greater on measures of the warmth subscale compared to the baseline anthropomorphism ad. The ad was not significantly different from the other anthropomorphism ads on general ad attitude or prosocial intentions. These results are encouraging in that the empathy ad seems to be successfully eliciting empathy more than the baseline anthropomorphism ad.

Green Trust Ad

Planned contrast: The green trust ad should elicit significantly greater levels of green trust than the other anthropomorphism ads. There is no prediction if this ad is more effective than other anthropomorphism ads in increasing donation behaviors.

Results: Green Trust ad was not significantly different than the other anthropomorphism ads, ($t(350) = -1.47$, $p = 0.143$). Post hoc tests show no significant differences between any group pairs, though the ad scores highest of all the ads for measures of green trust. For general ad attitude, post hoc tests found that the ad was marginally different than the pure control ($I\text{-}J = 0.69$, $SE = 0.26$, $p = 0.061$ and marginally different than the baseline anthropomorphism ad ($I\text{-}J = 0.69$, $SE = 0.26$, $p = 0.064$).[11]

Anticipatory Guilt Ad

Planned contrast: The anticipatory guilt ad should elicit significantly greater levels of anticipatory guilt than the other anthropomorphism ads. There is no prediction if this ad is more effective than other anthropomorphism ads in increasing donation behaviors.

Results: Anticipatory Guilt ad was not significantly different than the other anthropomorphism ads for either anticipatory guilt measure, ($t(350) = 0.18$, $p = 0.860$; $t(350) = 0.08$, $p = 0.937$). Interestingly, of the ads, the empathy ad scored highest on the first anticipatory guilt scale and the green trust ad scored highest on the second anticipatory guilt scale. Post hoc tests showed no significant differences between any group pairs. Post hoc tests also found that the ad was not significantly different from the other ads on general ad attitude or prosocial intentions.

[11] Though this is not an a priori prediction, when the planned contrast was conducted the ad was significantly different than the other anthropomorphism ads on general ad attitude ($t(174.34) = -2.31$, $p = 0.022$), likelihood of sharing the ad with family and friends ($t(350) = -2.01$, $p = 0.045$), and marginally differently than the other anthropomorphism ads on amount of earnings to donate to the nonprofit ($t(350) = -1.80$, $p = 0.073$).

Appendix B.1: Pretest 2 Method

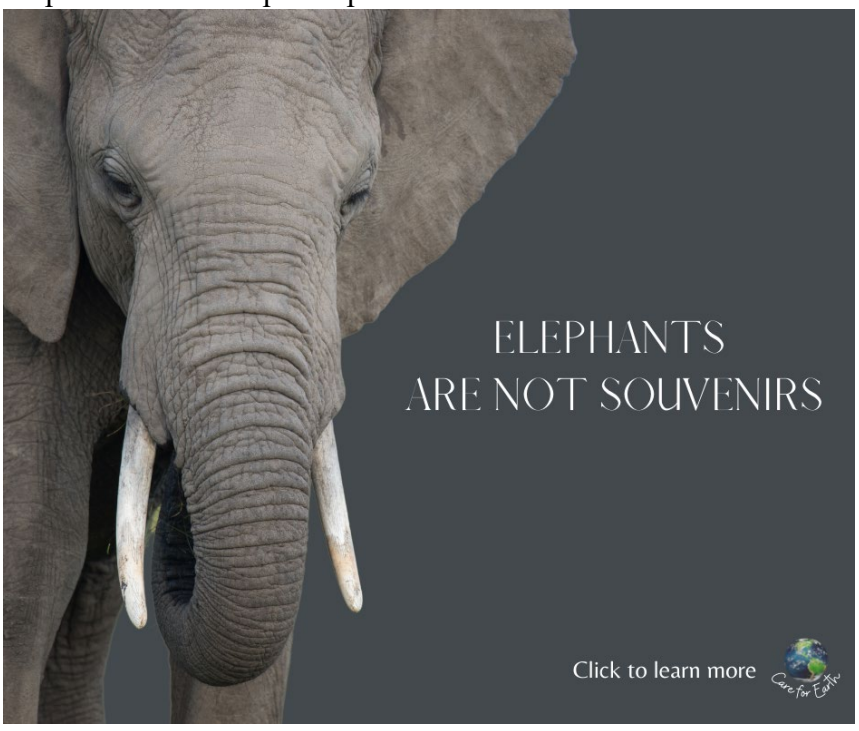
Based on the results from Pretest 1, it was important to test if the specific image of the elephant used had contributed to the null results. Before running another full pretest with other dimensions included (i.e., empathy, anticipatory guilt, and green trust), a pretest was required to 1) to test which image of an elephant as the source of the appeal would be most effective to use in subsequent testing and 2) to observe different effects on donation behaviors. This pretest employed a 1 (pure control) x 2 (elephant type: 1 vs. 2) x 2 (anthropomorphism: absent vs. present) between-subject design. The appeals used the same fictional nonprofit brand, Care for Earth, as Pretest 1. The pretest was run on Turk Prime with total of 355 individuals. After removing one participant due to incomplete participation, $N = 354$ was used in the analysis.

Participants were randomly assigned to one of the five appeal conditions. After viewing the appeal, all participants were asked to indicate likelihood of sharing the ad with family and friends (5-pt. Likert, 1 = extremely unlikely, 5 = extremely likely) and the percentage of earnings they would be willing to donate to Care for Earth. Then, participants indicate overall ad attitude and were asked to provide the same demographic information as in Pretest 1 and their MTurk ID information. Participants were then debriefed about the study's true purpose.

Appendix B.2: Stimuli

Pure Control

Elephant 1 – Anthropomorphism Absent



Elephant 2 – Anthropomorphism Absent

Elephant 1 – Baseline Anthropomorphism

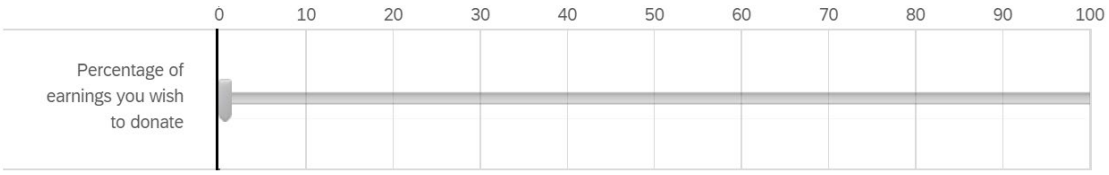
Elephant 2 – Baseline Anthropomorphism

Appendix B.3: Pretest 2 Measures

Behavioral Measures (counterbalanced)

1. How likely are you to share this ad with family and friends? (5-pt. Likert, 1 = extremely unlikely, 5 = extremely likely)

2. The researchers of this study have partnered with Care for Earth to support the protection of elephants by allowing participants to choose to donate a portion of their participation earnings to Care for Earth. Using the slider below, please indicate the percentage of your earnings that you wish to donate.



Ad Attitude[12] (loaded onto single factor; $\alpha = 0.92$)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

[12] Deshpandé, R., & Stayman, D. M. (1994). A tale of two cities: Distinctiveness theory and advertising effectiveness. *Journal of Marketing Research*, *31*(1), 57-64.

Appendix B.4: Pretest 2 Results

Descriptive Measures:

Ad Type	Ad Share	Earnings	Ad Attitude
Pure Control (N = 71)	*M* = 2.86 *SD* = 1.33	*M* = 20.68 *SD* = 30.53	*M* = 6.59 *SD* = 2.03
Control Elephant 1 (N = 71)	*M* = 3.08 *SD* = 1.39	*M* = 25.76 *SD* = 31.57	*M* = 7.15 *SD* = 1.55
Control Elephant 2 (N = 71)	*M* = 3.10 *SD* = 1.33	*M* = 18.92 *SD* = 28.67	*M* = 7.12 *SD* = 1.61
Anthro. Elephant 1 (N = 70)	*M* = 2.81 *SD* = 1.32	*M* = 19.67 *SD* = 29.21	*M* = 7.03 *SD* = 1.47
Anthro. Elephant 2 (N = 71)	*M* = 2.90 *SD* = 1.26	*M* = 16.38 *SD* = 25.16	*M* = 7.02 *SD* = 1.53

Outcome Variables:
Behavioral Measures: willingness to share ad; percentage of earnings willing to donate

Planned Contrasts[13]:
1. Pure control < all other ads
2. Pure control < control ads with elephants
3. Pure control < anthropomorphism ads
4. Control ads with elephants < anthropomorphism ads
5. Pure control < Control ad with Elephant 1
6. Pure control < Control ad with Elephant 2
7. Pure control < Anthropomorphism ad with Elephant 1
8. Pure control < Anthropomorphism ad with Elephant 2
9. Control ad with Elephant 1 < Anthropomorphism ad with Elephant 1
10. Control ad with Elephant 2 < Anthropomorphism ad with Elephant 2

One-Way ANOVA – Planned Contrasts Results[14]:
Pure Control vs. All Other Ads
No significant differences observed for behavioral DVs. However, a significant difference in ad attitude was observed between pure control ad and all other ads, $t(349) = 2.22$, $p = 0.027$.
Pure Control vs. Control Ads with Elephants

[13] There is no specific prediction between variations of elephant control ads and anthropomorphism ads. However, any difference is of interest regarding which elephant image may be more effective in the ad.

[14] Analyses controlling for age and gender were conducted as well, no significant differences were observed.

No significant differences observed for behavioral DVs. However, a significant difference in ad attitude was observed between pure control ad and control ads with elephants $t(349) = 2.26$, $p = 0.024$.

Pure Control vs. Anthropomorphism Ads
No significant differences observed for behavioral DVs. However, a marginal difference in ad attitude was observed between pure control and anthropomorphism ads, $t(349) = 1.79$, $p = 0.074$.

Control Ads with Elephants vs. Anthropomorphism Ads
No significant differences observed between control ads with elephants and anthropomorphism ads for behavioral DVs or ad attitude.

Pure control vs. Control ad with Elephant 1
No significant differences observed for behavioral DVs. However, a significant difference in ad attitude was observed between pure control and control ad with elephant 1, $t(349) = 2.00$, $p = 0.047$.

Pure control vs. Control ad with Elephant 2
No significant differences observed for behavioral DVs. However, a marginal difference in ad attitude was observed between pure control and control ad with elephant 2, $t(349) = 1.92$, $p = 0.056$.

Pure control vs. Anthropomorphism ad with Elephant 1
No significant differences observed between control ads with elephants and anthropomorphism ads for behavioral DVs or ad attitude.

Pure control vs. Anthropomorphism ad with Elephant 2
No significant differences observed between control ads with elephants and anthropomorphism ads for behavioral DVs or ad attitude.

Control ad with Elephant 1 vs. Anthropomorphism ad with Elephant 1
No significant differences observed between control ads with elephants and anthropomorphism ads for behavioral DVs or ad attitude.

Control ad with Elephant 2 vs. Anthropomorphism ad with Elephant 2
No significant differences observed between control ads with elephants and anthropomorphism ads for behavioral DVs or ad attitude.

Appendix C.1: Pretest 3 Method

The null results of Pretests 1 and 2 may have been driven by the messenger (an elephant) inherently possessing greater anthropomorphic qualities (e.g., eyes, mouth, etc.) than another nonhuman entity, such as an element of nature (e.g., tree, river, etc.). Indeed, given that anthropomorphism measures were relatively high for baseline anthropomorphism conditions, it is difficult to tease apart other elements beyond anthropomorphism, such as empathy, anticipatory guilt, and green trust. Therefore, a new messenger with less inherent anthropomorphic qualities was chosen: a tree.

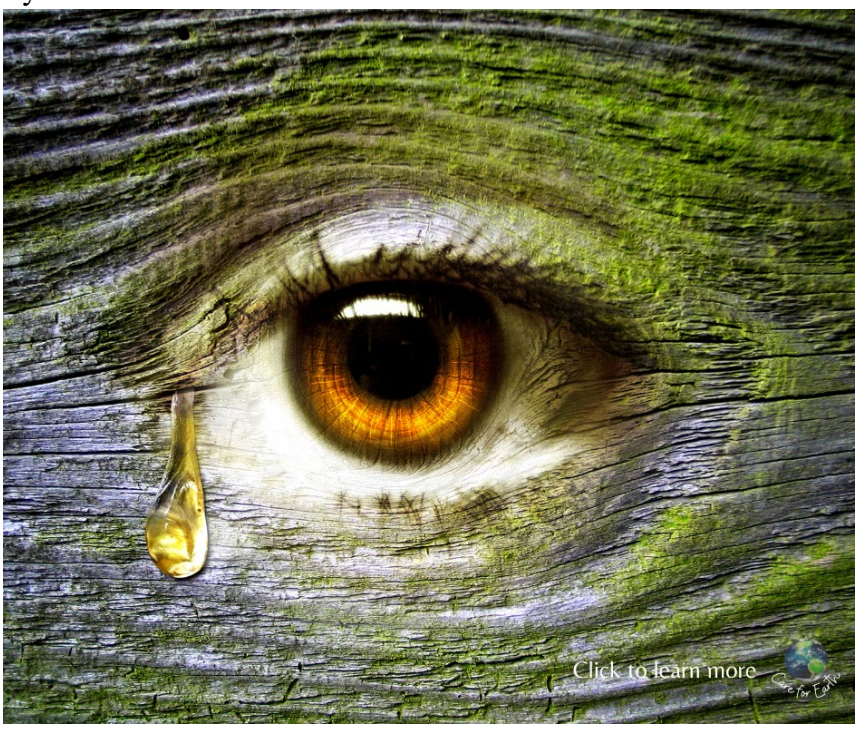
The purpose of this pretest was to test various visuals that featured an element of a tree to see which was considered the most anthropomorphic to be then used in subsequent tests. A 3 (tree eye vs. tree lungs vs. tree handshake) x 1 (single-factor) between-subjects design was employed. The appeals used the same fictional nonprofit brand, Care for Earth, as previous tests. The pretest was run on Turk Prime with total of 184 individuals, $N = 184$ was used in the analysis.

Participants were randomly assigned to view one of the three ad appeals. Then, all participants were asked, based on the information from the assigned ad, to complete two sets of anthropomorphism measures. The first set concerned the extent to which participants felt that trees experience emotions, consciousness, seem human. The second set concerned the extent to which participants felt that trees experience pain and discomfort, experience pleasure and comfort (all measures used an 11-pt. bipolar item, 0 = not at all, 10 = very much). The two sets of anthropomorphism measures were counterbalanced to avoid order effects.

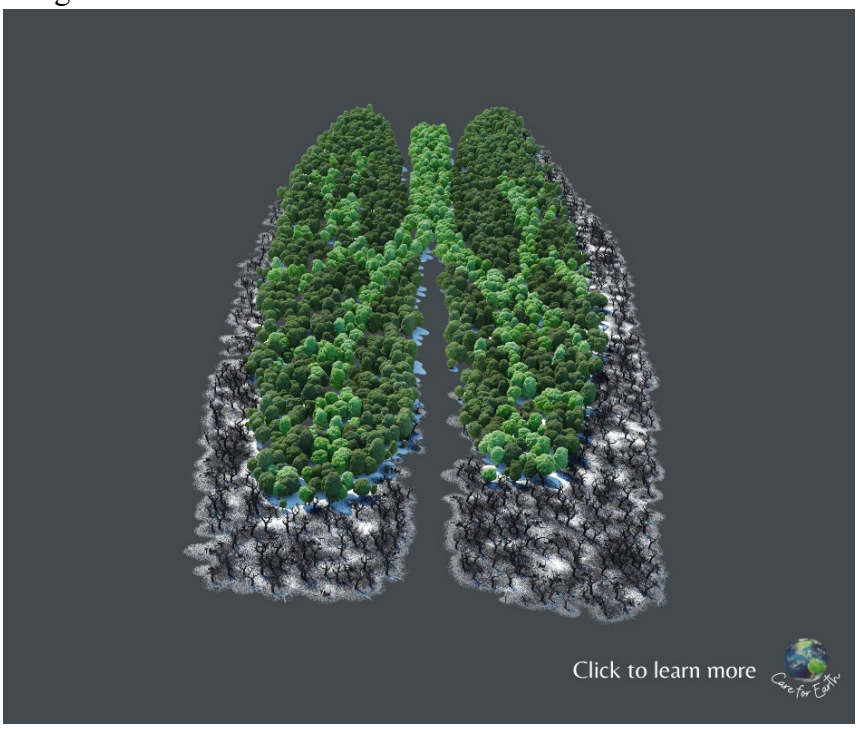
Participants were then asked to answer a set of questions focused on sustainability-related behavioral intentions: likelihood of sharing the ad with family and friends (5-pt. Likert, 1 = extremely unlikely, 5 = extremely likely), percentage of earnings willing to donate to nonprofit brand, likelihood of focusing on environmentally friendly products during the next shopping trip (5-pt. Likert, 1 = extremely unlikely, 5 = extremely likely). These measures were counterbalanced to avoid order effects. Participants were also asked to provide their attitudes towards the ad (Deshpandé and Stayman, 1994). Finally, participants were asked to provide demographic information, MTurk ID information, and were then debriefed about the true purpose of the pretest.

Appendix C.2: Pretest 3 Stimuli

Eye



Lungs



Hand

Appendix C.3: Pretest 3 Measures

Anthropomorphism (Human Scale) (loaded onto single factor; $\alpha = 0.95$)

To what extent do trees experience emotions? (0 = not at all, 10 = very much)

To what extent do trees have consciousness? (0 = not at all, 10 = very much)

To what extent do trees seem human? (0 = not at all, 10 = very much)

Anthropomorphism (Discomfort Scale) (loaded onto single factor; $\alpha = 0.84$)

To what extent do trees experience discomfort and pain? (0 = not at all, 10 = very much)

To what extent do trees experience comfort and pleasure? (0 = not at all, 10 = very much)

Donation Behaviors

How likely are you to share this ad with family and friends?

1 = extremely unlikely, 5 = extremely likely

The researchers of this study have partnered with Care for Earth to support the tree conservation by allowing participants to choose to donate a portion of their participation earnings to Care for Earth. Using the slider below, please indicate the percentage of your earnings that you wish to donate.

0% - 100%

Over time, routine purchase decisions like choosing between plastic and compostable products when grocery shopping can have large impacts on our environment. Based on the ad you just viewed, how likely are you to focus on environmentally friendly products during your next shopping trip?

1 = extremely unlikely, 5 = extremely likely

General Ad Attitude (loaded onto single factor; $\alpha = 0.91$)

Please rate the ad based on the following items (semantic differential scales; adapted from Deshpandé and Stayman, 1994):

1. Unpleasant/Pleasant
2. Bad/Good
3. Negative/Positive
4. Useless/Useful
5. Worthless/Valuable
6. Low quality/High quality

Appendix C.4: Pretest 3 Results

Descriptive Measures

Ad Type	Anthro. Human Scale	Anthro. Discomfort Scale	Ad Attitude	Ad Share Likelihood	Earnings for Nonprofit Donation	Future Shopping Plans
Eye (N = 61)	M = 5.63 SD = 3.38	M = 5.70 SD = 3.13	M = 6.39 SD = 1.84	M = 2.59 SD = 1.31	M = 17.36 SD = 30.69	M = 3.72 SD = 1.07
Lungs (N = 61)	M = 2.99 SD = 3.08	M = 3.68 SD = 3.10	M = 6.75 SD = 1.58	M = 2.62 SD = 1.36	M = 12.23 SD = 22.94	M = 3.75 SD = 1.03
Hand (N = 62)	M = 3.55 SD = 3.37	M = 4.20 SD = 3.32	M = 6.73 SD = 1.92	M = 2.58 SD = 1.44	M = 12.89 SD = 24.61	M = 3.40 SD = 1.30

One-Way ANOVAs observed a significant difference across the three stimuli conditions for the anthropomorphism-human scale, $F(2,181) = 11.03$, $p < 0.001$ and for the anthropomorphism-discomfort scale, $F(2,181) = 6.65$, $p = 0.002$. Post-hoc tests observed that participants rated the eye ad significantly higher as compared to the other two ads (lungs and hand) on the anthropomorphism-human scale and the anthropomorphism-discomfort scale. Specifically, the eye ad was rated significantly higher than the lungs ad on anthropomorphism-human measures, $M_{diff} = 2.64$, $SE = 0.59$, $p < 0.001$ and on anthropomorphism-discomfort measures, $M_{diff} = 2.08$, $SE = 0.59$, $p = 0.002$. Similarly, the eye ad was rated significantly higher than the hand ad on anthropomorphism-human measures, $M_{diff} = 2.02$, $SE = 0.58$, $p = 0.002$ and on anthropomorphism-discomfort measures, $M_{diff} = 1.50$, $SE = 0.57$, $p = 0.026$.

No other significant differences were found between the three ads for any other measures. Participants stated they were willing to donate 17% of their earnings to the nonprofit when viewing the eye ad, higher (though not significantly higher) than the 10% participants were willing to donate when viewing the other two ads, $p > 0.05$. All the ads received comparable ratings on ad attitude (all slightly above average on a 9-pt. item). All ads were rated slightly below average for likelihood of sharing the ad with family and friends and slightly above average for likelihood of future shopping trips focused on environmentally friendly products.

Appendix D.1: Pretest 4 Method

In Pretest 3, the ad featuring trees in the shape of lungs was rated with the lowest levels of anthropomorphism for both anthropomorphism scales. Additionally, this ad used a large group of trees in the shape of lungs to potentially communicate anthropomorphic qualities to the viewer. In contrast, the ads containing an eye and a tree branch in a "handshake" with a human hand use an element of a single tree: a tree's bark and branch, respectively. Both these ads elicited higher levels of anthropomorphism than the lung ad in Pretest 3.

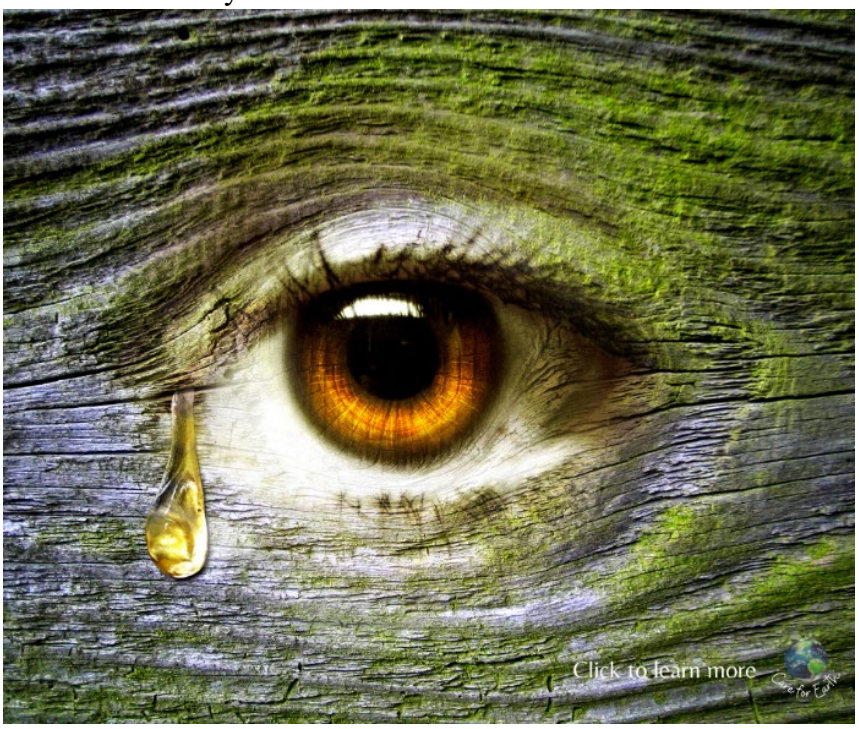
Given these results from Pretest 3, the purpose of Pretest 4 was to test the differences in baseline and pure control versions of the two nature stimuli on measures of anthropomorphism, using the two anthropomorphism scales from Pretest 3. Additionally, this pretest measured possible differences in the same behavioral intentions as studied in Pretest 3. Ultimately, the hope of this pretest was to determine which ad visual would be best to continue with in subsequent full pretesting and the A/B test. A 2 (entity: tree trunk vs. tree branch) x 2 (anthropomorphism: absent vs. present) between-subjects design as employed. The appeals used the same fictional nonprofit brand, Care for Earth, as previous tests. A total of 258 participants completed the study. The pretest was run on Turk Prime, with a total of 258 participants. After removing fourteen participants for incomplete entries, $N = 244$ used in the analysis.

Participants were randomly assigned to view one of the four ad appeals. Then, all participants were asked, based on the information from the assigned ad, to complete two sets of anthropomorphism measures as used in Pretest 3. The two sets of anthropomorphism measures were counterbalanced to avoid order effects. Participants were then asked to complete the behavioral measures from Pretest 3 and to evaluate ad attitude using the same measure from previous pretests (Deshpandé and Stayman, 1994) Finally, participants were asked for demographic information, MTurk ID information, and were then debriefed about the true purpose of the pretest.

Appendix D.2: Pretest 4 Stimuli

Tree Bark Pure Control

Tree Bark with Eye



Tree Branch Pure Control

Tree Branch in a Handshake

Appendix D.3: Pretest 4 Measures

Anthropomorphism (Human Scale) (loaded onto single factor; α = 0.94)

To what extent do trees experience emotions? (0 = not at all, 10 = very much)

To what extent do trees have consciousness? (0 = not at all, 10 = very much)

To what extent do trees seem human? (0 = not at all, 10 = very much)

Anthropomorphism (Discomfort Scale) (loaded onto single factor; α = 0.88)

To what extent do trees experience discomfort and pain? (0 = not at all, 10 = very much)

To what extent do trees experience comfort and pleasure? (0 = not at all, 10 = very much)

Donation Behaviors

How likely are you to share this ad with family and friends?

1 = extremely unlikely, 5 = extremely likely

The researchers of this study have partnered with Care for Earth to support the tree conservation by allowing participants to choose to donate a portion of their participation earnings to Care for Earth. Using the slider below, please indicate the percentage of your earnings that you wish to donate.

0% - 100%

Over time, routine purchase decisions like choosing between plastic and compostable products when grocery shopping can have large impacts on our environment. Based on the ad you just viewed, how likely are you to focus on environmentally friendly products during your next shopping trip?

1 = extremely unlikely, 5 = extremely likely

General Ad Attitude (loaded onto two factors, single index based on original scale: α = 0.91)

Please rate the ad based on the following items (semantic differential scales; adapted from Deshpandé and Stayman, 1994):

1. Unpleasant/Pleasant
2. Bad/Good
3. Negative/Positive
4. Useless/Useful
5. Worthless/Valuable
6. Low quality/High quality

Appendix D.4: Pretest 4 Results

Order of Effects

Given that there were three blocks of measures presented in a counterbalanced order, there were six possible combinations that a participant could be randomly assigned to, effect coded as:

Eff 1: anthro – beh – attitude

Eff 2: anthro – attitude – beh

Eff 3: beh – anthro – attitude

Eff 4: beh – attitude – anthro

Eff 5: attitude – beh – anthro

(Reference group: attitude – beh – anthro)

Multiple Linear Regression was performed for each DV with all five predictor variables included. There were no observed effects on anthropomorphism measures (both scales) as well as no effects on donation of Turk Prime earnings. However, two combinations, Eff 2 and Eff 3, had significant effects on ad share willingness, future shopping intentions, and ad attitude.

- Eff 2 had a significant effect on ad share willingness
- Eff 2 and Eff 3 had significant effects on future shopping intentions
- Eff 3 had a marginal effect on general ad attitude

ANOVA

Significant main effects of anthropomorphism and significant interactions were observed for both anthropomorphism scales. Post-hoc pairwise comparisons (Bonferroni adjusted) suggest that the baseline ad with the tree bark (the eye) scored significantly higher than its pure control version and that the baseline ad with tree bark scored significantly higher than the baseline ad with the tree branch (the branch handshake). No other significant comparisons were observed. Based on these findings, the baseline ad using the tree bark with an eye image and its pure control is planned be used in future pretests and tests.

Anthropomorphism Scale 1 (items: “emotions”, “consciousness”, “human”)

Condition	***M***	***SD***	***F*(1,244)**	***p***
Tree Bark	2.43	2.57	6.49	0.011
Tree Branch	3.12	3.04		
Bark Eye	5.15	3.78		
Branch Hand	3.73	3.37		

Anthropomorphism Scale 2 (items: “pain and discomfort”, “pleasure and comfort”)

Condition	***M***	***SD***	***F*(1,244)**	***p***
Tree Bark	2.93	2.50	5.06	0.025
Tree Branch	3.45	3.25		
Bark Eye	5.12	3.31		
Branch Hand	3.84	3.36		

No other significant effects were observed for any of the other DVs, $p > 0.05$, except for a main effect of tree type on ad attitude with the branch ads rated more favorably than the bark ads.

Appendix E.1: Pretest 5 Method

The results of Pretest 4 suggested that the appeal that utilized an eye on a tree elicited greater perception of humanlike qualities than the appeal that utilized a tree branch in a "handshake" with a human hand. Given this, the purpose of Pretest 5 was to create different anthropomorphic appeals based on the common constructs identified in Chapter 1, the with appeals using the eye visual for anthropomorphic conditions. Additionally, this pretest conducted manipulation checks on the various ad conditions.

This pretest employed a pure control + 5 (baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt vs. anthropomorphism plus Connectedness to Nature vs. anthropomorphism plus green trust) x single-factor between-subjects design. Connectedness to Nature (CTN), an individual difference that has received recent popularity as an explanation for anthropomorphism's influence on sustainable behavior (Tam et al. 2013) was included in this pretest. The pretest was run on Turk Prime with a total of 366 participants. After removing four participants with incomplete entries, $N = 362$ was used in the analysis.

Each appeal featured the logo of the fictional brand, Care for Earth, at the bottom right-hand side of the appeal as well as a tagline at the top right-hand corner with a statement to "stop deforestation". Beneath this statement, a call to action button was placed to click to learn more. In the pure control condition, the tagline read, "trees are better off standing". In the anthropomorphic conditions, the taglines read, "I'm better off standing". In this way, the anthropomorphic conditions used both the tagline's language (first-person instead of third-person) and the visual of the eye on the tree bark. The empathy, anticipatory guilt, CTN, and green trust conditions featured an additional message at the bottom of the appeals as a manipulation for the specific construct.

Participants were randomly assigned to one of the six appeal conditions. After considering the appeal, participants were asked to rate the ad on measures of empathy (adapted from Ketron and Naletelich, 2019), anticipatory guilt, CTN (Mayer and Frantz, 2004), and green trust (Chen, 2010) with the four measurements' order counterbalanced. Then, participants were asked to provide their general attitude towards the ad (Deshpandé and Stayman, 1994). In the final section of the pretest, participants were asked to provide demographic information, MTurk ID, and were then debriefed about the true purpose of the pretest.

Appendix E.2: Pretest 5 Stimuli

Pure Control

Baseline Anthropomorphism

Empathy

Anticipatory Guilt

Connectedness to Nature

Green Trust

Appendix E.3: Pretest 5 Measures

Victim Empathy Scale (adapted from Ketron and Naletelich, 2019) (loaded onto single factor; α = 0.90)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for trees
2. I want to save trees
3. I have sympathy for trees

Anticipatory Guilt (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Connectedness to Nature (Mayer and Frantz, 2004) (loaded onto three factors, consolidated to single index variable; α = 0.90)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1= completely agree, 9 = completely disagree)

1. I feel a sense of oneness with the natural world around me
2. I think of the natural world as a community to which I belong
3. I recognize and appreciate the intelligence of other living organisms
4. I feel disconnected from nature*
5. I imagine myself to be part of a larger cyclical process of living
6. I feel a kinship with animals and plants
7. I feel as though I belong to the Earth as equally as it belongs to me
8. I have a deep understanding of how my actions affect the natural world
9. I feel part of the web of life
10. I feel that all inhabitants of Earth, human and nonhuman, share a common "life force"
11. I feel embedded within the broader natural world
12. I consider myself to be a top member of hierarchy that exists in nature*
13. I feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees
14. My personal welfare is independent of the welfare of the natural world*

*reverse-coded

Green Trust (adapted from Chen, 2010) (loaded onto single factor; $\alpha = 0.96$)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Ad Attitude (Deshpandé and Stayman, 1994)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

Appendix E.4: Pretest 5 Results

Order Effects

No order effects observed for the counterbalanced empathy, anticipatory guilt, green trust, and connectedness to nature scales.

Descriptives

Ad Type	Empathy	Anticipatory Guilt	CTN	Green Trust	Ad Attitude
Pure Control (N = 62)	*M* = 7.20 *SD* = 2.04	*M* = 5.19 *SD* = 2.27	*M* = 6.33 *SD* = 1.55	*M* = 6.56 *SD* = 1.68	*M* = 7.19 *SD* = 1.64
Baseline Anthro. (N = 60)	*M* = 6.81 *SD* = 2.07	*M* = 5.26 *SD* = 2.43	*M* = 6.41 *SD* = 1.47	*M* = 6.60 *SD* = 1.67	*M* = 6.76 *SD* = 1.78
Empathy (N = 61)	*M* = 6.24 *SD* = 2.23	*M* = 4.43 *SD* = 2.71	*M* = 6.22 *SD* = 1.69	*M* = 6.11 *SD* = 1.78	*M* = 6.17 *SD* = 1.95
Ant. Guilt (N = 59)	*M* = 6.80 *SD* = 2.26	*M* = 5.41 *SD* = 2.70	*M* = 6.39 *SD* = 1.59	*M* = 6.62 *SD* = 1.71	*M* = 6.71 *SD* = 1.70
CTN (N = 61)	*M* = 6.61 *SD* =1.98	*M* =5.13 *SD* =2.32	*M* =6.23 *SD* =1.28	*M* = 6.43 *SD* =1.58	*M* =6.54 *SD* =1.54
Green Trust (N = 59)	*M* = 6.86 *SD* = 2.00	*M* = 5.37 *SD* = 2.23	*M* = 6.65 *SD* = 1.37	*M* = 6.82 *SD* = 1.63	*M* = 6.82 *SD* = 1.68

ANOVA

One-way ANOVA tests with planned contrasts were run for each of the manipulation check measures. Planned contrasts were a priori predictions that empathy, anticipatory guilt, green trust, and CTN appeals each would elicit significant greater measures of its respective manipulation check measure.

Empathy: The empathy ad was significantly lower on empathy measures compared to all the other ads, $t(356) = -2.11$, $p = 0.036$. However, no significant post-hoc pairwise comparisons were observed. This is opposite to what would have been predicted. Oddly, the control ad elicited the highest empathy of all the ads.

Anticipatory Guilt: The anticipatory guilt ad did score the highest on the anticipatory guilt measure, but not significantly so, $t(76.85) = 0.89$, $p = 0.374$. The green trust ad scored second highest and close to the anticipatory guilt ad.

CTN: The CTN ad scored second lowest on this measure compared to all other groups (empathy was lowest), though not significantly so, $t(356) = -0.80$, $p = 0.422$. The green trust ad elicited the greatest level of CTN of the different ads (again though not significantly).

Green Trust: The green trust ad scored the highest on the green trust measure, but not significantly so, $t(356) = 1.50$, $p = 0.136$.

Ad Attitude: A significant difference between groups was observed, $F(5,356) = 2.31$, $p = 0.044$. The control ad scored the highest on attitude; its measure was significantly higher than the empathy ad, $M_{diff} = 1.01$, $SE = 0.31$, $p = 0.018$. No other post-hoc comparisons between the ads were significant.

Appendix F.1: Pretest 6 Method

Though Pretest 4 had suggested that the eye stimuli triggered greater anthropomorphism than the handshake stimuli, when testing different anthropomorphic conditions in Pretest 5, the manipulation checks yielded null results. Additionally, in Pretest 5, the pure control ad was rated most favorably of the six ad types. Therefore, in an effort to select a visual stimulus that elicited anthropomorphism without overall lower ad evaluations the handshake visual stimulus was chosen for further testing. Pretest 6 employed a 2 (pure control vs. anthropomorphism) x 1 between-subjects design. Anthropomorphism was manipulated through language (first-person vs. third-person) in the appeal tagline and in the image in the appeal. The pretest was conducted on Turk Prime with a total of 124 participants. After removing one participant based on no valid MTurk identification, N = 123 was used in the analysis.

Participants were randomly assigned to view one of the two appeal conditions. Manipulation checks for anthropomorphism were measured using two different scales. Then, participants were presented with the same outcome measures from Pretest 4. Participants were then asked to provide demographic information, MTurk ID information, and were then debriefed on the true purpose of the study.

Appendix F.2: Pretest 6 Stimuli

Pure Control

Baseline Anthropomorphism

Appendix F.3: Pretest 6 Measures

Anthropomorphism (Human Scale) (loaded onto single factor; α = 0.95)

To what extent do trees experience emotions? (0 = not at all, 10 = very much)

To what extent do trees have consciousness? (0 = not at all, 10 = very much)

To what extent do trees seem human? (0 = not at all, 10 = very much)

Anthropomorphism (Discomfort Scale) (loaded onto single factor; α = 0.89)

To what extent do trees experience discomfort and pain? (0 = not at all, 10 = very much)

To what extent do trees experience comfort and pleasure? (0 = not at all, 10 = very much)

Donation Behaviors

How likely are you to share this ad with family and friends?

1 = extremely unlikely, 5 = extremely likely

The researchers of this study have partnered with Care for Earth to support the tree conservation by allowing participants to choose to donate a portion of their participation earnings to Care for Earth. Using the slider below, please indicate the percentage of your earnings that you wish to donate.

0% - 100%

Over time, routine purchase decisions like choosing between plastic and compostable products when grocery shopping can have large impacts on our environment. Based on the ad you just viewed, how likely are you to focus on environmentally friendly products during your next shopping trip?

1 = extremely unlikely, 5 = extremely likely

General Ad Attitude (loaded onto single factor; α = 0.91)

Please rate the ad based on the following items (semantic differential scales; adapted from Deshpandé and Stayman, 1994):

1. Unpleasant/Pleasant
2. Bad/Good
3. Negative/Positive
4. Useless/Useful
5. Worthless/Valuable
6. Low quality/High quality

Appendix F.4: Pretest 6 Results

Descriptives:

Condition	Anthro MC 1	Anthro MC 2	Ad Attitude	Ad Share	Nonprofit Donation	Sustainable Shopping
Pure Control (N = 62)	*M* = 2.97 *SD* = 3.37	*M* = 3.40 *SD* = 3.22	*M* = 6.88 *SD* = 1.36	*M* = 2.52 *SD* = 1.18	*M* = 11.53 *SD* = 19.66	*M* = 3.60 *SD* = 1.05
Baseline Anthro. (N = 61)	*M* = 4.77 *SD* = 3.10	*M* = 4.86 *SD* = 2.71	*M* = 7.12 *SD* = 1.58	*M* = 2.84 *SD* = 1.20	*M* = 22.51 *SD* = 32.68	*M* = 3.90 *SD* = 0.91

Independent Samples *t*-Tests:

Manipulation Check	*t*	df	*p*-value
Anthro MC 1	-3.09	121	0.003
Anthro MC 2	-2.73	119.22	0.007
Ad Attitude	-0.91	121	0.365

Outcome Variable	*t*	df	*p*-value
Anthro MC 1	-1.49	121	0.139
Anthro MC 2	-2.25	98.12	0.027
Ad Attitude	-1.72	121	0.087

The baseline ad was rated significantly more anthropomorphic (means were slightly below mid-point of 0-10 scale) than the control ad across two different manipulation check measures (means were slightly below and above 3 on 0-10 scale). There were no significant differences in ad attitude across the two conditions, though the baseline ad was rated slightly higher. Additionally, individuals who viewed the anthropomorphic ad pledged significantly greater percentages of their earnings to donate to the nonprofit and had marginally higher intentions to consider sustainable options during their future grocery shopping trips. There were no significant differences in willingness to share the ad, though the anthropomorphic ad scored slightly higher than the control ad.

Appendix G.1: Pretest 7 Method

Based on the successful results of Pretest 6, the purpose of Pretest 7 was to create a complete set of anthropomorphism stimuli for a pretest of all the appeals. Pretest 7 employed a pure control + 5 (baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt vs. anthropomorphism plus Connectedness to Nature vs. anthropomorphism plus green trust) x single-factor between-subjects design. This pretest was conducted on Turk Prime with a total of 372 participants. After removing six participants due to incomplete entries, $N = 366$ was used in the analysis.

Participants were randomly assigned to one of the six ad conditions. Then, participants were asked to evaluate the ad on measurements empathy (three scales counterbalanced within block), anticipatory guilt (two scales counterbalanced within block), CTN, and green trust. The four measurement blocks were counterbalanced in order. Then participants were asked to evaluate their overall attitudes towards the ad. Participants then provided demographic information, MTurk ID information, and were debriefed about the true purpose of the test.

Appendix G.2: Pretest 7 Stimuli

Pure Control

Baseline Anthropomorphism

Empathy

Anticipatory Guilt

CTN

Green Trust

Web Appendix G.3: Pretest 7 Measures

Victim Empathy Scale (adapted from Ketron and Naletelich, 2019) (loaded onto single factor; α = 0.90)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for trees
2. I want to save trees
3. I have sympathy for trees

Sympathy Subscale (adapted from Wang et al. 2017) (loaded onto single factor; α = 0.97)

To what extent do you feel the following towards trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Compassionate
2. Moved
3. Sympathetic

Warmth Subscale (adapted from Wang et al. 2017) (loaded onto single factor; α = 0.98)
To what extent do you feel the following towards trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Tender
2. Warm
3. Softhearted

Anticipatory Guilt (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Anticipatory Guilt (adapted from Ahn et al. 2014) (loaded onto single factor; α = 0.94)

Based on the ad you just viewed, how likely would you feel the following if you did nothing to help trees?

(9-pt. scale, 1 = extremely unlikely, 9 = extremely likely)

1. Guilt
2. Shame
3. Responsibility
4. Accountability

Connectedness to Nature (Mayer and Frantz, 2004) (loaded onto two factors, consolidated into single variable; $\alpha = 0.91$)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1= completely agree, 9 = completely disagree)

1. I feel a sense of oneness with the natural world around me
2. I think of the natural world as a community to which I belong
3. I recognize and appreciate the intelligence of other living organisms
4. I feel disconnected from nature*
5. I imagine myself to be part of a larger cyclical process of living
6. I feel a kinship with animals and plants
7. I feel as though I belong to the Earth as equally as it belongs to me
8. I have a deep understanding of how my actions affect the natural world
9. I feel part of the web of life
10. I feel that all inhabitants of Earth, human and nonhuman, share a common "life force"
11. I feel embedded within the broader natural world
12. I consider myself to be a top member of hierarchy that exists in nature*
13. I feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees
14. My personal welfare is independent of the welfare of the natural world*

*reverse-coded

Green Trust (adapted from Chen, 2010) (loaded onto single factor; $\alpha = 0.96$)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = completely disagree, 9 = complete agree)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Ad Attitude (Deshpandé and Stayman, 1994) (loaded onto single factor; $\alpha = 0.94$)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

Appendix G.4: Pretest 7 Results

Descriptives:

Ad Type	Victim Empathy	Sympathy Subscale	Warmth Subscale	Ant. Guilt 1	Ant. Guilt 2	CTN	Green Trust	Ad Attitude
Pure Control (N = 62)	*M* = 6.33 *SD* = 2.31	*M* = 6.11 *SD* = 2.44	*M* = 6.37 *SD* = 2.52	*M* = 4.66 *SD* = 2.54	*M* = 4.72 *SD* = 2.49	*M* = 6.32 *SD* = 1.76	*M* = 6.19 *SD* = 1.74	*M* = 6.64 *SD* = 2.01
Baseline Anthro. (N = 61)	*M* = 6.57 *SD* = 2.22	*M* = 6.36 *SD* = 2.37	*M* = 6.58 *SD* = 2.11	*M* = 4.69 *SD* = 2.65	*M* = 4.95 *SD* = 2.58	*M* = 6.38 *SD* = 1.44	*M* = 6.12 *SD* = 1.54	*M* = 6.75 *SD* = 1.81
Empathy (N = 62)	*M* = 6.51 *SD* = 2.14	*M* = 6.18 *SD* = 2.40	*M* = 6.32 *SD* = 2.48	*M* = 4.60 *SD* = 2.62	*M* = 4.84 *SD* = 2.54	*M* = 6.30 *SD* = 1.33	*M* = 6.54 *SD* = 1.51	*M* = 7.02 *SD* = 1.71
Ant. Guilt (N = 59)	*M* = 6.86 *SD* = 2.05	*M* = 6.55 *SD* = 2.18	*M* = 6.57 *SD* = 2.21	*M* = 5.56 *SD* = 2.50	*M* = 6.00 *SD* = 2.37	*M* = 6.32 *SD* = 1.46	*M* = 7.01 *SD* = 1.66	*M* = 7.08 *SD* = 1.55
CTN (N = 62)	*M* = 6.69 *SD* = 2.08	*M* = 6.10 *SD* = 2.40	*M* = 6.16 *SD* = 2.33	*M* = 4.95 *SD* = 2.37	*M* = 5.18 *SD* = 2.21	*M* = 6.27 *SD* = 1.42	*M* = 6.25 *SD* = 1.70	*M* = 6.78 *SD* = 1.84
Green Trust (N = 60)	*M* = 6.41 *SD* = 1.95	*M* = 6.16 *SD* = 2.18	*M* = 6.28 *SD* = 2.10	*M* = 4.79 *SD* = 2.09	*M* = 5.09 *SD* = 2.18	*M* = 6.35 *SD* = 1.44	*M* = 6.66 *SD* = 1.50	*M* = 7.21 *SD* = 1.40

One-Way ANOVA:
For each of the new anthropomorphism conditions (i.e., empathy, anticipatory guilt, CTN, and green trust), planned contrasts were conducted that compared the ad of interest to all the other five ads (including the pure control and baseline anthropomorphism ad). No planned contrasts were run when testing ad attitude.

Empathy: For all three empathy measurements, One-Way ANOVAs found no significant differences between groups, $p > 0.05$. The empathy ad does not elicit significantly greater empathy compared to all the other ads, Victim Empathy: $t(360) = -0.23$, $p = 0.820$; Sympathy: $t(360) = -0.24$, $p = 0.812$; Warmth: $t(360) = -0.21$, $p = 0.831$.Additionally, anticipatory guilt is consistently higher on these measures, though not significantly so.

Anticipatory Guilt: A One-Way ANOVA observed a marginal difference between groups for measures of the second anticipatory guilt scale, $F(5,360) = 2.18$, $p = 0.056$. Additionally, for both the first and second scale, the anticipatory guilt ad elicits significantly greater anticipatory guilt when compared to all the other ads, $t(81.15) = 2.32$, $p = 0.023$ and $t(360) = 3.07$, $p = 0.002$, respectively. Post hoc pairwise comparisons find that for the second scale, anticipatory guilt is right on the border of significantly higher in eliciting anticipatory guilt than the pure control ($p = 0.052$).

CTN: A One-Way ANOVA found no significant differences between groups, $t(360) = -0.30$, $p = 0.762$. The connectedness to nature ad does not elicit significantly greater CTN compared to all the other ads.

Green Trust: A One-Way ANOVA observed a significant difference between groups, $F(5,360) = 2.71$, $p = 0.020$. However, the green trust ad does not elicit significantly greater green trust

compared to all the other ads, though it has one of the higher scores of the group. Oddly, the anticipatory guilt ad elicits the greatest level of green trust of all the ads and is significantly greater than the baseline ad and marginally greater than the pure control.

Ad Attitude: A One-Way ANOVA found no significant differences between groups, $F(5,360) = 0.99$, $p = 0.425$. However, all anthropomorphism conditions scored higher on ad attitude than the pure control, with the green trust ad having the highest score.

Appendix H.1: Pretest 8 Method

Based on the unsuccessful results of Pretest 7, the purpose of Pretest 8 was to test all manipulations after minor edits to phrasing to the empathy and green trust appeals as well as minor formatting changes. Pretest 8 employed a pure control + 4 (baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt vs. anthropomorphism plus green trust) x single-factor between-subjects design. Given that past pretests found CTN difficult to manipulate and that it is traditionally considered an individual difference (Mayer and Frantz, 2004), this condition was dropped from Pretest 8. Pretest 8 was conducted on Turk Prime with a total of 308 participants. After removing three participants due to empty entries, $N = 305$ was used in the analysis.

Participants were randomly assigned to one of the six ad conditions. Then, participants were asked to evaluate the ad on measurements empathy (three scales counterbalanced within block), anticipatory guilt (two scales counterbalanced within block), and green trust. The three measurement blocks were counterbalanced in order. Then participants were asked to evaluate their overall attitudes towards the ad. Participants then provided demographic information, MTurk ID information, and were debriefed about the true purpose of the test.

Appendix H.2: Pretest 8 Stimuli

Pure Control

Baseline Anthropomorphism

Empathy

Anticipatory Guilt

Green Trust


For our friends in nature.
Stop deforestation.
Click to learn more
Founded in 1970, Care for Earth is a widely respected and committed global nature conservation organization with over three million members.
Care for Earth

Appendix H.3: Pretest 8 Measures

Victim Empathy Scale (adapted from Ketron and Naletelich, 2019) (loaded onto single factor; α = 0.91)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for trees
2. I want to save trees
3. I have sympathy for trees

Sympathy Subscale (adapted from Wang et al. 2017) (loaded onto single factor; α = 0.95)

To what extent do you feel the following towards trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Compassionate
2. Moved
3. Sympathetic

Warmth Subscale (adapted from Wang et al. 2017) (loaded onto single factor; α = 0.96)
To what extent do you feel the following towards trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Tender
2. Warm
3. Softhearted

Anticipatory Guilt (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Anticipatory Guilt (adapted from Ahn et al. 2014) (loaded onto single factor; α = 0.94)

Based on the ad you just viewed, how likely would you feel the following if you did nothing to help trees?
(9-pt. scale, 1 = extremely unlikely, 9 = extremely likely)

1. Guilt
2. Shame
3. Responsibility
4. Accountability

Green Trust (adapted from Chen, 2010) (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Ad Attitude (Deshpandé and Stayman, 1994) (loaded onto single factor; α = 0.94)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

Appendix H.4: Pretest 8 Results

Ad Type	Victim Empathy	Sympathy Subscale	Warmth Subscale	Ant. Guilt 1	Ant. Guilt 2	Green Trust	Ad Attitude
Pure Control (N = 60)	*M* = 6.28 *SD* = 2.26	*M* = 5.99 *SD* = 2.27	*M* = 6.04 *SD* = 2.41	*M* = 4.33 *SD* = 2.73	*M* = 4.45 *SD* = 2.52	*M* = 6.28 *SD* = 1.57	*M* = 6.42 *SD* = 1.90
Baseline Anthro. (N = 61)	*M* = 6.45 *SD* = 2.15	*M* = 6.11 *SD* = 2.24	*M* = 6.09 *SD* = 2.35	*M* = 4.06 *SD* = 2.77	*M* = 4.25 *SD* = 2.71	*M* = 6.17 *SD* = 1.54	*M* = 6.87 *SD* = 1.49
Empathy (N = 61)	*M* = 6.70 *SD* = 2.20	*M* = 6.25 *SD* = 2.61	*M* = 6.55 *SD* = 2.47	*M* = 4.58 *SD* = 2.54	*M* = 4.83 *SD* = 2.50	*M* = 6.48 *SD* = 1.95	*M* = 6.72 *SD* = 2.01
Ant. Guilt (N = 61)	*M* = 6.65 *SD* = 2.01	*M* = 6.65 *SD* = 2.10	*M* = 6.50 *SD* = 2.12	*M* = 4.85 *SD* = 2.33	*M* = 4.86 *SD* = 2.38	*M* = 6.72 *SD* = 1.50	*M* = 6.99 *SD* = 1.72
Green Trust (N = 62)	*M* = 6.55 *SD* = 1.87	*M* = 6.37 *SD* = 1.92	*M* = 6.53 *SD* = 1.72	*M* = 4.32 *SD* = 2.44	*M* = 4.73 *SD* = 2.20	*M* = 6.78 *SD* = 1.41	*M* = 7.20 *SD* = 1.46

Contrast	Victim Empathy	Sympathy Subscale	Warmth Subscale	Ant. Guilt 1	Ant. Guilt 2	Green Trust
1	$t(300) = 0.74$, $p = 0.463$	$t(300) = -0.09$, $p = 0.929$	$t(84.60) = 0.74$, $p = 0.463$	$t(300) = 1.42$, $p = 0.156$	$t(300) = 0.83$, $p = 0.407$	$t(107.24) = 1.75$, $p = 0.083$
2	$t(300) = 1.12$, $p = 0.265$	$t(300) = 0.65$, $p = 0.519$	$t(119.00) = 1.14$, $p = 0.255$	$t(300) = 1.10$, $p = 0.272$	$t(300) = 0.91$, $p = 0.365$	$t(117.82) = 1.83$, $p = 0.070$
3	$t(300) = 0.66$, $p = 0.510$	$t(300) = 0.34$, $p = 0.736$	$t(119.70) = 1.04$, $p = 0.300$	$t(300) = 1.69$, $p = 0.092$	$t(300) = 1.36$, $p = 0.175$	$t(119.73) = 2.29$, $p = 0.024$

ANOVA:
Three different planned contrasts were run (always predicting that the ad of interest would have significantly higher values) each for the empathy, anticipatory guilt, and green trust ads on their manipulation check measures. The contrasts were:
1. Comparing the ad of interest to all other ads
2. Comparing the ad of interest to the pure control ad
3. Comparing the ad of interest to the baseline anthropomorphism ad

Empathy: No significant differences from the contrasts. However, the values for empathy were greater in this round than in past pretests (about a 0.2 increase for each measure). The empathy ad actually had the highest value for our first empathy scale ("I feel sorry for trees", "I want to save trees", "I have sympathy for trees"). Anticipatory guilt had higher values for the sympathy sub-dimension scale. For the warmth sub-dimension scale, the empathy, anticipatory guilt and green trust ads all hovered around the same values.

Anticipatory Guilt: The anticipatory guilt ad elicited the greatest level of guilt across the ads for both guilt measures. Of the planned contrasts, the anticipatory guilt ad was marginally greater than the baseline anthropomorphism ad for the first guilt measure. No other contrasts were significantly or marginally different for either manipulation check measure. For the second measure, the empathy ad was just a few hundredths less than the anticipatory guilt ad and the

green trust ad was close in value as well. Interestingly, the pure control ad elicited greater anticipatory guilt than the baseline ad, but this was not a significant difference. Overall, it seems like the ad fared better with the first measure rather than the second.

Green Trust: The green trust ad had the highest value of all the ads and was marginally greater than all the other ads (contrast 1), marginally greater than the pure control ad (contrast 2), and significantly greater than the baseline anthropomorphism ad (contrast 3). Again, the pure control ad elicited greater green trust than the baseline ad, but this was not a significant difference.

Ad Attitude: No significant differences between groups on this measure, $F(4,300) = 1.77$, $p = 0.135$[15]. The (ascending) order of values are: pure control, empathy, baseline, anticipatory guilt, and green trust. No planned contrasts were run on this measure.

Empathy measures for the empathy ad increased compared to previous pretests and the anticipatory guilt ad had consistent measures for anticipatory guilt. However, it is not simple to disentangle empathy and anticipatory guilt from these two ads, both ads are showing similar values for the manipulation checks. Further editing to messaging is required in future pretests.

[15] Failed test of homogeneity of variance; Levene Statistic (4,300) = 3.81, $p = 0.005$.

Appendix I.1: Pretest 9 Method

A holistic view of the results from past pretest for the empathy condition suggested that further editing to the appeal's phrasing was required for a successful manipulation. Therefore, the following three pretests, Pretests 9 through 11, (Appendices I-K) focused on editing and pretesting the empathy ad condition against the baseline anthropomorphism condition. Because it was important to ensure that the empathy ad was only eliciting empathy and not other measurements (i.e., anticipatory guilt and green trust), these presents measured differences between the two ad conditions on measures of empathy, anticipatory guilt, and green trust. The broad methodology for these pretests was the same. The following paragraph describes the specific details of Pretest 9.

Pretest 9 employed a 2 (baseline anthropomorphism vs. anthropomorphism plus empathy) x single-factor between-subjects design. Pretest 9 was conducted on Turk Prime with a total of 310 participants. After removing four participants due to incomplete entries, $N = 306$ was used in the analysis. Changes to the ad were focused within the message at the bottom of the ad, with greater emphasis on asking the view to engage in perspective-taking (an element of empathy) and that this can extent to empathy with nature (Schultz, 2000).

Participants were randomly assigned to one of the two ad conditions. Then, participants were asked to evaluate the ad on measurements empathy, anticipatory guilt, and green trust. The three measurement blocks were counterbalanced in order. Participants then provided demographic information, MTurk ID information, and were debriefed about the true purpose of the test.

Appendix I.2: Pretest 9 Stimuli

Baseline Anthropomorphism

Empathy

Appendix I.3: Pretest 9 Measures

Victim Empathy Scale (adapted from Ketron and Naletelich, 2019) (loaded onto single factor; α = 0.91)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for trees
2. I want to save trees
3. I have sympathy for trees

Anticipatory Guilt (loaded onto single factor; α = 0.95)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Green Trust (adapted from Chen, 2010) (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Appendix I.4: Pretest 9 Results

Order Effects testing found marginal effect ($p = 0.079$) of empathy scale appearing first on anticipatory guilt measure.

Descriptives:

Ad Type	Victim Empathy	Ant. Guilt	Green Trust
Baseline Anthro. (N = 152)	*M* = 6.41 *SD* = 2.09	*M* = 4.49 *SD* = 2.43	*M* = 6.15 *SD* = 1.65
Empathy (N = 154)	*M* = 6.34 *SD* = 2.32	*M* = 4.61 *SD* = 2.43	*M* = 6.30 *SD* = 1.74

Independent Samples *t*-Test :

No significant differences between conditions on any measures.

DV	*t*(304)	*p*-value
Empathy	0.25	0.801
A. Guilt	-0.41	0.680
Green Trust	-0.76	0.447

Appendix J.1: Pretest 10 Method

The purpose of Pretest 10 was to further finetune the empathy ad condition and pretest strength of the ad's manipulation. The method for Pretest 10 was identical to Pretest 9. Pretest 10 employed a 2 (baseline anthropomorphism vs. anthropomorphism plus empathy) x single-factor between-subjects design. Pretest 9 was conducted on Turk Prime with a total of $N = 301$ used in the analysis (no participants were removed from analysis). Changes to the ad were focused on the tagline at the top of the ad. Previous versions of stimuli used the tagline "Embrace our friends in nature." However, it is possible that this tagline contains elements of empathy itself elicited empathy across conditions. Therefore, the tagline was changed to "Hand in hand with nature." as an attempt to continue provide anthropomorphic cues to the viewer without elicited empathy.

Appendix J.2: Pretest 10 Stimuli

Baseline Anthropomorphism

Empathy

Appendix J.3: Pretest 10 Measures

Victim Empathy Scale (adapted from Ketron and Naletelich, 2019) (loaded onto single factor; α = 0.91)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for trees
2. I want to save trees
3. I have sympathy for trees

Anticipatory Guilt (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Green Trust (adapted from Chen, 2010) (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Appendix J.4: Pretest 10 Results

Descriptives:

Ad Type	Victim Empathy	Ant. Guilt	Green Trust
Baseline Anthro. (N = 151)	*M* = 6.58 *SD* = 2.00	*M* = 4.48 *SD* = 2.42	*M* = 6.26 *SD* = 1.64
Empathy (N = 150)	*M* = 6.63 *SD* = 2.36	*M* = 4.71 *SD* = 2.54	*M* = 6.39 *SD* = 1.62

Independent Samples *t*-Test :

No significant differences between conditions on any measures.

DV	*t*(299)[16]	*p*-value
Empathy	-0.22	0.828
A. Guilt	-0.79	0.431
Green Trust	-0.66	0.509

[16] Empathy measure failed Levene's test for equality of variances; df = 290.66.

Appendix K.1: Pretest 11 Method

The purpose of Pretest 11 was to further finetune the empathy ad condition and pretest strength of the ad's manipulation. The method for Pretest 11 was identical to Pretests 9 and 10. Pretest 11 employed a 2 (baseline anthropomorphism vs. anthropomorphism plus empathy) x single-factor between-subjects design. Pretest 11 was conducted on Turk Prime a total of 306 participants. After removing one participant based on an incomplete entry, $N = 305$ was used in the analysis. In this pretest rather than changing the stimuli, the empathy measure's items were changed. The thought to change the empathy measurements was based on past pretests' measurements focusing on the empathic concern that the ad elicits rather than focusing on perspective taking. Therefore, the same stimuli from Pretest 10 were used in Pretest 11 with new manipulation check measurements for empathy. Participants were also asked to complete the same measurements for anticipatory guilt and green trust. Finally, participants also provided demographic information and were debriefed at the end of the study.

Appendix K.2: Stimuli

Baseline Anthropomorphism

Empathy

Appendix K.3: Pretest 11 Measures

Empathy Scale (loaded onto single factor; $\alpha = 0.91$)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I can imagine a tree's point of view
2. I can understand a tree's pain
3. I have empathy for trees

Anticipatory Guilt (loaded onto single factor; $\alpha = 0.96$)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Green Trust (adapted from Chen, 2010) (loaded onto single factor; $\alpha = 0.96$)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Appendix K.4: Pretest 11 Results

Descriptives:

Ad Type	Victim Empathy	Ant. Guilt	Green Trust
Baseline Anthro. (N = 152)	*M* = 5.16 *SD* = 2.37	*M* = 4.50 *SD* = 2.55	*M* = 6.20 *SD* = 1.57
Empathy (N = 153)	*M* = 5.05 *SD* = 2.60	*M* = 4.07 *SD* = 2.39	*M* = 6.09 *SD* = 1.75

Independent Samples *t*-Test :

No significant differences between conditions on any measures.

DV	*t*(303)	*p*-value
Empathy	0.36	0.723
A. Guilt	1.52	0.130
Green Trust	0.09	0.932

Appendix L.1: Pretest 12 Method

Given the unsuccessful manipulation of empathy observed in the last three pretests, the purpose of Pretest 12 was to consider changes to the basis of the ad stimuli and confirm that the tagline "Hand in hand with nature." when paired with the visual stimuli of a tree branch "shaking hands" with a human hand was indeed a successful manipulation of anthropomorphism. Additionally, Pretest 12 tested possible significant differences in ad attitude between conditions. Therefore, Pretest 12 employed a 2 (pure control vs. baseline anthropomorphism) x single-factor between-subjects design. The pretest was conducted on Turk Prime with a total of 126 participants. After removing three participants due to incomplete entries, $N = 123$ was used in the analysis.

Participants were randomly assigned to view one of the two appeal conditions. Then, participants were presented with two scales to measure anthropomorphism (items' orders counterbalanced within scales, scales counterbalanced). Participants were then asked to provide their general attitudes about the ad. Participants were then asked to provide demographic information, MTurk ID information, and were then debriefed on the true purpose of the study.

Appendix L.2: Pretest 12 Stimuli

Pure Control

Baseline Anthropomorphism

Appendix L.3: Pretest 12 Measures

Anthropomorphism (Human Scale) (loaded onto single factor; α = 0.93)

To what extent do trees experience emotions? (0 = not at all, 10 = very much)

To what extent do trees have consciousness? (0 = not at all, 10 = very much)

To what extent do trees seem human? (0 = not at all, 10 = very much)

Anthropomorphism (Discomfort Scale) (loaded onto single factor; α = 0.89)

To what extent do trees experience discomfort and pain? (0 = not at all, 10 = very much)

To what extent do trees experience comfort and pleasure? (0 = not at all, 10 = very much)

Ad Attitude (Deshpandé and Stayman, 1994) (loaded onto single factor; α = 0.92)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

Appendix L.4: Pretest 12 Results

Descriptives:

Ad Type	Anthro MC 1	Anthro MC 2	Ad Attitude
Pure Control (N = 60)	*M* = 2.74 *SD* = 2.84	*M* = 2.85 *SD* = 2.81	*M* = 6.40 *SD* = 1.58
Baseline Anthro. (N = 63)	*M* = 4.19 *SD* = 3.05	*M* = 4.31 *SD* = 2.99	*M* = 7.24 *SD* = 1.45

Independent Samples *t*-Test :

The baseline anthropomorphism condition was rated significantly higher than the pure control condition for all anthropomorphism measures as well as the ad attitude measure.

DV	***t*(121)**	***p*-value**
Anthro MC 1	-2.72	0.008
Anthro MC 2	-2.80	0.006
Ad Attitude	-3.06	0.003

Appendix M.1: Pretest 13 Method

Given the successful manipulation check of anthropomorphism observed in Pretest 12, the purpose of Pretest 13 was to run a full pretest testing all conditions and any significant differences across conditions regarding ad attitude. Pretest 13 employed a pure control + 5 (baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt vs. anthropomorphism plus CTN vs. anthropomorphism plus green trust) x single-factor between-subjects design. Though CTN was difficult to manipulate in past pretests, in a last attempt to test the condition, a CTN ad condition was included in Pretest 13. Pretest 13 was conducted on Turk Prime with a total of 367 participants. After removing four participants due to incomplete entries and one participant due to self-reported incorrect data entry , $N = 362$ was used in the analysis.

Participants were randomly assigned to one of the six ad conditions. Then, participants were asked to evaluate the ad on measurements empathy (one scale measuring empathic concern and one scale measuring empathic accuracy; scales counterbalanced within block), anticipatory guilt, CTN, and green trust (order counterbalanced). Then participants were asked to evaluate their overall attitudes towards the ad. Participants then provided demographic information, MTurk ID information, and were debriefed about the true purpose of the test.

Appendix M.2: Pretest 13 Stimuli

Pure Control

Baseline Anthropomorphism

Empathy

Anticipatory Guilt

CTN

Green Trust

Appendix M.3: Pretest 13 Measures

Empathic Concern[17] (adapted from Ketron and Naletelich, 2019) (loaded onto single factor; α = 0.91)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I feel sorry for trees
2. I want to save trees
3. I have sympathy for trees

Empathic Accuracy (loaded onto single factor; α = 0.92)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I can imagine a tree's point of view
2. I can understand a tree's pain
3. I have empathy for trees

Anticipatory Guilt (loaded onto single factor; α = 0.96)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Connectedness to Nature (Mayer and Frantz, 2004) (loaded onto three factors, consolidated to single variable; α = 0.87)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1= completely agree, 9 = completely disagree)

1. I feel a sense of oneness with the natural world around me
2. I think of the natural world as a community to which I belong
3. I recognize and appreciate the intelligence of other living organisms
4. I feel disconnected from nature*
5. I imagine myself to be part of a larger cyclical process of living

[17] Previous referred to as Victim Empathy Scale

6. I feel a kinship with animals and plants
7. I feel as though I belong to the Earth as equally as it belongs to me
8. I have a deep understanding of how my actions affect the natural world
9. I feel part of the web of life
10. I feel that all inhabitants of Earth, human and nonhuman, share a common "life force"
11. I feel embedded within the broader natural world
12. I consider myself to be a top member of hierarchy that exists in nature*
13. I feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees
14. My personal welfare is independent of the welfare of the natural world*

*reverse-coded

Green Trust (adapted from Chen, 2010) (loaded onto single factor; $\alpha = 0.96$)

Based on the ad you just viewed, to what extent do you agree with the following statements about Care for Earth?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. Care for Earth's wildlife reputation is generally reliable
2. Care for Earth's wildlife performance is generally dependable
3. Care for Earth's wildlife claims are generally trustworthy
4. Care for Earth's wildlife concern meets my expectations
5. Care for Earth keeps promises and commitments for wildlife protection

Ad Attitude (Deshpandé and Stayman, 1994) (loaded onto single factor; $\alpha = 0.94$)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

Appendix M.4: Pretest 13 Results

Descriptives:

Ad Type	Empathic Concern	Empathic Accuracy	Ant. Guilt	CTN	Green Trust	Ad Attitude
Pure Control (N = 62)	*M* = 6.33 *SD* = 2.50	*M* = 5.04 *SD* = 2.69	*M* = 4.53 *SD* = 2.77	*M* = 5.89 *SD* = 1.54	*M* = 6.09 *SD* = 2.00	*M* = 6.21 *SD* = 2.12
Baseline Anthro. (N = 59)	*M* = 6.88 *SD* = 2.32	*M* = 5.45 *SD* = 2.50	*M* = 5.27 *SD* = 2.63	*M* = 6.52 *SD* = 1.27	*M* = 6.86 *SD* = 1.66	*M* = 7.52 *SD* = 1.42
Empathy (N = 60)	*M* = 6.81 *SD* = 2.17	*M* = 6.08 *SD* = 2.30	*M* = 4.67 *SD* = 2.40	*M* = 6.32 *SD* = 1.27	*M* = 6.27 *SD* = 1.73	*M* = 6.76 *SD* = 1.93
Ant. Guilt (N = 60)	*M* = 7.15 *SD* = 1.75	*M* = 5.57 *SD* = 2.46	*M* = 5.47 *SD* = 2.49	*M* = 6.57 *SD* = 1.35	*M* = 6.67 *SD* = 1.46	*M* = 7.14 *SD* = 1.50
CTN (N = 61)	*M* = 6.07 *SD* = 2.05	*M* = 4.77 *SD* = 2.30	*M* = 4.55 *SD* = 2.67	*M* = 6.11 *SD* = 1.28	*M* = 6.07 *SD* = 1.69	*M* = 7.01 *SD* = 1.72
Green Trust (N = 60)	*M* = 6.36 *SD* = 1.93	*M* = 5.22 *SD* = 2.48	*M* = 4.72 *SD* = 2.54	*M* = 6.10 *SD* = 1.43	*M* = 6.65 *SD* = 1.32	*M* = 7.01 *SD* = 1.50

Overview of Results:

Differences between Conditions

One-Way ANOVAs suggest:

- Significant differences between conditions for outcomes variables of CTN, $F(5,361) = 2.30$, $p = 0.044$; green trust, $F(5,361) = 2.47$, $p = 0.032$; and ad attitude, $F(5,361) = 4.39$, $p = 0.001$
- Marginal differences between conditions for outcomes variables of empathic concern, $F(5,361) = 2.21$, $p = 0.053$ and empathic accuracy, $F(5,361) = 2.08$, $p = 0.068$
- No significant differences between groups for the outcome variable anticipatory guilt, $F(5,361) = 1.44$, $p = 0.210$

Planned Contrasts

1. Pure Control should be (significantly) lower in measures of empathy, anticipatory guilt, green trust, and connectedness to nature than all other conditions

- Pure control condition is significantly different than all other conditions for CTN, $t(356) = 2.28$, $p = 0.023$; Tukey post hoc finds pure control marginally different than anticipatory guilt condition

- Pure control condition is significantly different than all other conditions for ad attitude, $t(356) = 3.14$, $p = 0.002$; Tukey post hoc finds pure control significantly different than baseline anthropomorphism condition and significantly different than anticipatory guilt condition

- Pure control condition is marginally different than all other conditions for green trust, $t(356) = 1.79$, $p = 0.075$; Tukey post hoc finds no significant or marginal differences between conditions

Takeaway: The pure control conditions is consistently the lowest value across DVs, except for some where the CTN condition is also comparably low. Overall, the data supports this prediction.

2. Empathy condition should be significantly higher in measures of empathy than all other conditions

- Empathy condition is significantly different than all other conditions for empathic accuracy, $t(356) = 2.50$, $p = 0.013$; Tukey post hoc finds a significant difference between empathy condition and CTN condition

Takeaway: The empathy condition has the highest value (M = 6.08, SD = 2.30) of all the conditions. Given that this value is significantly different than all the other conditions' values, the manipulation can be considered successful. It is interesting to note that the differences are for measures of empathic accuracy and not empathic concern. Past pretests have observed movement in the latter for conditions of anticipatory guilt. This may be a way of teasing the two conditions and types of empathy apart.

3. Anticipatory Guilt condition should be significantly higher in measures of anticipatory guilt than all other conditions

- Anticipatory guilt condition is significantly different than other conditions for empathic concern, $t(356) = 2.19$, $p = 0.029$; Tukey post hoc finds a marginal difference between the anticipatory guilt condition and the CTN condition

- Anticipatory guilt condition is significantly different than other conditions for anticipatory guilt, $t(356) = 1.97$, $p = 0.050$; Tukey post hoc finds no significant or marginal differences between conditions

- Anticipatory guilt condition is significantly different than other conditions for CTN, $t(356) = 1.99$, $p = 0.048$; Tukey post hoc finds a marginal difference between anticipatory guilt condition and pure control condition

Takeaway: Most importantly, the anticipatory guilt condition had the highest value of the anticipatory guilt measure (M = 5.47, SD = 2.49). Given that this value is significantly different than all the other conditions, the manipulation can be considered successful.

Similar to results from past pretests, the anticipatory guilt condition scores high on empathic concern (highest of all conditions; M = 7.15, SD = 1.75). It also scored the highest on measures of CTN. It is interesting that these values are higher on the scale than the values for anticipatory guilt. It is possible that this is a way for individuals to attenuate their guilt, by selecting higher values for these measures that pertain to sympathy, compassion, and oneness with nature.

4. Connectedness to Nature (CTN) condition should be significantly higher in measures of CTN than all other conditions

- CTN condition is significantly different than other conditions for empathic concern, $t(356) = -2.11$, $p = 0.035$; Tukey post hoc finds a marginal difference between CTN condition and anticipatory guilt condition

- CTN condition is significantly different than other conditions for empathic accuracy, $t(356) = -2.03$, $p = 0.043$; Tukey post hoc finds a significant difference between CTN condition and empathy condition

- CTN condition is marginally different than other conditions for green trust, $t(356) = -1.82$, $p = 0.072$; Tukey post hoc finds a marginal difference between CTN condition and baseline anthropomorphism condition

Takeaway: Given that the CTN condition did not have the highest score of CTN (anticipatory guilt condition had the highest score) and that this construct is traditionally an individual difference (Mayer and Frantz, 2004), this pretest suggests that the manipulation was not successful.

5. Green Trust condition should be significantly higher in measures of green trust than all other conditions

- There were no observed differences between the green trust condition and all other conditions for any of the outcome variables.

Takeaway: Past pretests have found this manipulation successful However, the stimulus had used a different tagline with the same text and image currently used.

6. The Baseline Anthropomorphism condition should be significantly lower in measures of empathy, anticipatory guilt, green trust, and CTN than all other anthropomorphism conditions.

- Baseline anthropomorphism condition is significantly different than other conditions for ad attitude, $t(356) = -2.97$, $p = 0.004$; Tukey post hoc finds a marginal difference between baseline condition and CTN condition

- Baseline anthropomorphism condition is marginally different than other conditions for green trust, $t(356) = -1.87$, $p = 0.063$; Tukey post hoc finds a significant difference between baseline condition and pure control condition and a marginal difference between baseline condition and empathy condition

Takeaway: It is odd that the baseline condition scored the highest on green trust measures, though the difference between the baseline and other conditions is marginal. This does not align with what was expected from testing the planned contrasts. Perhaps because there is no other major text to read, viewers have the opportunity to focus on the brand logo and name more.

For an explanation on the results regarding ad attitude, please see the following section.

No particular predictions across conditions for differences on ad attitude

Though no particular predictions were made using planned contrasts, there were significant differences between conditions on measures of ad attitude. The baseline anthropomorphism ad scored the highest on ad attitude ($M = 7.62$, $SD = 1.42$) and the pure control ad scored the lowest ($M = 6.21$, $SD = 2.12$).

Takeaway: These results should not be surprising, as one might predict that anthropomorphic images are more appealing and would score higher than the pure control. Given that the baseline condition did not elicit any specific additional elements that could be potentially undesired to the viewed (e.g., feelings of anticipatory guilt), it is reasonable that the baseline ad would score higher than the other anthropomorphic conditions.

Final Conclusion: Given the results from Pretest 13 and unsuccessful manipulations of CTN and green trust, these two conditions were dropped from future testing. These two constructs consist of cognitive components which may be harder to influence from appeals. There are a multitude of dimensions that can drive anthropomorphism's influence on sustainability. Affective dimensions may be easier to shift than cognitive dimensions. Especially in advertising, it is easier to shift emotions than cognitive elements. Therefore, for future pretesting and future studies, the final set of stimuli will focus on the pure control condition, baseline anthropomorphism, and affective dimensions of anthropomorphism.

Appendix N.1: Pretest 14 Method

Based on the findings from Pretest 13 and the null effects of the CTN and green trust conditions, the purpose of Pretest 14 was to attempt a final robust pretest of the four remaining ad conditions: pure control, baseline anthropomorphism, empathy, and anticipatory guilt. Therefore, Pretest 14 employed a pure control + 3 (baseline anthropomorphism vs. anthropomorphism plus empathy vs. anthropomorphism plus anticipatory guilt) x single-factor between-subjects design. Pretest 13 was conducted on Turk Prime with a total of 816 participants. After removing three participants due to incomplete entries, $N = 813$ was used in the analysis.

Participants were randomly assigned to one of the four ad conditions. Then, participants were asked to evaluate the ad on measurements empathy (empathic accuracy) and anticipatory guilt (order counterbalanced). Then participants were asked to evaluate their overall attitudes towards the ad. Participants then provided demographic information, MTurk ID information, and were debriefed about the true purpose of the test.

Appendix N.2: Pretest 14 Stimuli

Pure Control

Baseline Anthropomorphism

Empathy

Anticipatory Guilt

Appendix N.3: Pretest 14 Measures

Empathic Accuracy (loaded onto single factor; $\alpha = 0.91$)

Based on the ad you just viewed, to what extent do you agree with the following statements?
(9-pt. scale, 1 = completely disagree, 9 = completely agree)

1. I can imagine a tree's point of view
2. I can understand a tree's pain
3. I have empathy for trees

Anticipatory Guilt (loaded onto single factor; $\alpha = 0.96$)

Based on the ad you just viewed, to what extent do you think you would feel the following if you did nothing to help trees?
(9-pt. scale, 1 = not at all, 9 = very much)

1. Guilt-ridden
2. Culpable
3. Remorseful

Ad Attitude (Deshpandé and Stayman, 1994) (loaded onto single factor; $\alpha = 0.92$)

Please rate the ad based on the following items:
(9-pt. bipolar scales)

1. Unpleasant vs. Pleasant
2. Bad vs. Good
3. Negative vs. Positive
4. Useless vs. Useful
5. Worthless vs. Valuable
6. Low quality vs. High quality

Appendix N.4: Pretest 14 Results

Descriptives:

Ad Type	Empathic Accuracy	Ant. Guilt	Ad Attitude
Pure Control (N = 203)	*M* = 4.69 *SD* = 2.48	*M* = 4.11 *SD* = 2.56	*M* = 6.45 *SD* = 1.87
Baseline Anthro. (N = 202)	*M* = 5.02 *SD* = 2.45	*M* = 4.40 *SD* = 2.46	*M* = 6.58 *SD* = 1.75
Empathy (N = 205)	*M* = 5.46 *SD* = 2.37	*M* = 4.72 *SD* = 2.43	*M* = 6.31 *SD* = 1.80
Ant. Guilt (N = 203)	*M* = 5.04 *SD* = 2.33	*M* = 4.86 *SD* = 2.59	*M* = 6.25 *SD* = 1.89

One-Way ANOVA:

Variable	*F*(3,309)	*p*-value
Empathy Manipulation Check	3.55	0.014
A. Guilt Manipulation Check	3.59	0.013
Ad Attitude	1.36	0.255

Planned Contrasts:

Contrast #	Pure Control	Baseline Anthropomorphism	Empathy	Anticipatory Guilt
1	-1	+1	0	0
2	-1	0	+1	0
3	0	-1	+1	0
4	-1	0	0	+1
5	0	-1	0	+1
6	0	0	+1	-1

Contrast	Empathy	A. Guilt	Ad Attitude
1	*t*(809) = 1.40 *p* = 0.162	*t*(809) = 1.16 *p* = 0.246	*t*(809) = 0.74 *p* = 0.460
2	*t*(809) = 3.25 *p* = 0.001	*t*(809) = 2.43 *p* = 0.015	*t*(809) = -0.79 *p* = 0.428
3	*t*(809) = 1.84 *p* = 0.066	*t*(809) = 1.26 *p* = 0.207	*t*(809) = -1.53 *p* = 0.126
4	*t*(809) = 1.47 *p* = 0.142	*t*(809) = 3.00 *p* = 0.003	*t*(809) = -1.09 *p* = 0.276
5	*t*(809) = 0.07 *p* = 0.946	*t*(809) = 1.84 *p* = 0.067	*t*(809) = -1.83 *p* = 0.068
6	*t*(809) = 1.78 *p* = 0.076	*t*(809) = -0.58 *p* = 0.564	*t*(809) = 0.30 *p* = 0.764

Overview of Results:

Contrast 1: Differences between the pure control and baseline anthropomorphism ads

No significant differences between the pure control and baseline anthropomorphism ads for any outcome measure.

Contrast 2: Differences between the anthropomorphism plus empathy ad and the pure control ad

The anthropomorphism plus empathy ad (M = 5.46, SD = 2.37) elicited significantly greater empathic accuracy than the pure control ad (M = 4.69, SD = 2.48), $t(809) = 3.25$, $p = 0.001$. The anthropomorphism plus empathy ad (M = 4.72, SD = 2.43) also elicited significantly greater anticipatory guilt than the pure control ad (M = 4.11, SD = 2.56), $t(809) = 2.43$, $p = 0.015$. No significant differences were observed for ad attitude between the two ads ($p > 0.05$).

Contrast 3: Differences between the anthropomorphism plus empathy ad and the baseline anthropomorphism ad

The anthropomorphism plus empathy ad (M = 5.46, SD = 2.37) elicited marginally greater empathic accuracy than the baseline anthropomorphism ad (M = 5.02, SD = 2.45), $t(809) = 1.84$, $p = 0.066$. Differences between these two ads for anticipatory guilt and ad attitude were not statistically significant ($p > 0.05$).

Contrast 4: Differences between the anthropomorphism plus anticipatory guilt ad and the pure control ad

The anthropomorphism plus anticipatory guilt ad (M = 4.85, SD = 2.59) elicited significantly greater anticipatory guilt than the pure control ad (M = 4.11, SD = 2.56), $t(809) = 3.00$, $p = 0.003$. Differences between these two ads for empathic accuracy and ad attitude were not statistically significant ($p > 0.05$).

Contrast 5: Differences between the anthropomorphism plus anticipatory guilt ad and the baseline anthropomorphism ad

The anthropomorphism plus anticipatory guilt ad (M = 4.85, SD = 2.59) elicited marginally greater anticipatory guilt than the baseline anthropomorphism ad (M = 4.40, SD = 2.46), $t(809) = 1.84$, $p = 0.067$. The anthropomorphism plus anticipatory guilt ad (M = 6.25, SD = 1.89) also elicited marginally lower ad attitude than the baseline anthropomorphism ad (M = 6.58, SD = 1.75), $t(809) = -1.83$, $p = 0.068$.

Contrast 6: Differences between the anthropomorphism plus empathy ad and the anthropomorphism plus anticipatory guilt ad

The anthropomorphism plus empathy ad (M = 5.46, SD = 2.37) elicited marginally greater empathic accuracy than the anthropomorphism plus anticipatory guilt ad (M = 5.04, SD = 2.33), $t(809) = 1.78$, $p = 0.076$. Differences between these two ads for anticipatory guilt and ad attitude were not statistically significant ($p > 0.05$). However, the anthropomorphism plus anticipatory guilt ad elicited directionally greater anticipatory guilt than the anthropomorphism plus empathy ad.

Takeaways:

Anthropomorphism plus empathy ad – The anthropomorphism plus empathy ad clearly elicited empathic accuracy more than any other condition and significantly more than pure control and marginally more than the baseline anthropomorphism and anthropomorphism plus anticipatory guilt conditions. Therefore, the manipulation check for the empathy ad was successful.[18]

Anthropomorphism plus anticipatory guilt ad – The anthropomorphism plus anticipatory guilt ad elicited significantly greater anticipatory guilt than the pure control condition and marginally more than the baseline anthropomorphism condition. Though the anthropomorphism plus anticipatory guilt ad was not significantly greater in eliciting anticipatory guilt than the anthropomorphism plus empathy ad, the anthropomorphism plus anticipatory guilt ad's value was directionally greater than the anthropomorphism plus empathy ad. Therefore, the manipulation check for the anthropomorphism plus anticipatory guilt ad was considered successful.

No significant differences were observed between the pure control and baseline anthropomorphism conditions for empathy, anticipatory guilt. This indicates that highlighting specific cues of empathy and anticipatory guilt were required to manipulate the underlying dimensions of empathy and anticipatory guilt in the anthropomorphism plus empathy and anthropomorphism plus anticipatory guilt conditions, respectively.

No significant differences were observed across ad conditions for ad attitude. This is encouraging that the effects observed are not due to differences in general ad attitude and are driven by the specific and intentional manipulations of anthropomorphism, empathy, and anticipatory guilt.

Based on these results, Pretest 14 provides the final set of stimuli to be used as the basis for Studies 1 and 2 in Chapter 2.

[18] Post-hoc Tukey test also observed a marginal difference between the empathy ad and pure control ad on levels of anticipatory guilt, M_{Diff} = -0.60, SE = 0.25, p = 0.072 (95% Confidence Interval: LB = -1.24, UB = 0.04). However, this effect is not a significant effect and does not affect the empathy ad condition's ability to elicit empathy.

Appendix O.1: Study 1 Pretest Method

Pretest 15 was conducted as a pretest for Study 1 described in Chapter 2 of this dissertation. For a full description of Pretest 15 and its methods, please refer to Study 1 in Chapter 2.

Appendix O.2[19]: Study 1 Materials

Pretest[20]:

Version A

1. To what extent are you familiar with the following nonprofit organizations? (Circle a number for each nonprofit organization)

	1 Not at all familiar	2 Slightly familiar	3 Moderately familiar	4 Very familiar	5 Extremely familiar
United Way	1	2	3	4	5
World Wide Fund for Nature	1	2	3	4	5
Sierra Club	1	2	3	4	5
Habitat for Humanity	1	2	3	4	5
The Nature Conservancy	1	2	3	4	5
Boys and Girls Club	1	2	3	4	5

2. If you had a few dollars that you were planning to donate to a nonprofit organization, how likely would you be to make a donation to each of the following organizations? (Circle a number for each nonprofit organization)

	1 Extremely unlikely	2 Somewhat unlikely	3 Neither likely nor unlikely	4 Somewhat likely	5 Extremely likely
United Way	1	2	3	4	5

[19] Links back to Study 1 within main document

[20] Versions A and B of this pretest were printed on paper and conducted in an in-person format. Two versions were used to simulate a counterbalanced order of nonprofits organizations presented in each question. Each version of the pretest fit a single page and was titled as a "Brand Evaluations Survey".

World Wide Fund for Nature	1	2	3	4	5
Sierra Club	1	2	3	4	5
Habitat for Humanity	1	2	3	4	5
The Nature Conservancy	1	2	3	4	5
Boys and Girls Club	1	2	3	4	5

Version B

1. To what extent are you familiar with the following nonprofit organizations? (Circle a number for each nonprofit organization)

	1 Not at all familiar	2 Slightly familiar	3 Moderately familiar	4 Very familiar	5 Extremely familiar
Boys and Girls Club	1	2	3	4	5
The Nature Conservancy	1	2	3	4	5
Habitat for Humanity	1	2	3	4	5
Sierra Club	1	2	3	4	5
World Wide Fund for Nature	1	2	3	4	5
United Way	1	2	3	4	5

2. If you had a few dollars that you were planning to donate to a nonprofit organization, how likely would you be to make a donation to each of the following organizations? (Circle a number for each nonprofit organization)

	1 Extremely unlikely	2 Somewhat unlikely	3 Neither likely nor unlikely	4 Somewhat likely	5 Extremely likely
Boys and Girls Club	1	2	3	4	5
The Nature Conservancy	1	2	3	4	5
Habitat for Humanity	1	2	3	4	5

Sierra Club	1	2	3	4	5
World Wide Fund for Nature	1	2	3	4	5
United Way	1	2	3	4	5

Study 1 Ad Stimuli:

Pure Control

Baseline Anthropomorphism

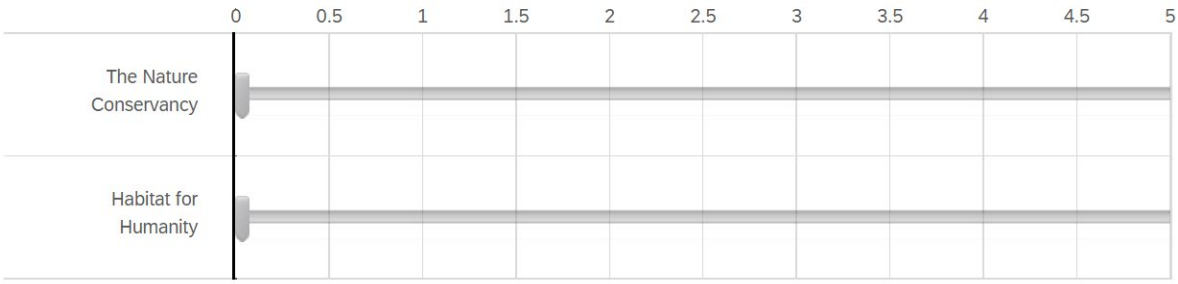
Empathy

Anticipatory Guilt

Study 1 Measures:

Money Allocation

As part of this study, the researchers will be contributing $5 per participant to charities, and would like to allocate those contributions based on your preferences. Using the form below, please allocate the $5 that will be donated on your behalf to the listed nonprofit organizations. You can instruct the experimenters to contribute the entire $5 to one organization or divide the $5 between the organizations.



Donation Likelihood

If you had a few dollars that you were planning to donate to a nonprofit organization, how likely would you be to make a donation to The Nature Conservancy? (5-pt. Likert item; 1 = extremely unlikely, 5 = extremely likely)

Familiarity with Nonprofit Organizations

To what extent are you familiar with the following nonprofit organizations? (5-pt. Likert scale; 1 = not familiar at all, 5 = extremely familiar)

The Nature Conservancy

Habitat for Humanity

Environmentalism – Subscale of Personal/Internal Environmentalism Scale (Banerjee and McKeage, 1994)

In general, to what extent do you agree with the following statements? (5-pt. Likert scale; 1 = strongly disagree, 5 = strongly agree)

1. I often think about the harm we are doing to our environment

2. The whole environmental issue is very important to me

3. I am a person who cares about the environment

4. I really don’t spend much time thinking about the environment*

5. I think of myself as an environmentalism

6. I often worry about the effects of pollution on myself and my family

7. I’m really not interested in environmental issues*

*reverse-coded

Appendix O.3[21]: Pretest and Study 1 Statistical Analyses

Pretest Results

Paired Samples Tests – Familiarity:

Pair	***Mean***	***SD***	***SE***	***t***	**df**	**Sig. (2-tailed)**
WWF – UW	0.22	0.98	0.16	1.35	36	0.186
WWF – HFH	-1.62	1.55	0.26	-6.36	36	< 0.001
WWF – BGC	-2.32	1.20	0.20	-11.75	36	< 0.001
Sierra – UW	0.38	1.06	0.18	2.17	36	0.037
Sierra – HFH	-1.46	1.45	0.24	-6.14	36	< 0.001
Sierra – BGC	-2.16	1.44	0.24	-9.11	36	< 0.001
TNC – UW	0.33	0.99	0.16	2.03	35	0.050
TNC – HFH	-1.56	1.48	0.25	-6.30	35	< 0.001
TNC - BGC	-2.25	1.36	0.23	-9.93	35	< 0.001

Paired Samples Tests – Donation Likelihood:

Pair	***Mean***	***SD***	***SE***	***t***	**df**	**Sig. (2-tailed)**
WWF – UW	0.89	1.30	0.22	4.09	35	< 0.001
WWF – HFH	-0.61	1.36	0.23	-2.70	35	0.011
WWF – BGC	-0.67	1.77	0.30	-2.26	35	0.030
Sierra – UW	0.31	0.67	0.11	2.74	35	0.010
Sierra – HFH	-1.28	1.28	0.21	-6.00	35	< 0.001
Sierra – BGC	-1.31	1.60	0.27	-4.90	35	< 0.001
TNC – UW	1.19	1.45	0.24	4.99	36	< 0.001
TNC – HFH	-0.35	1.46	0.24	-1.47	36	0.151
TNC - BGC	-0.38	1.83	0.30	-1.26	36	0.217

[21] Links back to Study 1 within main document

Study 1 Results[22]

Descriptives:

Ad Type	Money Allocated to The Nature Conservancy	Money Allocation to Habitat for Humanity	Donation Likelihood of Own Money to The Nature Conservancy
Pure Control (N = 47)	*M* = 2.62 *SD* = 1.12	*M* = 2.38 *SD* = 1.12	*M* = 3.47 *SD* = 1.06
Baseline Anthropomorphism (N = 46)	*M* = 2.61 *SD* = 1.21	*M* = 2.39 *SD* = 1.21	*M* = 3.57 *SD* = 0.94
Empathy (N = 46)	*M* = 2.86 *SD* = 1.14	*M* = 2.14 *SD* = 1.14	*M* = 3.39 *SD* = 1.04
Anticipatory Guilt (N = 46)	*M* = 2.29 *SD* = 1.28	*M* = 2.71 *SD* = 1.28	*M* = 3.43 *SD* = 1.17

Variables in Regression:

Variable Name	Variable Type	Purpose
Ad_Eff1	IV; Effect-Coded	Baseline (ref group: Pure Control)
Ad_Eff2	IV; Effect-Coded	Empathy (ref group: Pure Control)
Ad_Eff3	IV; Effect-Coded	A. Guilt (ref group: Pure Control)
Gen_Eff1	Covariate, Effect-Coded	Males (ref group: Females)
Gen_Eff2	Covariate, Effect-Coded	"No Answer" (ref group: Females)[23]
Z(Familiar_NatCon)	Covariate, Continuous	Z-scored
Z(Familiar_Hab)	Covariate, Continuous	Z-scored
Z(Environ)	Covariate, Continuous	Z-scored
Eff1xGen1	Interaction	Ad_Eff1*Gen_Eff1
Eff2xGen1	Interaction	Ad_Eff2*Gen_Eff1
Eff3xGen1	Interaction	Ad_Eff3*Gen_Eff1
Eff1xGen2	Interaction	Ad_Eff1*Gen_Eff2
Eff2xGen2	Interaction	Ad_Eff2*Gen_Eff2
Eff3xGen2	Interaction	Ad_Eff3*Gen_Eff2
Eff1xZTNC	Interaction	Ad_Eff1*Z(Familiar_NatCon)
Eff2xZTNC	Interaction	Ad_Eff2* Z(Familiar_NatCon)
Eff3xZTNC	Interaction	Ad_Eff3* Z(Familiar_NatCon)
Eff1xZHab	Interaction	Ad_Eff1*Z(Familiar_Hab)
Eff2xZHab	Interaction	Ad_Eff2*Z(Familiar_Hab)
Eff3xZHab	Interaction	Ad_Eff3*Z(Familiar_Hab)
Eff1xZEnv	Interaction	Ad_Eff1*Z(Environ)
Eff2xZEnv	Interaction	Ad_Eff2*Z(Environ)
Eff3xZEnv	Interaction	Ad_Eff3*Z(Environ)

[22] Note for MLR: Given that the slider form mandated that participants indicate portions of a total of $5 to allocate across the two organizations, the two measures were connected. Therefore, from the perspective of statistical analysis, the statistical values for money allocation to the two nonprofit organizations are identical in nature except for the valence sign of the *B* and *t* values.

[23] Three participants selected "no answer" when providing information about gender. Eff1xGen2 and Eff3xGen2 were not provided in regression analyses.

Multiple Linear Regression:
DV: Money Allocated to The Nature Conservancy

ANOVA:

Model	df	*F*	Sig.
1	(3,181)	1.78	0.153
2	(8,176)	3.48	0.001
3	(21,163)	2.02	0.008

Coefficients:

Model	Variable	*B*	*SE*	*t*	Sig.
1	Ad_Eff1	0.01	0.15	0.10	0.924
	Ad_Eff2	0.27	0.15	1.76	0.081
	Ad_Eff3	-0.30	0.15	-2.01	0.046
2	Ad_Eff1	-0.03	0.15	-0.22	0.823
	Ad_Eff2	0.29	0.15	1.98	0.050
	Ad_Eff3	-0.27	0.15	-1.86	0.065
	Gen_Eff1	0.09	0.28	0.31	0.757
	Gen_Eff2	-0.13	0.55	-0.24	0.813
	Z(Familiar_NatCon)	0.33	0.10	3.48	0.001
	Z(Familiar_Hab)	-0.36	0.10	-3.79	<0.001
	Z(Environ)	0.15	0.09	1.77	0.079
3	Ad_Eff1	-0.04	0.15	-0.25	0.801
	Ad_Eff2	0.02	0.56	0.04	0.969
	Ad_Eff3	-0.25	0.15	-1.69	0.092
	Gen_Eff1	-0.04	0.40	-0.09	0.927
	Gen_Eff2	0.06	0.78	0.08	0.940
	Z(Familiar_NatCon)	0.35	0.10	3.65	<0.001
	Z(Familiar_Hab)	-0.41	0.10	-4.22	<0.001
	Z(Environ)	0.15	0.09	1.70	0.092
	Eff1xGen1	-0.08	0.16	-0.50	0.617
	Eff2xGen1	0.27	0.57	0.48	0.631
	Eff3xGen1	0.07	0.15	0.44	0.664
	Eff2xGen2	-0.52	1.11	-0.47	0.643
	Eff1xZTNC	0.04	0.17	0.37	0.792
	Eff2xZTNC	-0.43	0.16	-2.70	0.008
	Eff3xZTNC	0.34	0.18	1.90	0.059
	Eff1xZHab	-0.15	0.17	-0.90	0.371
	Eff2xZHab	0.16	0.17	0.91	0.364
	Eff3xZHab	-0.21	0.18	-1.17	0.242
	Eff1xZEnv	0.04	0.17	0.23	0.820
	Eff2xZEnv	0.01	0.15	0.09	0.930
	Eff3xZEnv	0.13	0.15	0.85	0.396

DV: Money to Habitat for Humanity

ANOVA:

Model	df	*F*	Sig.
1	(3,181)	1.78	0.153
2	(8,176)	3.48	0.001
3	(21,163)	2.02	0.008

Coefficients:

Model	Variable	*B*	*SE*	*t*	Sig.
1	Ad_Eff1	-0.01	0.15	-0.10	0.924
	Ad_Eff2	-0.27	0.15	-1.76	0.081
	Ad_Eff3	0.30	0.15	2.01	0.046
2	Ad_Eff1	0.03	0.15	0.22	0.823
	Ad_Eff2	-0.29	0.15	-1.98	0.050
	Ad_Eff3	0.27	0.15	1.86	0.065
	Gen_Eff1	-0.09	0.28	-0.31	0.757
	Gen_Eff2	0.13	0.55	0.24	0.813
	Z(Familiar_NatCon)	-0.33	0.10	-3.48	0.001
	Z(Familiar_Hab)	0.36	0.10	3.79	<0.001
	Z(Environ)	-0.15	0.09	-1.77	0.079
3	Ad_Eff1	0.04	0.15	0.25	0.801
	Ad_Eff2	-0.02	0.56	-0.04	0.969
	Ad_Eff3	0.25	0.15	1.69	0.092
	Gen_Eff1	0.04	0.40	0.09	0.927
	Gen_Eff2	-0.06	0.78	-0.08	0.940
	Z(Familiar_NatCon)	-0.35	0.10	-3.65	<0.001
	Z(Familiar_Hab)	0.41	0.10	4.22	<0.001
	Z(Environ)	-0.15	0.09	-1.70	0.092
	Eff1xGen1	0.08	0.16	0.50	0.617
	Eff2xGen1	-0.27	0.57	-0.48	0.631
	Eff3xGen1	-0.07	0.15	-0.44	0.664
	Eff2xGen2	0.52	1.11	0.47	0.643
	Eff1xZTNC	-0.04	0.17	-0.37	0.792
	Eff2xZTNC	0.43	0.16	2.70	0.008
	Eff3xZTNC	-0.34	0.18	-1.90	0.059
	Eff1xZHab	0.15	0.17	0.90	0.371
	Eff2xZHab	-0.16	0.17	-0.91	0.364
	Eff3xZHab	0.21	0.18	1.17	0.242
	Eff1xZEnv	-0.04	0.17	-0.23	0.820
	Eff2xZEnv	-0.01	0.15	-0.09	0.930
	Eff3xZEnv	-0.13	0.15	-0.85	0.396

DV: Donation Likelihood to The Nature Conservancy

ANOVA:

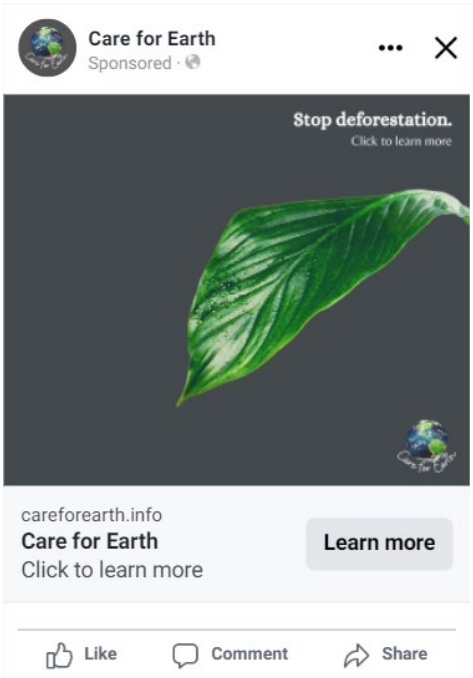
Model	df	*F*	Sig.
1	(3,181)	0.23	0.878
2	(8,176)	8.33	< 0.001
3	(21,163)	3.87	< 0.001

Coefficients:

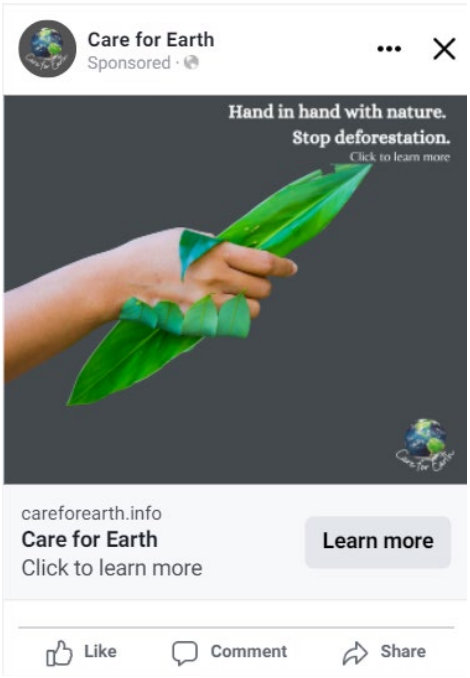
Model	Variable	*B*	*SE*	*t*	Sig.
1	Ad_Eff1	0.10	0.14	0.75	0.457
	Ad_Eff2	-0.07	0.14	-0.55	0.585
	Ad_Eff3	-0.30	0.14	-0.22	0.823
2	Ad_Eff1	-0.02	0.12	-0.13	0.899
	Ad_Eff2	0.06	0.12	0.52	0.607
	Ad_Eff3	-0.02	0.12	-0.17	0.866
	Gen_Eff1	-0.08	0.23	-0.37	0.714
	Gen_Eff2	-0.16	0.44	-0.36	0.718
	Z(Familiar_NatCon)	0.42	0.08	5.50	< 0.001
	Z(Familiar_Hab)	-0.18	0.08	-2.40	0.017
	Z(Environ)	0.40	0.07	5.76	< 0.001
< 0.0013	Ad_Eff1	-0.001	0.12	-0.01	0.993
	Ad_Eff2	0.35	0.45	0.78	0.437
	Ad_Eff3	-0.03	0.12	-0.21	0.833
	Gen_Eff1	-0.01	0.32	-0.03	0.979
	Gen_Eff2	-0.35	0.63	-0.56	0.577
	Z(Familiar_NatCon)	0.45	0.08	5.82	< 0.001
	Z(Familiar_Hab)	-0.21	0.08	-2.66	0.009
	Z(Environ)	0.38	0.07	5.28	< 0.001
	Eff1xGen1	0.03	0.13	0.22	0.824
	Eff2xGen1	-0.29	0.46	-0.64	0.522
	Eff3xGen1	-0.08	0.12	-0.69	0.490
	Eff2xGen2	0.54	0.89	0.61	0.542
	Eff1xZTNC	-0.16	0.14	-1.20	0.231
	Eff2xZTNC	-0.22	0.13	-1.67	0.096
	Eff3xZTNC	0.36	0.15	2.46	0.015
	Eff1xZHab	0.06	0.14	0.42	0.673
	Eff2xZHab	0.24	0.14	1.73	0.086
	Eff3xZHab	-0.24	0.14	-1.63	0.104
	Eff1xZEnv	-0.08	0.14	-0.64	0.526
	Eff2xZEnv	0.19	0.12	1.57	0.118
	Eff3xZEnv	0.05	0.12	0.42	0.672

Appendix P.1[24]: Study 2 Materials[25]

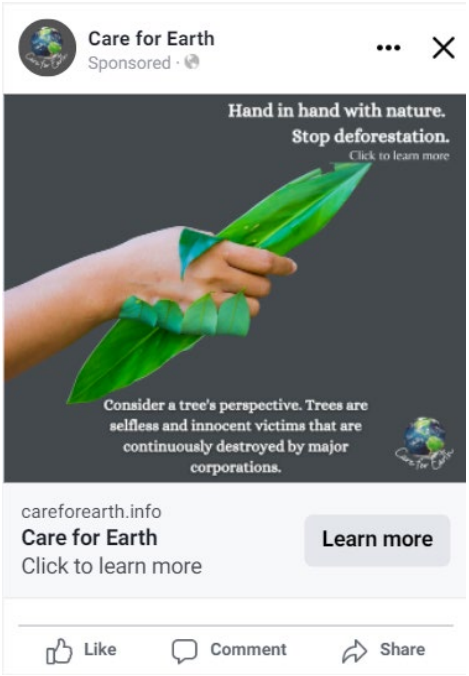
Facebook Ads:



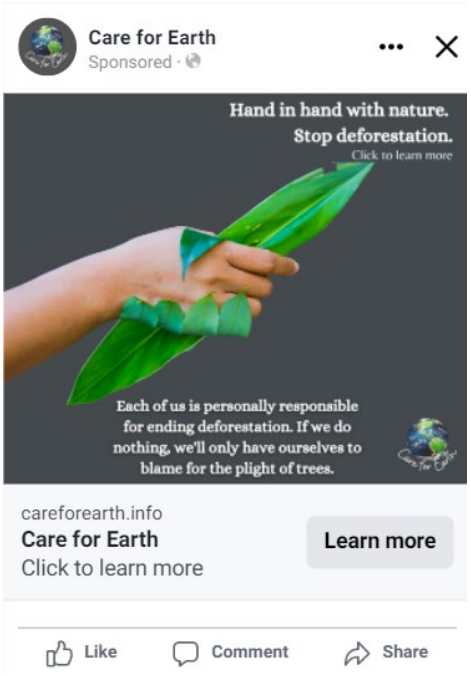
Pure Control Ad



Baseline Anthropomorphism Ad



Empathy Ad



Anticipatory Guilt Ad

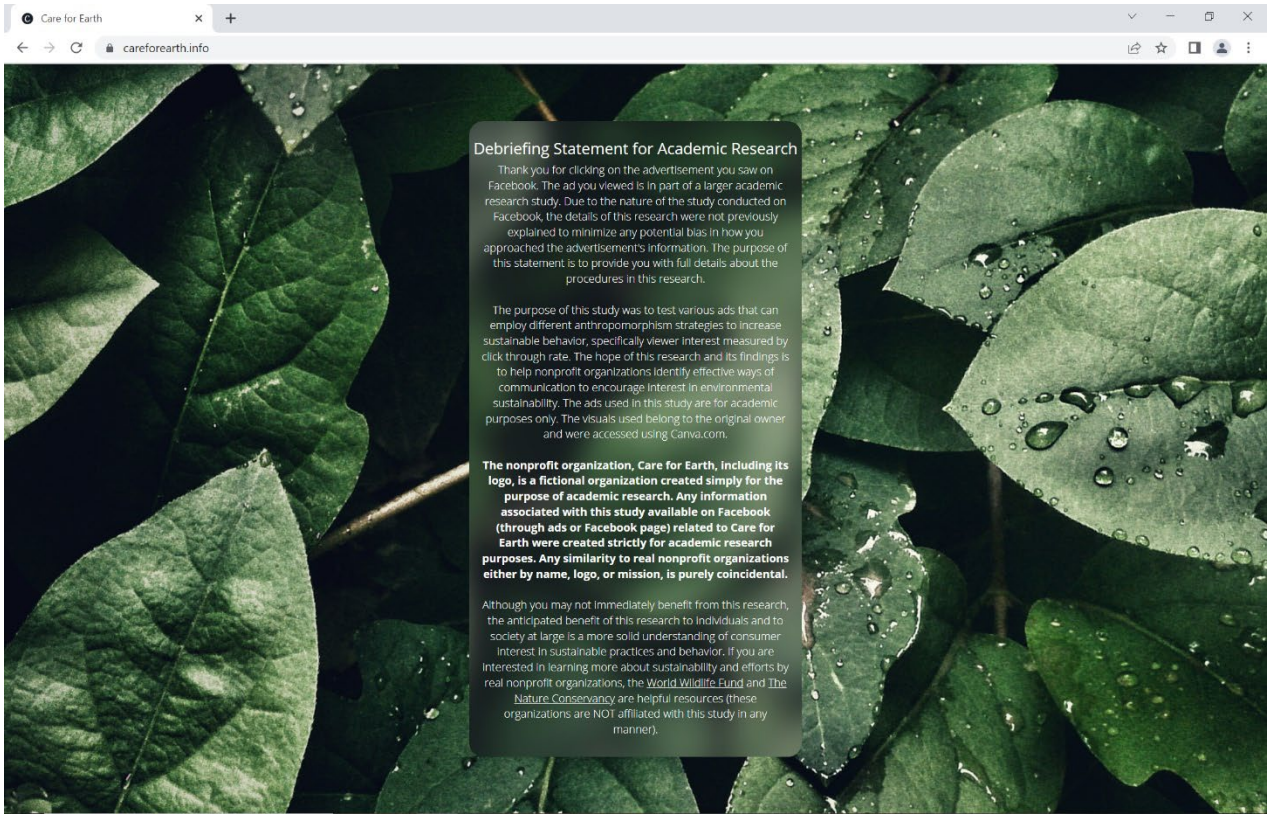
[24] Links back to Study 2 Method section within main document
[25] All visual materials used were accessed from Canva.com. Webpage and website were created using Canva.com, domain was purchased for the year through Canva.com.

Facebook Page:

Brand Logo

Background Picture

Landing Page:



Debriefing Statement within Landing Page:

Appendix P.2[26]: Study 2 Statistical Analyses

Ad Metrics:

Ad Type	Link Clicks	Unique Clicks	Reach	Impressions	CTR	Robustness	Cost per Result	Ad Budget
Pure Control	12	12	741	849	1.41%	1.62%	$1.06	$12.72
Baseline	380	372	27,719	33,120	1.15%	1.34%	$0.54	$204.24
Empathy	237	230	14,772	18,329	1.29%	1.56%	$0.56	$132.30
Anticipatory Guilt	231	229	10,044	12,478	1.85%	2.28%	$0.65	$150.70

Ad Engagement:

Ad Type	Comments	Engagement	Reactions	Saves	Shares
Pure Control	2	16	2	0	0
Baseline	13	817	345	1	78
Empathy	44	773	400	4	88
Anticipatory Guilt	32	673	321	3	86

Logistic Binary Regression (Reference Group: Pure Control Ad):

Covariate	*B*	*SE*	Wald χ^2	df	Sig.	Exp(*B*)	95% CI (LB)	95% CI (UB)
Baseline	-0.21	0.30	0.51	1	0.474	0.81	0.45	1.44
Empathy	-0.09	0.30	0.09	1	0.762	0.91	0.51	1.64
A. Guilt	0.27	0.30	0.85	1	0.358	1.32	0.73	2.36

Robustness Check (Reference Group: Pure Control Ad):

Covariate	*B*	*SE*	Wald χ^2	df	Sig.	Exp(*B*)	95% CI (LB)	95% CI (UB)
Baseline	-0.19	0.30	0.42	1	0.519	0.83	0.46	1.48
Empathy	-0.04	0.30	0.02	1	0.894	0.96	0.54	1.73
A. Guilt	0.35	0.30	1.36	1	0.243	1.42	0.79	2.55

[26] Links back to Study 2 Results section within main document

Logistic Binary Regression (Reference Group: Baseline Anthropomorphism Ad):

Covariate	*B*	*SE*	Wald χ^2	df	Sig.	Exp(*B*)	95% CI (LB)	95% CI (UB)
Control	0.21	0.30	0.51	1	0.474	1.24	0.69	2.20
Empathy	0.12	0.08	2.11	1	0.146	1.13	0.96	1.33
A. Guilt	0.49	0.08	33.34	1	< 0.001	1.63	1.38	1.92

Robustness Check (Reference Group: Baseline Anthropomorphism Ad):

Covariate	*B*	*SE*	Wald χ^2	df	Sig.	Exp(*B*)	95% CI (LB)	95% CI (UB)
Control	0.19	0.30	0.42	1	0.519	1.21	0.68	2.16
Empathy	0.15	0.09	3.18	1	0.074	1.16	0.99	1.37
A. Guilt	0.54	0.09	40.47	1	< 0.001	1.72	1.45	2.03