

COLOR ME GREEN: THE INFLUENCE OF ENVIRONMENTAL IDENTITY LABELING ON
SPILLOVER IN PRO-ENVIRONMENTAL BEHAVIORS

by

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Color me green: The influence of environmental identity labeling on spillover in pro-environmental behaviors

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Researchers in the field of behavioral spillover – the idea that engaging in a pro-environmental behavior (PEB) in response to an intervention or program influences whether a person engages in a subsequent PEB that was not initially targeted – have hypothesized that a person’s pro-environmental identity acts as a mediator that leads to subsequent PEBs after initial PEBs are undertaken. However, there is little research on how labeling a person as pro-environmental or not might influence her subsequent behaviors, and how such a label affects individuals of different environmental identity strengths. Through an experimental manipulation in which participants were labeled as “green” or “non-green” consumers, this research seeks to identify how confirming or disconfirming a person’s environmental identity influences spillover tendencies. After gathering information about the strength of participants’ environmental identities, I used a pseudo-consumer opinions task to provide each participant with a label that was either consistent or inconsistent with that identity. Participants were subsequently presented with an opportunity to choose to donate money to a charity, one of which was environmental, and this choice provided a measure of behavioral spillover. Results indicated that regardless of whether a person has a weak, moderate, or strong environmental identity, being labeled

pro-environmental did not decrease the likelihood of making a donation to an environmental cause and in fact increased that likelihood among strong environmental identifiers. On the other hand, being labeled as non-environmental significantly reduced weak and moderate environmental identifiers' likelihood of donating to an environmental cause but increased strong environmental identifiers' likelihood of engaging in subsequent PEBs. These findings provide some evidence in favor of using pro-environmental labels more widely because they do not result in reduced PEBs, regardless of environmental identity strength. On the other hand, "non-green" labels should be avoided because they do not motivate one to engage in more PEBs.

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CONTENTS

CHAPTER

I.	INTRODUCTION.....	1
II.	LITERATURE REVIEW	7
	Manifestations of behavioral spillover	7
	Decision mode	8
	Environmental identity formation	10
	Environmental identity strength and behavioral consistency.....	12
	Identity labeling.....	15
	The present research	17
	Primary hypotheses	20
	Secondary hypotheses.....	22
III.	METHODOLOGY.....	23
	Participants	23
	Procedure	24
	Measures	29
	Environmental identity.....	30
	Positive and negative affect	31
	Moral self-image	32
	Policy support.....	32
	Issue attention	32

	Environmental donation	33
	Protocol development and power analysis	33
IV.	RESULTS	36
	Analysis of main effects and moderation	36
	Analysis of mediation effects	51
	Secondary dependent variable analyses	55
V.	DISCUSSION	58
	Key findings	58
	Insights and implications	66
	Limitations and future research	68
	BIBLIOGRAPHY	72
	APPENDICES	
A.	Screenshots	80
B.	Alternative identity measure mediation analyses	82
C.	Continuous generalized linear models with environmental identity and political ideology as continuous predictors	86

TABLES

Table

1.	Demographic profiles by experimental group.....	24
2.	Survey items and response options.....	25
3.	Correlation matrix for all variables.....	30
4a.	Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (categorical general environmental identity predictor).....	37
5a.	Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (categorical environmental consumer identity predictor).....	43
6a.	Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (categorical relative environmental identity predictor).....	48
7.	Effect of experimental condition and environmental identity strength on environmental policy support and environmental issue attention (ANOVA).....	57

FIGURES

Figure

1.	General Environmental Identity Main Effects (Table 4a Model 1)	
a.	Main effect of condition.....	38
b.	Main effect of environmental identity.....	39
c.	Main effect of political identity.....	39
2.	General environmental identity x Condition interaction.....	41
3.	Environmental Consumer Identity Main Effects (Table 5a Model1)	
a.	Main effect of condition.....	44
b.	Main effect of environmental identity.....	45
c.	Main effect of political identity.....	45
4.	Environmental consumer identity x Condition interaction.....	46
5.	Relative Environmental Identity Main Effects (Table 6a Model 1)	
a.	Main effect of condition.....	49
b.	Main effect of environmental identity.....	50
c.	Main effect of political identity.....	50
6.	Relative environmental identity x Condition interaction.....	51
7.	Full model mediation analysis.....	53
8.	General identity strength mediation analyses	
a.	Low environmental identity strength.....	54
b.	Moderate environmental identity strength.....	54
c.	High environmental identity strength.....	55
9.	High consumer environmental identity strength mediation analysis.....	56

1. INTRODUCTION

Individual and household behavior change can play a significant role in the effort to reduce environmental degradation resulting from greenhouse gas (GHG) emissions. There is indication that actions taken by households to use energy more efficiently can lead to emissions reductions accounting for approximately 7.4% of total U.S. emissions (Dietz, Gardner, Gilligan, Stern, and Vandenberg, 2009). However, much emphasis is placed on implementing regulations and technological advances that primarily affect the industrial sector (Vandenberg, Barkenbus, and Gilligan, 2008, EPA, 2015). Targeting large power plants and industrial facilities has the potential to create long-lasting and wide-reaching emissions reductions. This approach, however, may not result in immediate benefits due to political and technological barriers to implementing certain policies, such as cap-and-trade (Dietz et al., 2009). Some have proposed that given a U.S. political climate that is not favorable to fast-acting policy change or agreement about climate regulation, individual and household behaviors can serve as “low-hanging fruit” by which more immediate emissions reductions can occur (Vandenberg et al., 2008). Behavioral science can inspire the design of certain smaller scale “nudges” to influence households and individuals by preventing behaviors that aggregate over time and across individuals to contribute to environmental destruction. Certainly, federal regulatory efforts to reduce industry emissions are needed in order to curb environmental degradation, but the immediate importance of behavioral nudges should not be overlooked. These low-cost and fast-acting nudges can complement the wider-scale regulatory approaches, and thus should receive greater attention (Dietz et al., 2009).

To achieve more immediate benefits, many have argued that policymakers should look to the demonstrated efficacy of behavioral science methods to inform the design of strategies that reduce the demand for energy of households and individuals (Dietz et al., 2009). However, others have cautioned that this approach will be unable to achieve projected emissions reductions and could even be counterproductive if, after engaging in a first behavior that reduces emissions, a person then compensates by performing “rebound” behaviors that increase emissions (e.g. Gillingham, Rapson, and Wagner, 2015, Wagner, 2011). Skeptics have pointed to examples like this as a key concern of negative spillover, which, in an environmental context, is the idea that engaging in a pro-environmental behavior (PEB) in response to an intervention or program reduces the likelihood of a person engaging in subsequent PEBs that were not initially targeted (Poortinga, Whitmarsh, and Suffolk, 2013, Truelove, Carrico, Weber, Raimi, and Vandenberg, 2014). However, the opposite effect may also occur whereby there is a bigger than anticipated reduction in emissions if a PEB in response to an intervention also leads to subsequent PEBs that were not initially targeted. This is known as a positive spillover effect.

Numerous studies have provided evidence for both types of spillover (see Truelove et al., 2014 for a review). In an example of positive spillover, one study found that compared to a control condition, participants who were encouraged to purchase green products were more likely to subsequently engage in other PEBs like recycling, reducing their car use, and saving water (Lanzini and Thøgersen, 2014). Regarding negative spillover, evidence has been found for “rebound effects”. In one such example, households that received energy efficiency improvements subsequently *increased* their thermostat settings (Hirst, White, and Goeltz, 1985). Further, there is also a possibility that neither

type of spillover will manifest (Truelove et al., 2014, Carrico, Raimi, Truelove, and Eby, under review). In this case, an initial PEB makes an individual no more or less likely to engage in subsequent PEBs. Within the behavioral spillover literature, examples of no spillover are difficult to come by despite the fact that this effect could plausibly be demonstrated empirically. Some have indicated that this is a problem inherent to current practices in publishing academic research results; null effects tend not to be prioritized for journal publication, and thus researchers often forego submitting these results for publication in the first place (Carrico et al., under review, Ferguson and Heene, 2012, Blanken, van de Ven, and Zeelenberg, 2015).

Understanding what leads to positive, negative, and no spillover effects is relevant to the design of environmental and energy policy. If, for example, there is psychological evidence for positive spillover, decision-makers should pursue and invest in programs and policies that are inspired by that underlying psychological theory. On the other hand, if a program or policy is likely to result in negative spillover, decision-makers should avoid those programs or policies or explore approaches that mitigate negative spillover effects (Truelove et al., 2014). If there is no evidence of spillover, then perhaps there should not be a focus on how initial behaviors influence subsequent behaviors and other mechanisms for encouraging pro-environmental behaviors should be pursued.

Because there is evidence for all three types of spillover, current research efforts have sought to uncover the patterns and conditions that lead to each. For example, Truelove et al. (2014) hypothesized that social and internal pressure to act consistently with an environmental identity may induce positive spillover effects, while negative spillover is more likely induced by one's emotional state or moral self-image at the time of

the decision. In the second scenario, after having just performed a good environmental deed, one may experience a boost in moral self-worth such that she may then feel less motivated to perform subsequent pro-environmental actions (Truelove, Yeung, Carrico, Gillis, and Raimi, 2016). It is important to note that the underlying mechanisms of the above-mentioned decision-making processes are different, since one is based on emotional state while the other – which is the focus of this research – is based on identity.

In the field of Psychology, self-identity or self-concept is whom an individual thinks of herself as being (Crompton and Kasser, 2009). When one's self-concept, which is rooted in her values, leads her to consistently strive for pro-environmental attitudes and behaviors, that individual holds a pro-environmental identity (van der Werff, Steg, and Keizer, 2013). Past research has indicated that holding a pro-environmental identity can lead to both initial and subsequent PEBs, supporting Truelove et al.'s proposed link between environmental identity and positive spillover (e.g. van der Werff et al., 2013, Whitmarsh and O'Neill, 2010, Truelove et al., 2014). However, the possibility of a pro-environmental identity, under some conditions, leading to negative spillover or no spillover is worth further investigation. For example, a recent study by Truelove et al. (2016) used political identity as a proxy for environmental identity. They hypothesized that a first environmental action would make a Democratic identity salient and thus increase the likelihood of positive spillover. Instead there was evidence for the contrary; Democrats were less supportive of an environmental policy after engaging in an initial pro-environmental behavior, and were the only group to demonstrate negative spillover.

Given a rise in “green” marketing techniques, questions regarding spillover are becoming increasingly relevant. We have the opportunity to earn “green” labels many times

throughout a day, most notably for the things we purchase or consume. For example, many home and personal care products highlight “natural” or “eco-friendly” ingredients on their labels. Regardless of whether this motivates a person’s selection of the product, we know little about how these labels influence the individual’s motivations for pro-environmental action, more generally. Do these labels may make the individual feel as though he has engaged in an environmentally responsible act? Do these labels lead him to strive for other pro-environmental goals? Do they have no effect on his behaviors whatsoever?

In evaluating how environmental identity influences behavioral spillover, it is important to recognize that due to differences in the value that individuals attribute to the natural environment, there is variation in the strength and direction of each person’s environmental identity. As such, performing a pro-environmental behavior may result in varying inclinations toward subsequent PEBs. The experience of receiving or not receiving a green label may have different effects on a person’s emotions and behavior, depending on how strongly one views him- or herself as holding an environmental identity. Individuals’ reactions to environmental labels based on their initial pro-environmental actions can be important indicators of whether subsequent pro-environmental actions are adopted or avoided. To date, there is no known research on how identity labeling influences behavioral spillover and, as mentioned above, there is a need for more work to examine the effect of identity on spillover processes. Through an experimental manipulation in which participants are labeled as “green” or “non-green” consumers, this research seeks to identify how confirming or disconfirming an environmental identity influences spillover tendencies. In particular, this research will investigate whether the strength of a person’s

environmental identity at the time of receiving the label influences his or her inclination to donate to an environmental cause.

2. LITERATURE REVIEW

This research seeks to better understand individuals' perceptions of their environmental identities and the ways in which a label that confirms or disconfirms those identities influences subsequent pro-environmental behaviors. To do this, I will first summarize the proposed manifestations of behavioral spillover. By way of further investigating the role that identity plays in behavioral spillover, I will then outline the existing research regarding environmental identity formation, including the value basis of identities, how environmental identities can vary in strength, and how identity relates to behavioral consistency. I will then summarize the literature on identity-relevant labeling to better understand how efforts to highlight or minimize the salience of an identity might influence pro-environmental behaviors. Finally, I will suggest the anticipated effects of environmental identity on spillover processes and will outline the current study intended to measure these effects.

2.1. Manifestations of behavioral spillover

In their framework of behavioral spillover, Truelove et al. (2014) outline three possible factors that may affect how spillover manifests. These factors are: causal attribution (i.e. whether an individual claims personal responsibility for his or her behaviors vs. attributing one's actions to an external source such as being coerced with a reward or penalty), behavioral characteristics and interrelationships (i.e. whether behaviors are difficult to perform, and whether two or more behaviors are viewed as similar), and most importantly for the present research, the decision mode through which the behavior is chosen. Here I will focus on the influence of decision mode on the possible

manifestations of spillover. For further explanation and examples of the other factors refer to Truelove et al., (2014).

2.1.1. Decision mode

Truelove et al (2014) proposed three possible decision modes through which initial PEBs might be chosen, and that are hypothesized to influence spillover. The first, calculation-based decisions, involve weighing the costs and benefits of different decisions in the context of the other available options. The occurrence of positive or negative spillover depends on whether engaging in an initial behavior changes one's perceptions of the relative costs and benefits of a subsequent behavior. For example, when purchasing groceries one might desire the health and environmental benefits of organic foods, but at the same time recognize that these products tend to be more expensive and also desire to allocate her money to other things. If health and environmental benefits are particularly important to the individual when considering other PEBs (e.g. perhaps this person also regularly purchases plant-based home and personal care because she values their benefits to the environment and to her health), then this initial purchase of plant-based products (PEB1) might result in positive spillover to the purchase of organic foods (PEB2). Here, PEB1 posed no restriction on the individual's perceived ability to engage in PEB2 because of the importance she placed on the health and environmental benefits attributed to both behaviors. If, however, monetary considerations are more important to this individual when considering other PEBs (e.g. perhaps this person has actually refrained from purchasing plant-based products because they are more expensive and she would prefer to spend her money on other things), then negative spillover is likely to result. Despite her desire to purchase organic groceries, the higher importance placed on monetary

considerations inhibited her from engaging in PEB2. Truelove et al. (2014) expect that these effects will average out over time and across individuals, such that there is no net positive or negative spillover effect.

Affect-based decisions are driven by one's emotions such as guilt, fear, or pride. The behaviors resulting from affect-based decisions can serve as a "reset" button when one's emotional state is thrown off; for example, a person may choose to engage in pro-environmental behaviors in order to avoid feeling guilty about the other environmentally harmful actions he or she has engaged in. The literatures of single action bias and of moral licensing point to more specific instances of affect-based decisions. For each, performing initial pro-environmental behaviors leads to a reduction of negative emotions, which then renders one less likely to engage in subsequent pro-environmental behaviors. In the case of single action bias, it is hypothesized that initial behaviors taken to reduce a risk (e.g. a farmer's decision to irrigate his crops to mitigate the effects of climate change, though better protective options are available), may lead him to feel his worries have been sufficiently addressed, thus undermining his motivation to engage in subsequent behaviors that are better suited to address the problem (Weber, 2006). In the case of moral licensing, an initial moral behavior is believed to increase positive emotion and boost one's moral self-image, which then "licenses" her to behave poorly (Khan and Dhar, 2006, Truelove et al., 2014). Both of these examples suggest that negative spillover may be likely when a PEB is motivated by negative emotions.

Finally, the authors propose rule- and role-based decisions in their spillover framework, which suggests that the desire to adhere to what is seen as typical or expected

of a particular identity group will lead to behavioral consistency and, thus, will result in positive spillover. This final decision mode is the subject of this current research.

Since the framework was published, other research has suggested that rule-and role-based decisions do not always result in subsequent pro-environmental behaviors or environmental policy support, which may indicate that highlighting one's environmental identity is not always effective in encouraging subsequent PEBs (Truelove et al., 2016, Lacasse, 2014). For example, Truelove et al. (2016) anticipated that environmental behaviors would make Democratic identities salient, and would increase the likelihood of positive spillover. Instead, Democrats who recycled experienced a reduction in environmental identity, and they actually demonstrated negative spillover. The authors provide two explanations for why this may have happened. First, the authors suggest that an easy first PEB may have served as a reminder that participants are not regularly engaging in pro-environmental behaviors, therefore undermining identity. An alternative second explanation suggests that the first PEB fulfilled Democrats' objectives to act pro-environmentally, allowing them to redirect motivations to other Democratic goals. Importantly, both of these explanations are separate from an affect-based process, which is the typical expected route to negative spillover. These cases of conflicting causal evidence highlight the need for more research to better understand the role played by identity in spillover processes.

2.2. Environmental identity formation

Understanding how environmental identities form and how they vary in significance among individuals is important for understanding why some people choose to engage in pro-environmental behaviors while others do not.

Environmental identity is derived from values, the desire to achieve self-understanding, emotional connections to nature, and social or group expectations (Clayton, 2012, Clayton and Opatow, 2003, Whitmarsh and O'Neill 2010). Perhaps the most important factor involved in the formation of an environmental identity is an individual's values. Researchers have theorized that environmental identities are rooted in a set of more fundamental values (e.g., the life qualities one views as important; Crompton and Kasser, 2009, Rokeach, 1973, Schwartz, 1992, Clayton, 2003, van der Werff et al., 2013¹). There is evidence that those who place strong emphasis on the importance of nature are oriented toward a self-transcendent value dimension (Karp, 1996, Schwartz, 1992). The self-transcendent value dimension is comprised of the specific basic values of universalism and benevolence, which emphasize caring for others including nature and non-human life (see, e.g., Karp, 1996, and Nordlund and Garvill, 2002, van der Werff et al., 2013). van der Werff et al. (2013) found that one form of self-transcendent values, biospheric values, predicted both a general environmental identity and an energy-saving identity, and that environmental self-identity served as a mediator between biospheric values and pro-environmental behaviors.

In contrast, there is a tendency for those who hold more negative views toward the environment, or who place greater personal importance on social power, wealth, and authority than on nature, to be oriented toward the self-enhancement value dimension, which focuses on power and achievement (Nordlund and Garvill, 2002, Schwartz, 1992, Crompton and Kasser, 2009). Subscribing to these values may lead one to have a weak or

¹ van der Werff and colleagues suggest that while values likely influence self-identity, there exists a possibility that one may endorse certain values but fail to view himself as holding a self-identity in line with those values. For example, one might claim that preserving nature is important but not view himself as someone likely to engage in PEBs.

nonexistent environmental self-identity,² which can manifest in minimal direct contact with the natural world (Hinds and Sparks, 2008, Pyle, 1978) or in an explicit prioritization of financial gain, materialism, and heavy resource consumption (Crompton and Kasser, 2009, Richins and Dawson, 1992).

Of particular interest are the behavioral inclinations of individuals with moderate environmental identities, as their behaviors are less predictable. Similar to the way that political moderates tend to have diverse opinions on issues (Treier and Hillygus, 2009), this group is likely to hold varying or at the very least, neutral opinions about environmental issues and as such, might be less consistent in their tendency toward pro-environmental behaviors.

2.2.1. Environmental identity strength and behavioral consistency

It is well established that if an identity is particularly important to an individual, he or she is more likely to engage in behaviors that maintain that identity (e.g. Charng, Piliavin, and Callero, 1988, Mannetti, Pierro, and Livi, 2004, Sparks and Shepherd, 1992, Fielding, McDonald, and Louis, 2008, Stedman, 2002, Kiesling and Manning, 2010, Clayton, 2003, Kempton and Holland, 2003). For example, within the environmental domain, one study indicated that the more participants conceived of themselves as environmental activists, the more likely they were to indicate behavioral intentions toward pro-environmental activism (Fielding et al., 2008). As such, a strong environmental identity should lead to more PEBs and a weak environmental identity should lead to fewer PEBs.

² I do not consider the possibility of an *anti* environmental identity. Rather, my discussion is in terms of relative strength or weakness of pro-environmental identity such that if environmental identity were to be represented on a unipolar scale from 0-1, numbers closer to zero would represent those with weak environmental identities, while numbers closer to 1 would represent those with strong environmental identities. 0.5 would represent a true moderate environmental identity, on this scale.

Those who do identify strongly with an environmental identity should also exhibit heightened behavioral consistency. In other words, not only will identity strength predict initial identity-relevant behaviors, but identity strength will also predict the regularity with which one engages in identity-relevant behaviors. The human desire for consistency has been laid out in various theories (e.g. Festinger, 1957, Bem, 1967), and is demonstrated in one's desire to be seen as consistent both to herself and to others. Consistency allows one to maintain a favorable self-concept (Cialdini and Trost, 1998), and to avoid disapproval from others (Cialdini, Kallgren, and Reno, 1991) both of which can be understood as means for acting within the expectations of a particular role identity.

Behavioral consistency has been extensively studied in the environmental domain and has been attributed to, for example, pro-environmental attitudes and commitments to engage in pro-environmental behaviors (e.g. Fekadu and Kraft, 2001, Smith et al., 2007, Baca-Motes, Brown, Gneezy, Keenan, and Nelson, 2013, Pallak and Cummings, 1976, Vining and Ebreo, 1992, Roberts and Bacon, 1997). These studies are limited, however, in that they only discuss PEBs in one situation; in other words, they demonstrate that committing to or engaging in one behavior renders a person more likely to engage in a subsequent behavior that achieves the same goal. More research is needed to determine whether and how one's identity leads to the desire for behavioral consistency across varying environmental contexts. Whitmarsh and O'Neill (2010) state that, "Assertion of identity may be understood as an attempt to establish consistency in our attitudes and actions and continuity across experiences, and therefore appears to be highly relevant in exploring consistency (and, ultimately, spill-over effects) across pro-environmental behaviours." This

statement suggests that one's identity might not only lead to consistent behaviors in one context, but might influence related behaviors that are slightly different in context.

In order to understand how identity influences behavior across a variety of environmental situations, it is important to understand whether individuals perceive different pro-environmental behaviors as achieving the same goal. In other words, though environmental activities such as recycling and purchasing organic foods have different immediate outcomes, are they perceived as achieving the same general goal of benefitting the environment? One of the earliest explicit examinations of environmental behavioral spillover found that many pro-environmental behaviors representing different "domains", or situations, aren't conceptually linked for most people, and as such the researchers suggested only modest evidence for PEB spillover between environmentally-relevant categories (Thøgersen and Ölander, 2003). Importantly, this study also underlined the importance of identities in influencing cross-contextual behavior, as individuals who rated higher on universalism, a value within the self-transcendent value orientation, were more likely to perceive different pro-environmental behaviors as similar and thus, to demonstrate positive spillover (Thøgersen and Ölander, 2003). Further support for the identity basis of cross-contextual spillover was provided in a survey that tested intentions toward several pro-environmental behaviors against four different identity types: health conscious, environmentally-friendly, moral, and frugal (Gatersleben et al., 2014). Those researchers found that environmental identity predicted and explained additional variance over and above other predictors for not flying to a holiday destination, buying fair trade items, and recycling (Gatersleben, Murtagh, and Abrahamse, 2014).

Given the importance of identities in generating consistent behaviors not only within one environmental domain, but also spillover across environmental domains, further research is needed to solidify whether this spillover is likely to always be positive and, further, how the strength of one's environmental identity influences spillover. In addition it is important to understand, for the various strengths of environmental identity, how others' endorsement or disapproval of one's pro-environmental behaviors influence her subsequent actions. One way of doing this is to provide an identity label that either approves of or rejects one's environmental identity.

2.2.2. Identity labeling

Given that behaving in line with a role identity is an important component of behavioral consistency, one way of increasing PEBs may be to increase the salience of one's environmental identity. Identity salience is important because individuals hold a variety of self-identities – for example, one might concomitantly identify as an environmentalist, a father, and a teacher – and whichever identity is most salient at a given time will influence a person's resulting behaviors due to the propensity for individuals to engage in role-based behaviors (Stryker, 1968, Stryker and Serpe, 1982). One way in which programs or policies might be designed to encourage PEBs is by applying labels to individuals that highlight or foster an environmental identity.

A 2003 study found that the salience of one's environmental identity is related to an increase in PEBs (Stets and Biga, 2003). This study was limited, however, in that it merely tested how identity salience affected the reporting of already-completed PEBs, rather than how salience affected actual pro-environmental behaviors. Further, the researchers did not

closely examine how identity salience differentially affected propensity toward PEBs as a function of relative strength or weakness of environmental identities.

There is evidence to suggest that tailoring a message to highlight one's identity can increase behaviors typical of that identity. For instance, one study found that when participants' cultures were made salient, they were more easily persuaded by culturally-relevant health messages to engage in subsequent healthy behaviors (Uskul and Oyserman, 2010). These culturally-relevant messages thus served as primes for culturally-relevant health behaviors.

On the other hand, if a person's identity is contradicted, for example by labeling her with an identity to which she doesn't relate, she may try to distance herself from the assigned label by engaging in identity-restoring behaviors. An opposing identity can be threatening, and thus a person likely will not be motivated to conform to that other identity (Breakwell, 2010). One study triggered identity threat by providing participants with vignettes that contained a mix of identity-neutral and identity-threatening messages (Murtagh, Gatersleben, and Uzzell, 2012). After each vignette, participants were asked how likely they were to change their behaviors to align with the vignette, and the researchers found that messages which posed threats to participants' identities were less effective in swaying them toward the behaviors represented in the identity-threat vignettes (Murtagh et al., 2012).

While highlighting one's environmental identity might encourage PEBs among those who have strong environmental identities, receiving a pro-environmental label might pose a threat to those with weak environmental identities. For this group, pro-environmental behaviors might be encouraged through the use of framing, recognizing that individuals

hold various identities and engage in behaviors specific to whichever identity is salient. George Lakoff (2010) describes frames as the unconscious structures that shape our thoughts based on role identities. For example, an environmental frame might bring to mind such images as environmentalists, scenes of nature, wind farms, and recycling bins. Some have proposed the use of audience-oriented messages that appeal to a wide variety of American values to promote pro-environmental action (Schultz and Zelezny, 2003). The authors suggest that given the American propensity toward a self-enhancement value orientation, PEBs might be encouraged by strategically framing these actions as connected to other value orientations. For example, one's identity as a hunter might be connected to pro-environmental behaviors by saying that protecting public lands can lead to better hunting opportunities.

Given different levels of knowledge about environmental topics and different attitudes toward the environment, environmental labels might have inconsistent effects on individuals. For those with strong or weak environmental identities, receiving a label that is either consistent or inconsistent with those identities may not result in the same behaviors. While there is some evidence to indicate that making an environmental identity salient increases initial PEBs (Stets and Biga, 2003), there is no existing data on how identity salience influences behavioral spillover. Further, little is known about how labels which are consistent or inconsistent with one's environmental identity affect her initial and subsequent behaviors, or how this process plays out differently depending on the strength of her environmental identity. The present research seeks to address this question.

2.3. The present research

As outlined in Truelove et al. (2014), there is some evidence for the different types of spillover, though this evidence mainly points to correlational ties rather than to causation. The authors summarize research pointing to the mediating effect of environmental identity on positive spillover, and the present research seeks to further understand whether labels that emphasize or violate this identity shift the likelihood of positive spillover.

Environmental identity will be assessed by several different measures. The primary analysis will be conducted using a general environmental identity measure, which is meant to be a comprehensive indicator of one's overall sense of him or herself as an environmentalist. This measure, adapted partly from the Environmental Identity Scale (EIS) (Clayton, 2003), is widely used in similar research. The same models will also be analyzed using alternative environmental identity measures, which will allow me to capture different conceptualizations of environmental identity: environmental consumer identity and relative environmental identity. Specifically, the environmental consumer identity measure will provide a more tailored examination of a specific type of environmental identity that a person can have. There is indication that attitudes and values specific to one context or idea, rather than broad attitudes and values, are more predictive of behaviors that match those contexts and ideas (Ajzen, 2012, Ajzen and Fishbein, 1980, Ajzen and Fishbein, 1977). For example, having a favorable attitude toward all animals, generally-speaking, is likely less predictive of a person's decision to adopt a pet dog than is having a favorable attitude towards dogs in particular. Further, this consumer identity measure matches the "consumer preferences" frame of the study.

The relative environmental consumer identity measure will provide a reference for how much each individual prioritizes environmental aspects of his identity relative to other aspects (e.g., spiritual beliefs, political values). To my knowledge, no other environmental research has investigated measures that take into consideration how much an individual prioritizes environmental goals relative to the other aspects of his identity. This measure is important to explore, because it may capture the underlying precursors to environmental prioritization. Those with high relative environmental identities may be more dedicated to environmental goals despite other “distracting” identity aspects, while those with low relative environmental identities are likely less dedicated to environmental goals because other identity aspects take precedent.

To gauge the effects of identity labeling on spillover, I will perform a pseudo-consumer opinions marketing study in which participants believe they are providing opinions about common products. A consumer opinions design was adopted because environmental identities, attitudes, and behaviors have been studied on numerous occasions in the context of consumer tendencies (e.g. McCarty, Shrum, and Lowrey, 2010, Mainieri, Barnett, Valdero, Unipan, and Oskamp, 1997, Straughan and Roberts, 1999, Roberts and Bacon, 1997, Minton and Rose, 1997), and further, by presenting the study as a general consumer opinions task I was able to mask the environmental nature of the study.

Participants will either be given no label or labeled as “green” or “nongreen”. With respect to the spillover literature, this label mirrors the first pro-environmental behavior (PEB 1) such that those who receive a “green consumer” label believe they have been acknowledged for being a pro-environmental consumer. Each person will then be given the opportunity to donate to one of three organizations, one of which is environmental. My

primary research question is with regard to the effect of green or non-green labels on donation behavior and, more specifically, the moderating effect of pro-environmental identity strength on this relationship.

2.3.1. Primary hypotheses

Drawing on previous literature regarding identity strength, I expect a main effect of pre-existing identity such that those with strong environmental identities will be more likely to donate to the environmental cause than those with weak environmental identities (H1).

Further, I expect a main effect of condition such that the label one receives will serve as a prime that leads to behaviors consistent with that prime. I anticipate that those who receive a green label will be more likely to donate to the environmental cause than those who receive a non-green label (H2).

I also expect that the strength of one's pre-existing environmental identity will moderate the effect of the green label on donation behavior. Among those with strong environmental identities, I expect that those who receive the green label will be more likely to donate than those in a control condition, who receive no label (H3a), representing a positive spillover effect driven by an identity consistency process. This process will stem from the importance of values and identity in determining behaviors, and will reflect the desire of individuals to solidify their self-concept. I expect that those with strong environmental identities who receive the non-green label will also be more likely to donate to the environmental charity than those in the control condition, as this donation will give them an opportunity to reaffirm their environmental identities (H3b). Since this group did

not receive a green label and thus, these participants did not believe they performed a first pro-environmental behavior, this is not considered a positive spillover effect.

Among those with weak environmental identities, I expect that those who receive the green label will be less likely to donate to the environmental cause than those in a control condition, representing a negative spillover effect driven by resistance to behavior change due to identity threat (H4a). Inconsistent labels will create discomfort for this group, and they will try to “reset” their identities by engaging in an identity-consistent behavior. I expect that a non-green label will have no effect on donations to the environmental cause among those with weak environmental identities, because their motivation to donate is already low and thus, a non-green label will not further hurt their likelihood of donating (H4b).

Among those with moderate environmental identities, I expect that those who receive the green label will be more likely to donate to the environmental cause than those in a control condition, representing positive spillover driven by a green label priming effect (H5a). I expect that a non-green label will lead to lower donations to the environmental cause compared to those in the control condition, again due to a label priming effect (H5b). Overall, I anticipate that the effect of labels within the moderately identified groups will be stronger than it is among the other two identity subgroups.

I anticipate that the hypotheses listed here will apply to all three environmental identity measures. However, given the exploratory nature of both the consumer and relative environmental identity measures, any indications of results that diverge from my general identity measure would be revealing, and may suggest the need to continue exploring different ways of defining and interpreting environmental identity.

2.3.2. Secondary hypotheses

While I anticipate that identity-based decision processes will result in higher likelihood of donating to the environmental cause, the possibility exists that instead, affect-based decisions will lead to negative spillover. As such, I will also explore the role of negative affect and moral self-image in spillover processes. Should I find evidence for negative spillover, this analysis will test the theory that receiving a green label will increase one's moral self image or reduce one's negative affect, therefore leading to a reduction in donation behavior.

I will also examine the predictive ability of environmental identity and green labels on spillover as measured by other dependent variables: environmental policy support and priority given to environmental issues relative to other contemporary issues, e.g. improving access to healthcare and reducing the federal deficit. For these measures, I anticipate findings parallel to what is predicted in my main hypotheses. These secondary dependent variables will allow me to investigate spillover from behaviors to policy support. Many researchers have called for a closer look at the role that individuals' attitudes and beliefs play in influencing not only their behaviors, but also their wider political acts (e.g. Truelove et al., 2014, Thøgersen and Crompton, 2009, Hale, 2008). These calls acknowledge the importance of generating support among individuals for large-scale government policies and regulations that reduce emissions.

3. METHODOLOGY

3.1. Participants

This study was conducted in January and February, 2016. Five hundred and two adults aged 18 and up were recruited for this study through Amazon's Mechanical Turk (MTurk) website (Buhrmester, Kwang, and Gosling, 2011, Mason and Suri, 2012). The MTurk post was advertised as a consumer behavior study, for which participants could earn \$2.50 in Amazon credit. Throughout the survey, participants were required to correctly answer several basic factual questions to detect clicking through, of which they were warned before beginning the study. Those who failed one or more questions were directed to an early termination screen and no further data were collected, thus they did not receive payment and none of their data were included in the dataset. Of the 502 eligible cases in the data set, 8 participants with duplicate MTurk IDs and 11 with duplicate IP addresses were dropped. One participant requested to have his or her data dropped from analysis upon receiving details of the study at the end of the survey. Several participants were dropped due to the time it took them to complete the survey: 3 were dropped because it took them over 2 hours, and 10 were dropped because it took them under 5 minutes to complete. On average, the survey took participants 13 minutes to complete, and these respondents were classified as outliers. Finally, an additional 9 participants were dropped for failing to pass a comprehension check in which they were asked which label was assigned to them in the study (more detail below). This left 460 participants in the final data set.

Demographics for the participants eligible for analysis are summarized by condition in Table 1. Due to the disproportionately low number of males in the control condition, the

respondent's sex was entered as a control variable in the following analyses. Further, there were slightly more participants in the control condition due to a survey design error which directed more participants to this condition. This error was corrected after the initial round of data collection.

Table 1

Demographic profiles by experimental group

	Green label	Non-green label	Control – no label	Full Sample
N	142	149	169	460
% Male	62.4	59.1	52.7	57.7
Age (mean)	32.12	33.97	33.19	33.11
Education (median)	Some college	Some college	Some college	Some college
Income (median)	\$30 – 45k	\$30 – 45k	\$30 – 45k	\$30 – 45k
General environmental identity (%)	26.1 – weak 56.3 – moderate 17.6 - strong	26.2 – weak 50.3 – moderate 23.5 - strong	24.9 – weak 58.0 – moderate 17.2 - strong	25.7 – weak 55.0 – moderate 19.3 - strong
Environmental consumer identity (%)	33.8 – weak 31.7 – moderate 34.5 - strong	28.2 – weak 45.0 – moderate 26.8 - strong	32.5 – weak 28.4 – moderate 39.1 - strong	31.5 – weak 34.8 – moderate 33.7 - strong
Relative environmental identity (%)	25.4 – weak 54.2 – moderate 20.4 - strong	20.8 – weak 57.0 – moderate 22.1 - strong	26.6 – weak 53.8 – moderate 19.5 - strong	24.3 – weak 55.0 – moderate 20.7 - strong
Political identity (%)	14.1 – conservative 42.3 – moderate 43.7 - liberal	17.4 – conservative 42.3 – moderate 40.3 - liberal	11.8 – conservative 40.2 – moderate 47.9 - liberal	14.3 – conservative 41.5 – moderate 44.1 - liberal
Donated to the environmental cause (%)	43.0	30.2	39.6	37.6

3.2. Procedure

Eligible participants completed a pre-manipulation survey in which questions about demographic information, such as age and highest level of education achieved, were asked. Next, participants answered a series of general identity questions, from which their

responses to specifically the environmental items were extrapolated to form a measure of general environmental identity (see Table 2).

Table 2.

Survey items and response options

Survey item	Response options
General Environmental Identity (recoded into strong, moderate, weak) (adapted from the Aspects of Identity Questionnaire, Cheek and Briggs, 2013 & the Environmental Identity Scale, Clayton, 2003) <i>These items describe different aspects of how you think of yourself and what is important to you. Please read each item and consider how it applies to you.</i> • Engaging in environmentally-responsible behaviors • Living a sustainable lifestyle • Devoting time or money to environmental causes • Spending time outdoors	1 = not important to my sense of who I am; 5 = extremely important to my sense of who I am Cronbach's alpha = .78 Mean = 2.80 SD = .91
Environmental Consumer Identity (recoded into strong, moderate, weak) (adapted from the Ecologically Conscious Consumer Behavior Scale, Roberts, 1996) <i>The following questions ask about more specific shopping considerations. Please consider how true each of these considerations is to you when shopping.</i> • I will not buy products that have excessive packaging. • I have switched products for ecological reasons. • I try to only buy products that can be recycled.. • I make a conscious effort to buy products that are low in pollutants. • When I have a choice between two equal products, I always choose the one less harmful to the environment.	1 = never true; 5 = always true Cronbach's alpha = .90 Mean = 2.52 SD = .87

Table 2. (continued)	
Relative Environmental Identity (recoded into strong, moderate, weak) (Average of the four above General Environmental Identity measures minus average of the non-environmental measures from the General Environmental Identity question. See below.) <i>These items describe different aspects of how you think of yourself and what is important to you. Please read each item and consider how it applies to you.</i> • My popularity with other people. • Being a good friend to those I really care about. • My race or ethnic background. • My personal goals and hopes for the future. • Being physically active/exercising. • Devoting time or money to humanitarian causes. • My physical appearance: my height, weight, and the shape of my body. • My religion. • Devoting time or money to my religious group. • My language, such as my regional accent or dialect. • My age, belonging to my age group or being part of my generation. • My sex, being a male or female. • My political affiliation. • Being a sports fan, identifying with a sports team. • My occupational choice and career plans. • My sexual orientation (i.e. heterosexual, homosexual, bisexual).	1 = not important to my sense of who I am; 5 = extremely important to my sense of who I am Mean = 2.31 SD = .84
Positive and Negative Affect (adapted from Watson et al., 1988) <i>This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way <u>RIGHT NOW</u>, that is, at the present moment.</i> • Guilty • Fearful • Proud • Ashamed • Calm • Afraid • Happy	1 = very slightly or not at all; 5 = extremely Cronbach's alpha ("guilty" and "ashamed" only) = .81 Mean = 1.22 SD = .47 Cronbach's alpha ("proud" and "happy" only) = .72 Mean = 2.68 SD = 1.00

Table 2. (continued)	
Policy Support <i>How much do you support or oppose the following policies?</i> • Regulating carbon dioxide as a pollutant • Requiring electric utilities to produce at least 20% of their electricity from renewable energy sources	1 = strongly oppose; 5 = strongly support (6 = no opinion*) Cronbach's alpha = .68 Mean = 4.11 SD = 1.04
Moral Self-Image (adapted from Aquino and Reed (2002) & Khan and Dhar (2006)) <i>Please rate your level of agreement with each item.</i> • I am compassionate • I am fair • I am selfish** • I am moral • I am immoral**	1 = strongly disagree; 7 = strongly agree Cronbach's alpha = .81 Mean = 5.56 SD = .89
Issue Attention <i>As you know, there are many different issues on which Congress and the president can focus their time and attention. Please tell us how much of a priority that you think the following issues should receive.</i> • Reducing greenhouse gas emissions to mitigate climate change • Setting renewable energy standards	1 = not a priority; 5 = a top priority Cronbach's alpha = .87 Mean = -0.03 SD = .94

Note: * = Scale point was excluded from analysis

** = Item is reverse-coded

These items were followed by a series of general consumer behavior questions, from which responses to specifically the environmental items were extrapolated to form a measure of environmental consumer identity. Participants in all but the original pilot round then saw several questions regarding their materialistic versus experiential buying habits.

Participants were then told, "We are measuring consumer interest on a variety of products", and were shown 8 separate pairs of similar home cleaning and personal care products and asked to select the product they would be more likely to purchase (see

Appendix A, Item 1). Home and personal care products were chosen because these are items that most people commonly use and the particular products I chose had green qualities, but these qualities were not so obvious as to arouse participant suspicion regarding the environmental nature of the research. After selecting among these products, two-thirds of participants were filtered into an experimental condition and were shown a page with three “consumer profiles” claimed to be of interest in this study: green consumers (indicative of an environmentally-motivated identity), trendy consumers (indicative of a materialism-motivated identity), and cost-conscious consumers (indicative of a financially-motivated identity)(see Appendix A, Item 2). Half of the experimental participants were told that based on their choices, they were considered to be a “green consumer” while the other half of experimental participants were told that based on their choices, they were considered to be either a “trendy consumer” or a “cost-conscious consumer”. All experimental condition participants were asked to indicate which type of consumer they were told that they are. This check served as a filter and participants who did not correctly answer ($n = 9$) this question were dropped from analysis. The remaining one-third of participants were filtered into a control condition in which they did not see these three consumer profiles, but were simply thanked for their choices. This design allowed me to compare green consumer labeling vs. control, non-green consumer labeling vs. control, and green consumer labeling vs. non-green consumer labeling.

Following the experimental manipulation, participants completed a series of questions about their feelings and emotions, their support for various policies, their moral self-image, and the priority they believed several political issues should receive by the

President and the U.S. Congress. Among the policy and issue support questions, several items addressed environmental issues (discussed in further detail below).

At the end of the study, participants were told that a \$0.25 donation would be made on their behalf to an organization of their choosing. Participants had a choice between three organizations: one environmental charity (The Nature Conservancy), one patriotic (The Disabled American Veterans Charitable Service Trust), and one health (The American Red Cross) (see Appendix A, Item 3).

Finally, participants were asked to report in an open-ended question what they believed the study to be about, asked if they had any feedback, and were then debriefed.

3.3. Measures

Bivariate correlations for all measures are indicated in Table 3.

Table 3

Correlation matrix for all variables

	Sex	Political Identity	Condition	General Environmental Identity	Environmental Consumer Identity	Relative Environmental Identity	Donations to the Environmental Cause
Sex N	1 459	-.14** 459	.08^ 459	.02 459	.08^ 459	-.08^ 459	.01 459
Political Identity N	- .14** 459	1 460	.00 460	-.02 460	.04 460	.06 460	.04 460
Condition N	.08^ 459	.00 460	1 460	.02 460	-.02 460	-.01 460	-.02 460
General Environmental Identity N	.02 459	-.02 460	.01 460	1 460	.19** 460	.41** 460	.10** 460
Environmental Consumer Identity N	.08^ 459	.04 460	-.02 460	.19** 460	1 460	.23** 460	.13** 460
Relative Environmental Identity N	- .08^ 459	.06 460	-.01 460	.41** 460	.23** 460	1 460	.13** 460
Donations to the Environmental Cause N	.01 459	.04 460	-.02 460	.10** 460	.13** 460	.13** 460	1 460

3.3.1. Environmental Identity. Pre-existing environmental identities were tested by adapting two identity scales, the Aspects of Identity Questionnaire (AIQ) (Cheek and Briggs, 2013) and the Environmental Identity Scale (EIS) (Clayton, 2003), to achieve a general environmental identity score, and by adapting an environmental consumer behavior scale, the Ecologically Conscious Consumer Behavior Scale (ECCBS) (Roberts, 1996) to achieve an environmental consumer identity score. See Table 2 for an example of the environmental identity scale. These environmental questions were embedded among more general identity questions, to avoid participant suspicion that I was in fact measuring environmental identity. The modified ECCBS measures allowed me to assess environmental identity while also adhering to the stated “consumer opinions” theme of the study.

Average environmental identity scores were separately generated for both the general identity and consumer identity question sets. A high bivariate correlation pointed to strong overlap between the measures of environmental identity gathered from each $r(460) = 0.62, p < 0.01$.

A score was also calculated for each person's environmental identity relative to his or her general identity. This was calculated by subtracting the average of each person's environmental identity score (described above) from the average of the "non-environmental" aspects of his or her identity. Non-environmental identity scores were calculated simply by averaging a person's responses to the prompt, *"These items describe different aspects of how you think of yourself and what is important to you. Please read each item carefully and consider how it applies to you."* for various general identity questions that had no environmental relevance (e.g. "My popularity with other people", "My race or ethnic background"). The scale ranged from -4 to 4 with values above 0 indicating a higher environmental identity relative to a person's non-environmental identity and items below 0 indicating a lower environmental identity. See Table 2 for an example of the relative environmental identity scale.

The environmental identity scores were then recoded into weak, moderate, and strong environmental identities for each measure of environmental identity by splitting the averaged environmental identity scores into three groups³, and these 3-level variables of environmental identity was used in analysis.

3.3.2. Positive and Negative Affect. Positive and negative affects were assessed by adapting the Positive and Negative Affect Schedule (Watson, Clark, and Tellegen, 1988).

³ Percentile cuts for three equivalent groups was not possible for each measure. As such, the weak environmental identity group actually comprised a slightly lower range of scores.

This measure was collected after the experimental manipulation and participants were asked to indicate their emotional feelings at that moment in time. These measures are listed in Table 2. Due to a high correlation between the guilt and shame measures $r(460) = 0.69, p < 0.01$, these two were combined and averaged to create one score for negative affect. Similarly, due to a high correlation between pride and happiness $r(460) = 0.57, p < 0.01$, these were combined and averaged to create one score for positive affect.

3.3.3. Moral Self-Image. Moral self-image was assessed by using several traits from Aquino and Reed's (2002) measurement of moral identity and Khan and Dhar's (2006) measure of moral self-concept. These measures are listed in Table 2. I reverse-coded the selfish and immoral items before averaging all items to create an overall score of moral self-image.

3.3.4. Policy Support. Participants were asked about their support for various policies (e.g. A U.S. decision to accept more refugees; allowing gay and lesbian couples to marry legally in the U.S.). The list also included two environmental policies: regulating carbon dioxide, and producing power from renewable energy. The environmental policies were pulled from the list and averaged to create a measure of environmental policy support. These measures are listed in Table 2.

3.3.5. Issue Attention. Participants were asked to indicate the level of priority various U.S. political issues should receive. Priority ratings for all but the environmental issues were averaged to create a composite issue priority score. This score was then subtracted from the scores for each of the two environmental issues, *reducing greenhouse gas emissions to mitigate climate change*, and *setting renewable energy standards*, to create two separate measures of environmental issue support relative to support for other policy

issues. The recoded scale ranged from -4 to 4 with values above 0 indicating a higher priority assigned to environmental issues relative to non-environmental issues. These measures are listed in Table 2.

3.3.6. Environmental Donation. Each person was finally told, “We are donating \$0.25 on behalf of each of this study’s participants to a variety of organizations. Please review the three organizations listed below. You may choose to donate to one of these organizations. This donation does not come from your earnings in this study.” The three organizations listed above were then displayed, participants’ choices were subsequently counted, and the researcher made a donation to each of the organizations. This variable was dummy-coded for analysis to indicate that participants either chose to donate to the environmental cause (i.e. The Nature Conservancy) or did not choose to donate to the environmental cause (i.e. either The American Red Cross or The Disabled American Veterans Charitable Service Trust).

3.4. Protocol development and power analysis

This protocol was developed in two stages, as this was the first time environmental identity was studied in the context of behavioral spillover. First, pilot data were collected for 50 participants as a means to assess the overall functionality of the study, as well as the reliability and validity of my survey measures. At the end of the survey, participants were asked to indicate what they thought the study was about. With this question, I wanted to ensure that there was not an imbalance in perceptions of the study’s purpose, namely that the environmental theme of the study was not overly salient. Responses to this question were coded to assess relative frequencies for various perceived study purposes. The four purpose categories generated by participants were: “unawareness” (i.e. indication that the

participant did not know what the study was about), “psychological” (i.e. belief that the study was about general perceptions or beliefs), “environmental” (i.e. belief that the study was specifically about environmental opinions), and “consumer” (i.e. belief that the study was about general consumer opinions). While the majority of participants did not find the environmental aspect of the study to be particularly salient, I was concerned that the minority indicated that it was about consumer behaviors, which is how the survey was framed and thus should have been the most salient to participants.

To further mask the environmental theme of the study, abridged versions of two consumer behavior survey measures, the Experiential Buying Scale (Howell, Pchelin, and Iyer, 2012) and the Materialistic Values Scale (Richins and Dawson, 1992) were added among several other existing consumer behavior survey measures.

Following the first pilot, two donation options – The Sierra Club and The National Trust for Historic Preservation – were also changed due to concern that they were garnering less than expected consideration from participants. I was concerned that The Sierra Club might be perceived as too controversial, based on several participant comments, and that The National Trust for Historic Preservation was not easily recognized. These choices were switched to The Nature Conservancy and The Disabled American Veterans Charitable Service Trust.

The improvements were made prior to implementing the second stage of the protocol: a second pilot of 52 participants⁴, and then the full data collection. All pilot data were included in the final analysis. While many participants did still pick up on the environmental theme of the study, there were more participants who believed it to be a

⁴ However, 5 participants were removed from this analysis because they were repeat participants from Pilot 1.

consumer opinions study, and beliefs were more evenly spread among the four purposes. There was no indication of negative impressions of the new donation choices.

To determine the appropriate sample size for the final dataset, an a priori power analysis was run based on the initial pilot data. I estimated the necessary sample size to detect a small to medium effect size ($f = 0.20$, cf. Cohen, 1988) with statistical power of 0.80. The target sample size was, therefore, set at $n=415$. As indicated above, my achieved sample size was $n=460$.

4. RESULTS

4.1. Analysis of main effects and moderation

A generalized linear model with a logit link function was used to test the main hypotheses. Specifically, this test allowed for a prediction of the probability that participants would choose to donate to an environmental organization vs. a non-environmental organization. I included two control variables: sex, which was entered as a control due to the disproportionately low number of males in the control condition, and political ideology, which was entered as a control due to theoretical precedent indicating that this variable affects pro-environmental behaviors (Truelove et al., 2016). I also estimated main effects of experimental condition (green label, non-green label, no label) and a 3-level categorical measure of environmental identity (weak, moderate, strong⁵). The interaction effect between condition and environmental identity was estimated to test for the moderating effect of environmental identity strength. Dummy coded variables were used for experimental group (control = reference), environmental identity strength (moderate = reference), political ideology (moderate = reference), and sex (female = reference). The dataset included eligible participants from both pilots as well as the final full sample.

The model results are summarized in Table 4a.

⁵ This generalized linear model was run again with environmental identity and political ideology as continuous predictors. See Tables 4b, 5b, and 6b in Appendix C for summaries of results.

Table 4a.

Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (categorical general environmental identity predictor)

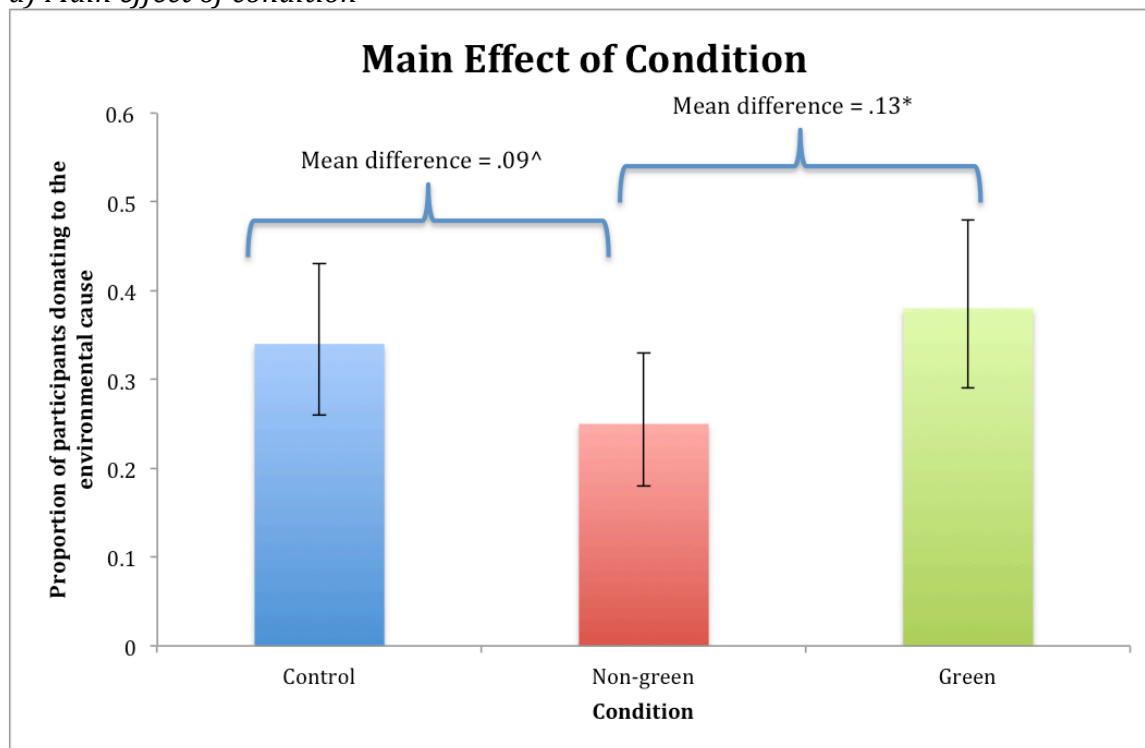
	Model 1		Model 2		Model 3		Model 4	
Predictor	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
Constant	-.51*	.25	-.38	.28	-.74*	.30	-.59 [^]	.32
Sex (ref = female)	-.10	.21	-.11	.21	-.12	.21	-.13	.21
Political Identity (ref = moderate)								
Conservative	-.88*	.37	-.89*	.37	-.55	.64	-.61	.61
Liberal	.55*	.22	.53*	.23	.95**	.36	.90**	.35
Condition (Label) (ref = control)								
Green	.19	.25	-.03	.31	.61	.38	.36	.42
Non-green	-.42 [^]	.25	-.57 [^]	.34	-.11	.38	-.27	.45
Environmental Identity Strength (ref = moderate)								
Low	-.79**	.26	-.67 [^]	.39	-.80**	.25	-.68 [^]	.39
High	.76**	.27	.02	.44	.77**	.27	.03	.46
Condition x Environmental Identity Strength								
Green X Low			.16	.59			.19	.58
Green X High			.99	.69			.99	.68
NonGreen X Low			-.90	.76			-.92	.76
NonGreen X High			1.22*	.62			1.19 [^]	.64
Condition x Political Identity								
Green X Conservative					-.18	.84	-.11	.82
Green X Liberal					-.83	.53	-.78	.51
NonGreen X Conservative					-1.01	1.02	-.96	1.03
NonGreen X Liberal					-.44	.53	-.40	.54
Summary statistics (block)	χ^2	df	χ^2	df	χ^2	df	χ^2	df
Likelihood ratio test	52.65**	7	60.63**	11	56.54**	11	64.29**	15

Note: [^] p < 0.10. *p < 0.05. **p < 0.01

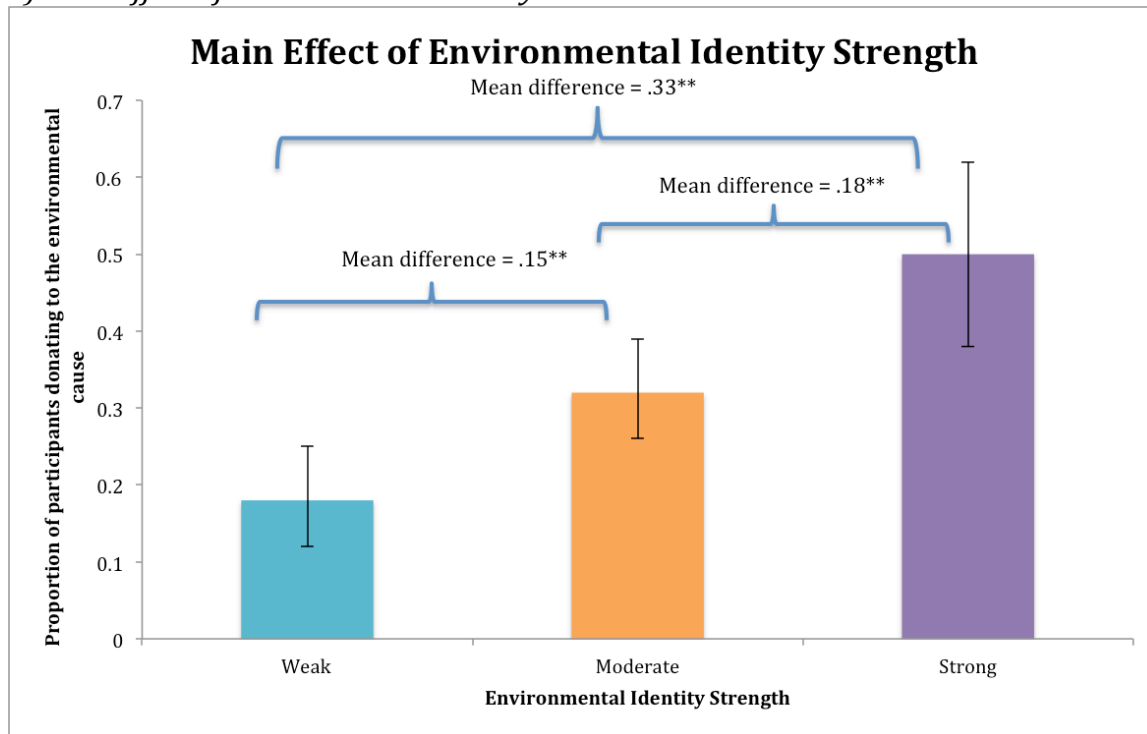
The model was significant, $\chi^2(11) = 60.63$, $p < 0.01$, explained 17% (Nagelkerke R^2) of the variance in donation behavior, and correctly classified 67.1% of cases. The Wald criterion demonstrated that there was a marginally significant main effect for condition ($p = 0.05$), a significant main effect for environmental identity strength ($p < 0.01$), and a significant main effect of political identity ($p < 0.01$). These main effects are plotted in Figures 1a-c. The interaction of condition and environmental identity strength was not significant, although planned comparisons to test the hypothesized interaction elicited significant and interesting results, discussed in further detail below.

Figure 1. General Environmental Identity Main Effects (Table 4a Model 1)
(Error bars represent 95% confidence intervals)

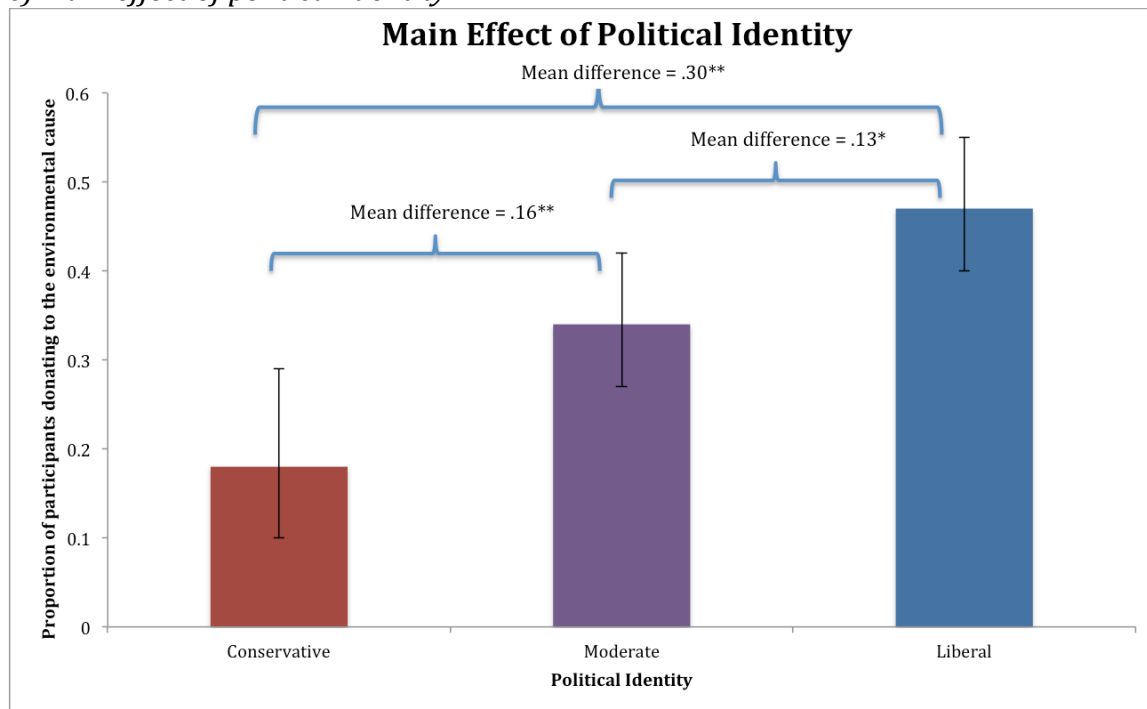
a) Main effect of condition



b) Main effect of environmental identity



c) Main effect of political identity

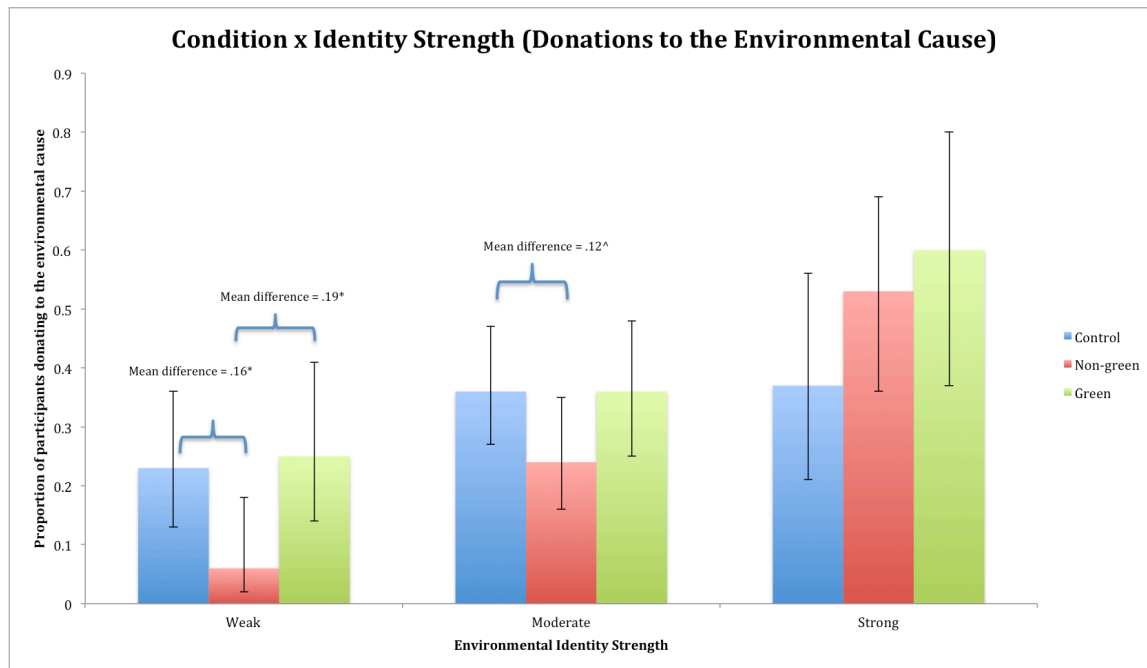


Note: ^ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$

Main effects analyses indicated a marginally significant effect in which participants in the non-green condition were 9% less likely than those in the control condition to donate to the environmental cause ($p = 0.09$). In addition, those in the green condition were 13% more likely to donate to the environmental cause than were those in the non-green condition ($p = 0.02$). The difference between the green and control conditions was not statistically significant. The main effect of political condition indicated that political conservatives were 16% less likely than political moderates to donate to the environmental cause ($p < 0.01$). Political liberals were 13% more likely than political moderates ($p = 0.01$), and 30% more than were political conservatives ($p < 0.01$) to donate to the environmental cause. Finally, the main effect of identity strength suggested that those with weak environmental identities were 15% less likely to donate than were those with moderate environmental identities ($p < 0.01$), while those with strong environmental identities were 18% more likely to donate than were moderates ($p < 0.01$) and 33% more likely to donate than were those with weak environmental identities ($p < 0.01$).

The interaction effect is graphed in Figure 2.

Figure 2. General environmental identity x Condition interaction



Note: ^ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$

Planned comparisons of the proportion of participants in each label group who chose to donate to the environmental cause indicated that among the moderate environmental identifiers, the non-green group was significantly less likely to donate than the control group (mean difference = 0.12, $p = 0.08$). However, there were no significant differences between the green and control groups, and the green and non-green groups.

Among the weak environmental identifiers, the green label group was significantly more likely to donate than the non-green label group (mean difference = 0.19, $p = 0.02$), and the non-green label group was significantly less likely to donate than the control group (mean difference = 0.16, $p = 0.02$). Again, there was no difference between the green group and the control group.

Among the strong environmental identifiers, there were no statistically significant differences in donation rates, though the contrast between the green and control conditions pointed to a trend toward positive spillover (mean difference = 0.24, $p = 0.11$).

The three-way interaction between political identity, condition, and identity strength was explored. However, the models did not converge due to the small sample size of conservatives (full sample average = 14.3%), and thus there are no results to interpret.

The model results for the environmental consumer identity measure are summarized in Table 5a.

Table 5a.

Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (categorical environmental consumer identity predictor)

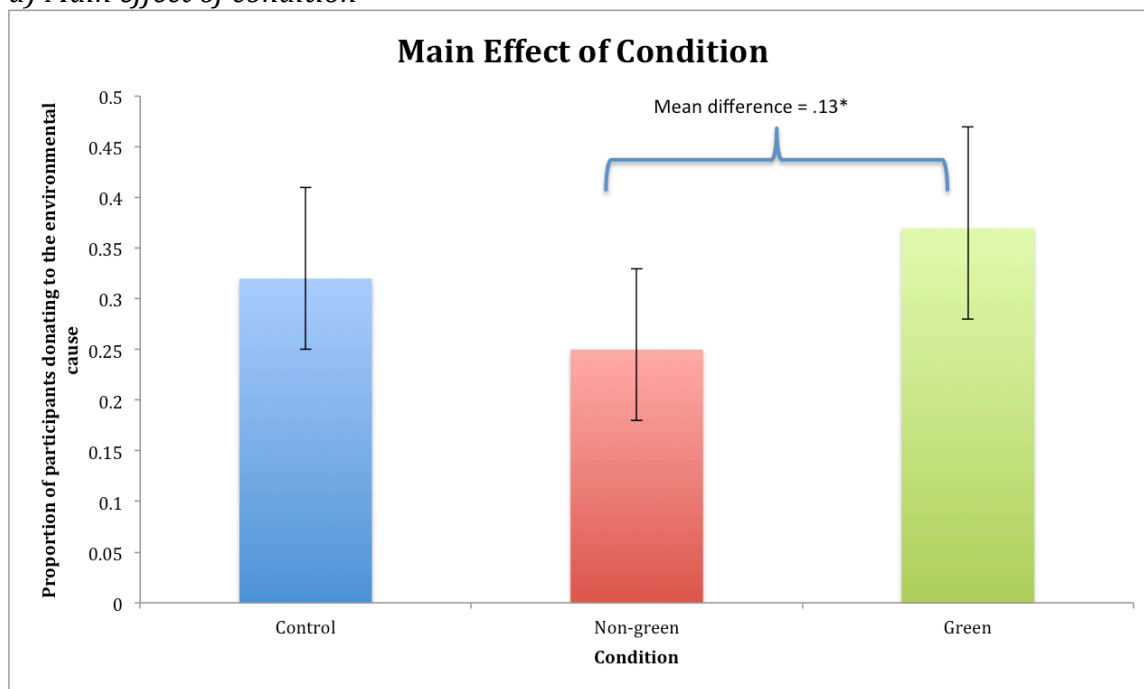
	Model 1		Model 2		Model 3		Model 4	
Predictor	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
Constant	-.60*	.25	-.61*	.29	-.79**	.30	-.81*	.33
Sex (ref = female)	.00	.21	.00	.21	-.02	.21	-.02	.21
Political Identity (ref = moderate)								
Conservative	-.82*	.37	-.81*	.37	-.54	.64	-.54	.63
Liberal	.57**	.22	.57**	.22	.92*	.36	.91**	.35
Condition (Label) (ref = control)								
Green	.21	.25	.27	.33	.58	.39	.64	.43
Non-green	-.39	.25	-.40	.32	-.13	.39	-.15	.43
Environmental Consumer Identity Strength (ref = moderate)								
Low	-1.01**	.28	-.82*	.42	-1.03**	.29	-.84*	.42
High	.87**	.27	.78^	.40	.85**	.27	.79^	.42
Condition x Environmental Identity Strength								
Green X Low			-.35	.65			-.35	.65
Green X High			.02	.65			-.04	.64
NonGreen X Low			-.35	.79			-.35	.80
NonGreen X High			.30	.62			.28	.64
Condition x Political Identity								
Green X Conservative					-.03	.86	.01	.87
Green X Liberal					-.76	.53	-.74	.53
NonGreen X Conservative					-.98	1.03	-.97	1.03
NonGreen X Liberal					-.34	.53	-.32	.53
Summary statistics (block)	χ^2	df	χ^2	df	χ^2	df	χ^2	df
Likelihood ratio test	60.61**	7	61.34**	11	64.36**	11	65.05**	15

Note: ^ p < .1. *p < .05. **p < .01

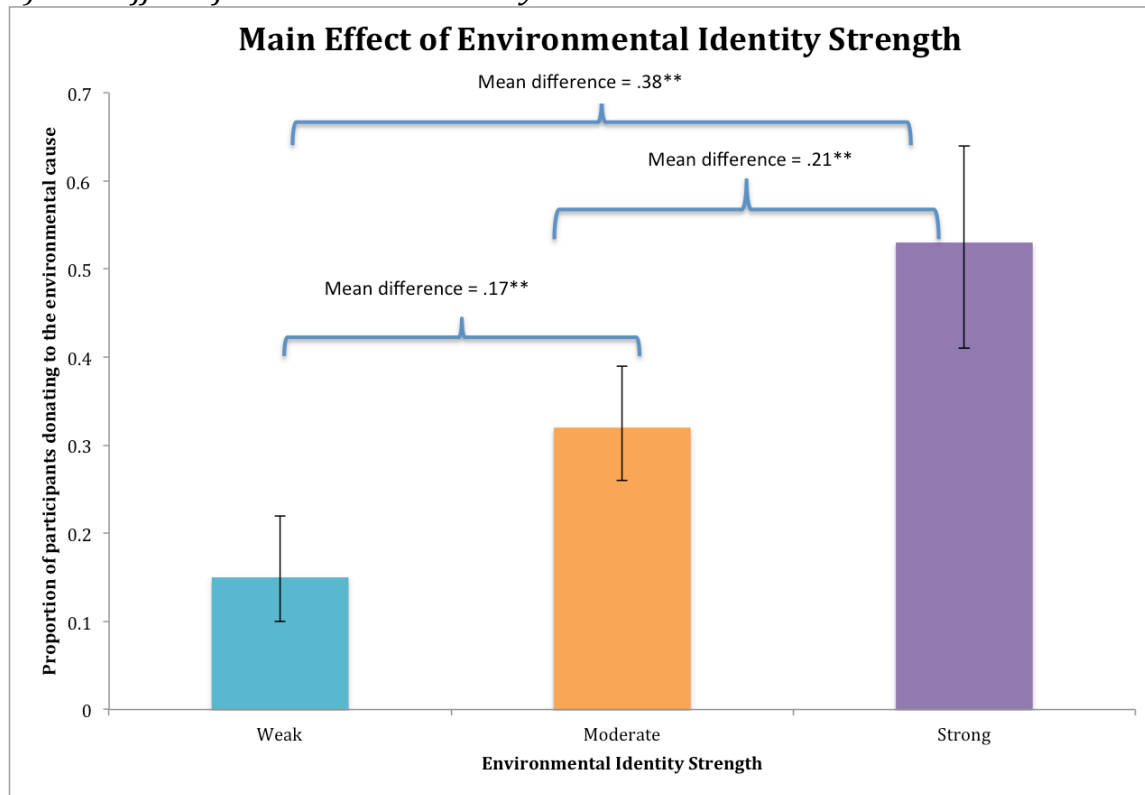
The model was significant, $\chi^2(11) = 61.34$, $p < 0.01$, explained 17% (Nagelkerke R^2) of the variance in donation behavior, and correctly classified 67.1% of cases. The Wald criterion demonstrated that there was a marginally significant main effect for condition ($p = 0.07$), a significant main effect for environmental identity strength ($p < 0.01$), and a significant effect of political identity ($p < 0.01$). These main effects are substantively identical to those found for the general environmental identity measure (see Figures 3a-c).

Figure 3. Environmental Consumer Identity Main Effects (Table 5a Model 1)

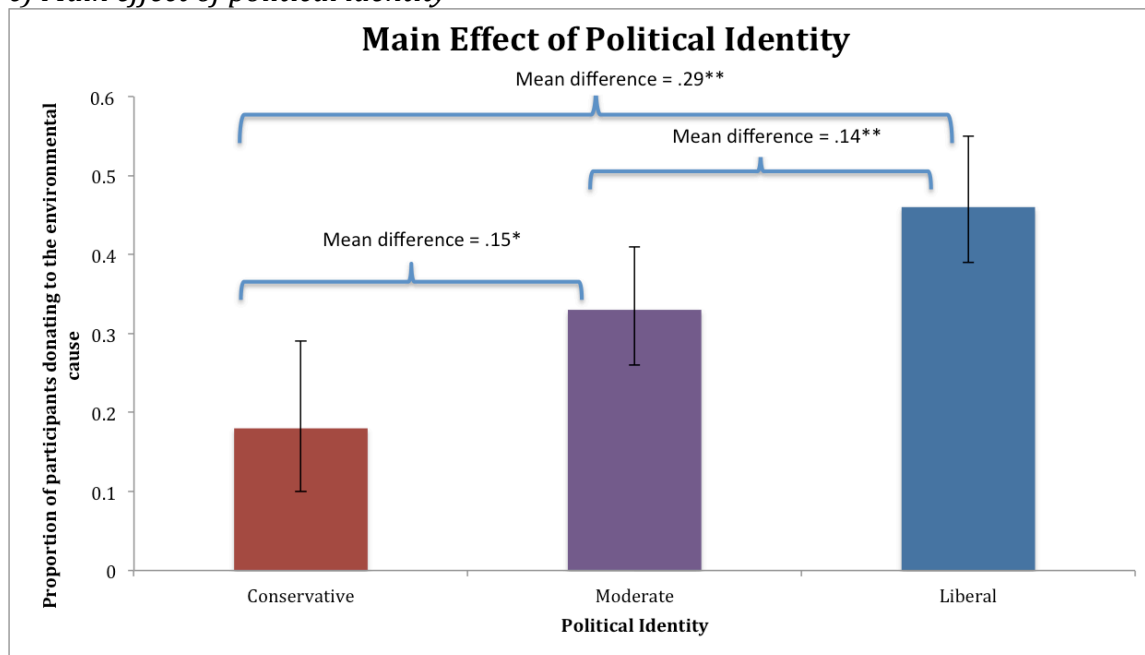
a) Main effect of condition



b) Main effect of environmental identity



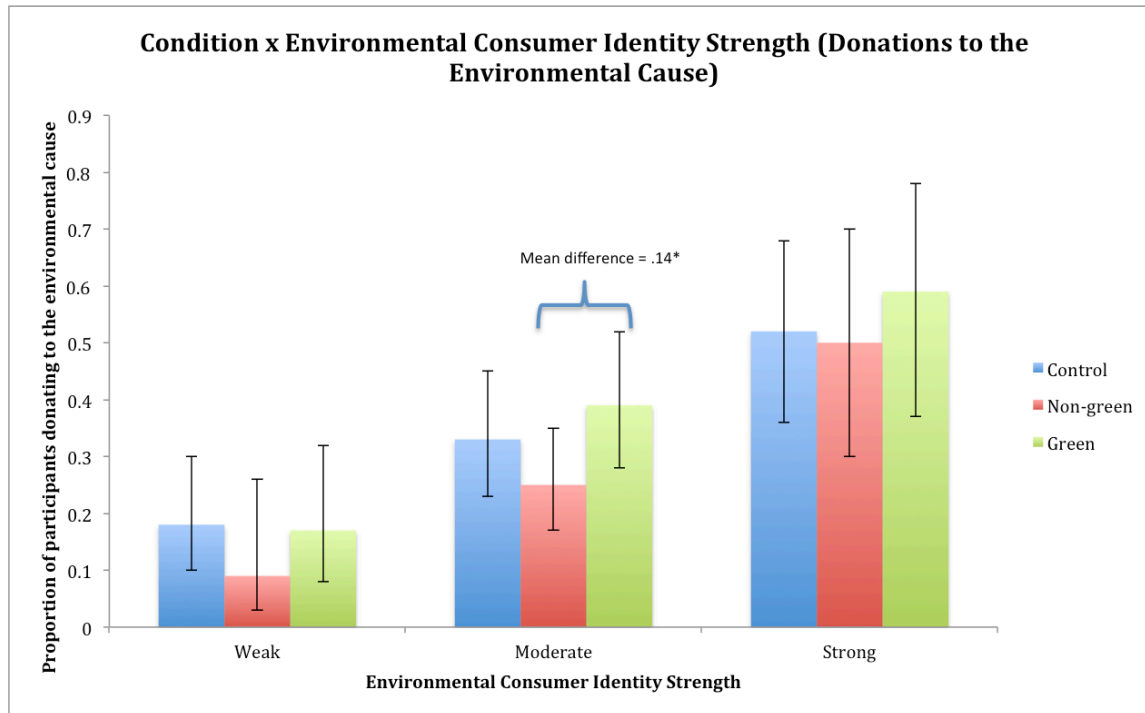
c) Main effect of political identity



Note: ^ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$

The interaction term of condition and environmental consumer identity strength was not significant. However, planned comparisons were conducted (See Figure 4).

Figure 4. Environmental consumer identity x Condition interaction



Note: ^ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$

The weak and moderate identifiers did not demonstrate the same stark mean differences that were observed in the models using the general environmental identity measure. Among the weak identifiers, there were no differences in donation rates between any of the three groups. For the moderate identifiers, neither experimental group differed in donation rates from the control group. However, those in the green condition were more likely to donate than were those in the non-green condition (mean difference = 0.14, $p = 0.04$). Within the strong environmental identifiers, labeling – both green and non-green – seemed to have no impact whatsoever on donation rates. Unlike the trend toward positive spillover as demonstrated by the general environmental identity measure, there was no evidence for spillover in either direction for strong environmental consumer identifiers.

The model results for the relative environmental identity measure are summarized in Table 6a.

Table 6a.

Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (categorical relative environmental identity predictor)

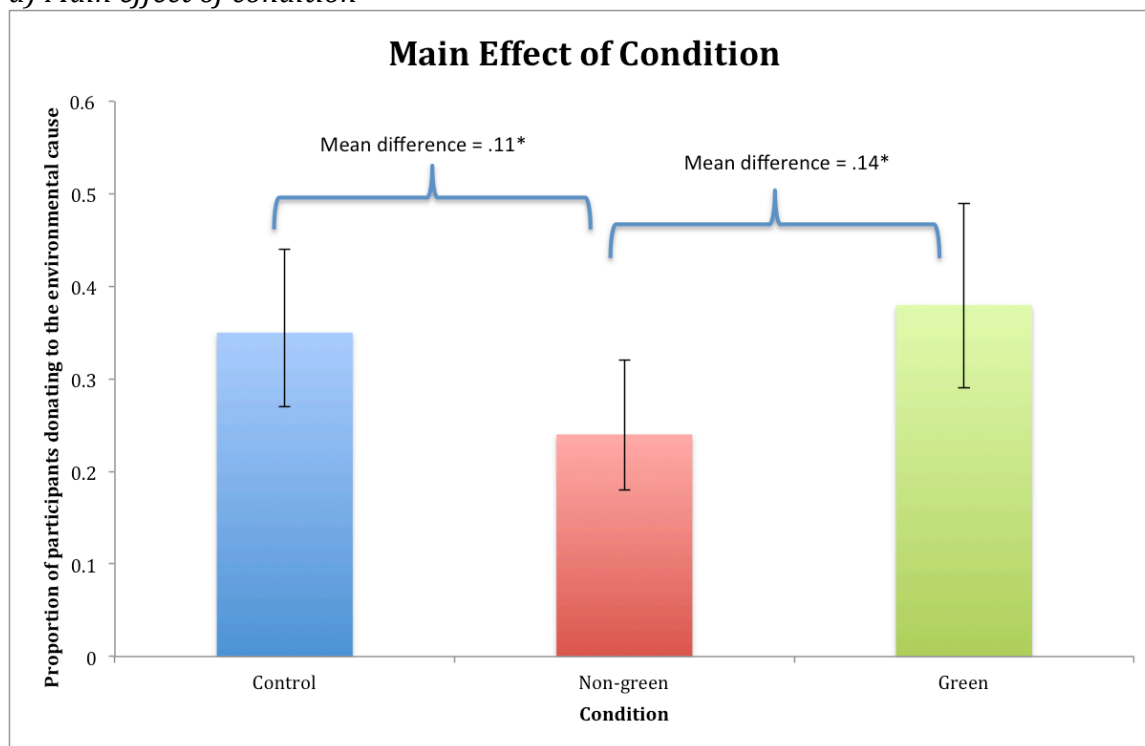
	Model 1		Model 2		Model 3		Model 4	
Predictor	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
Constant	-.59*	.27	-.67*	.29	-.80**	.30	-.95**	.34
Sex (ref = female)	-.10	.22	-.09	.22	-.14	.22	-.13	.22
Political Identity (ref = moderate)								
Conservative	-.44	.37	-.46	.38	-.12	.61	.02	.63
Liberal	.64**	.23	.65**	.23	1.08**	.36	1.14**	.38
Condition (Label) (ref = control)								
Green	.15	.26	.18	.33	.55	.40	.69	.46
Non-green	-.52*	.26	-.33	.33	-.13	.39	.14	.47
Relative Environmental Identity Strength (ref = moderate)								
Low	-1.28**	.30	-1.28**	.45	-1.38**	.31	-1.36**	.45
High	1.17**	.27	1.52**	.48	1.13**	.27	1.61**	.53
Condition x Environmental Identity Strength								
Green X Low			.29	.67			.23	.68
Green X High			-.43	.67			-.61	.70
NonGreen X Low			-.55	.88			-.50	.88
NonGreen X High			-.62	.64			-.80	.69
Condition x Political Identity								
Green X Conservative					.10	.84	-.15	.88
Green X Liberal					-.84	.54	-.91^	.55
NonGreen X Conservative					-1.23	.97	-1.44	1.01
NonGreen X Liberal					-.56	.55	-.61	.56
Summary statistics (block)	χ^2	df	χ^2	df	χ^2	df	χ^2	df
Likelihood ratio test	82.74**	7	84.63**	11	87.74**	11	89.97**	15

Note: ^ p < .1. *p < .05. **p < .01

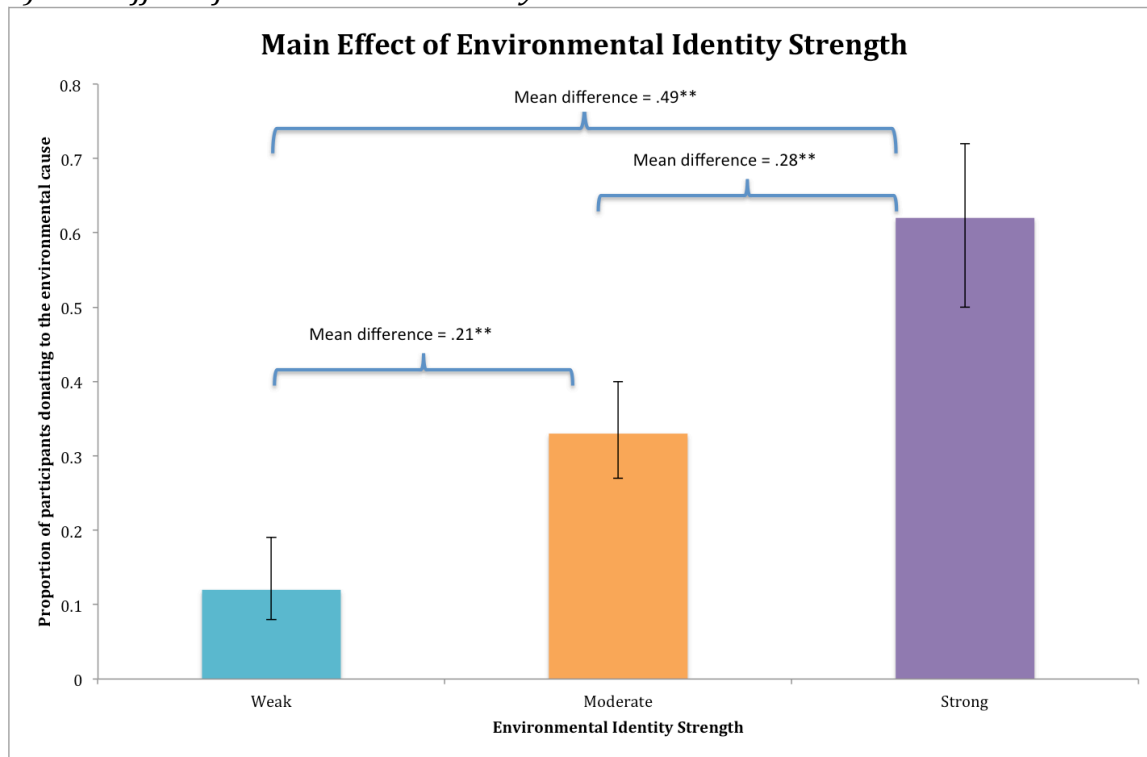
The model was significant, $\chi^2(11) = 84.63$, $p < 0.01$, explained 23% (Nagelkerke R^2) of the variance in donation behavior, and correctly classified 69.1% of cases. The Wald criterion demonstrated that there was a significant main effect for condition ($p = 0.04$), a significant main effect for environmental identity strength ($p < 0.01$), and a significant effect of political identity ($p < 0.01$). Once again, these main effects are substantively identical to those found for the general environmental identity measure (see Figures 5a-c).

Figure 5. Relative Environmental Identity Main Effects (Table 6a Model 1)

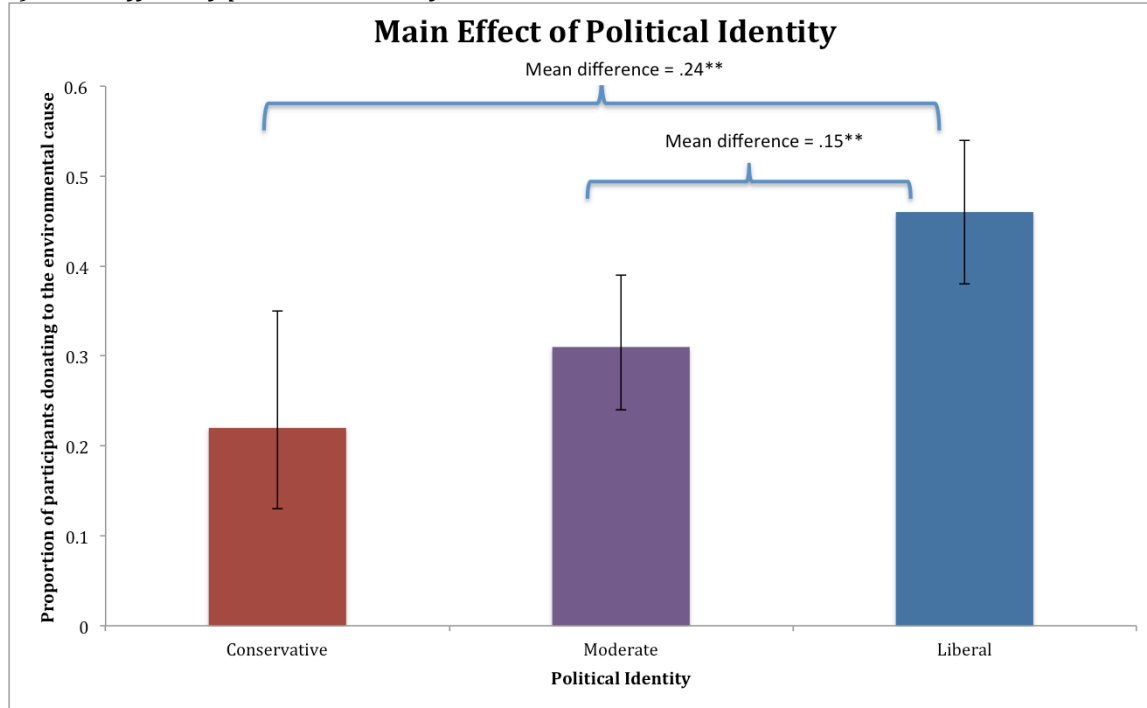
a) Main effect of condition



b) Main effect of environmental identity



c) Main effect of political identity

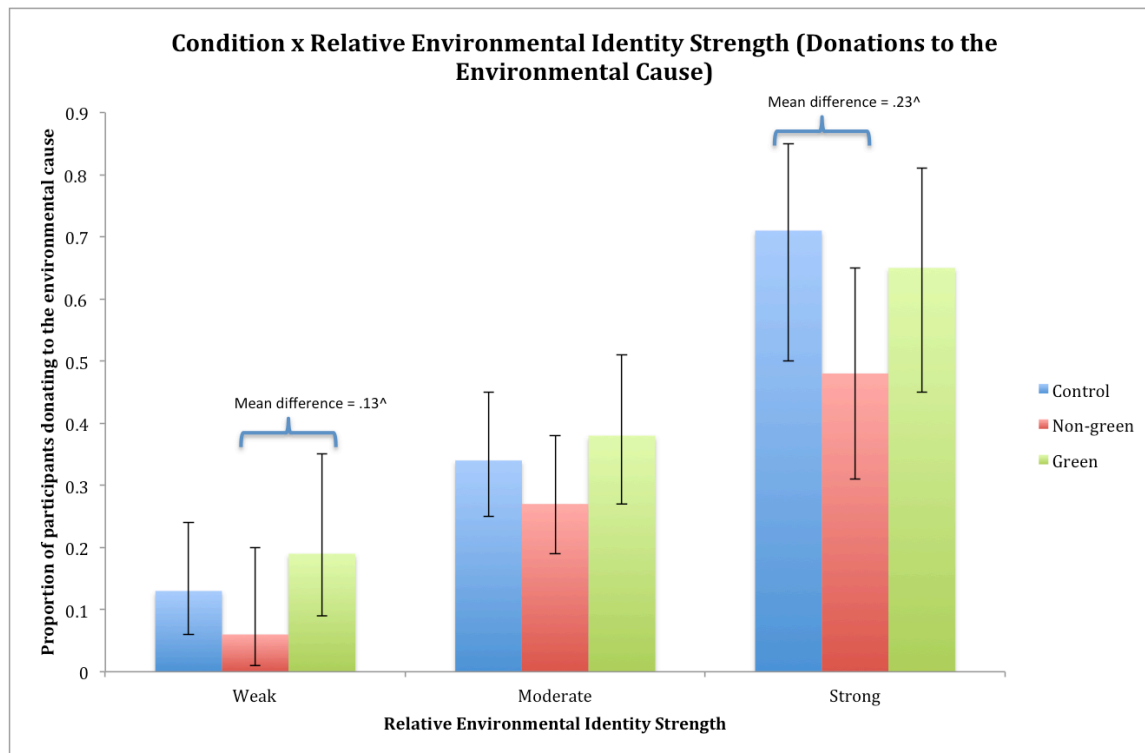


Note: ^ $p < 0.1$. * $p < 0.05$. ** $p < 0.01$

The interaction term of condition and relative environmental identity strength was not significant. However, planned comparisons indicated some significant differences between the cell means. Among weak identifiers, those in the green condition were more likely to donate than were those in the non-green condition (mean difference = 0.13, $p = 0.09$). There were no differences in donation rates between either of the experimental groups and the control group. For the weak identifiers, the pattern of statistical significance deviated somewhat from the previous two models; however, the overall pattern of means within this group was consistent.

Among the strong identifiers, those in the non-green condition were less likely to donate than were those in the control condition (mean difference = 0.23, $p = 0.07$) (See Figure 6).

Figure 6. Relative environmental identity x Condition interaction



Note: [^] $p < 0.1$. * $p < 0.05$. ** $p < 0.01$

Neither experimental group was more likely to donate than the control group. When using the relative identity measure, the non-green group was marginally significantly *less* likely to donate than were those in the control condition (mean difference = 0.23, $p = 0.07$).

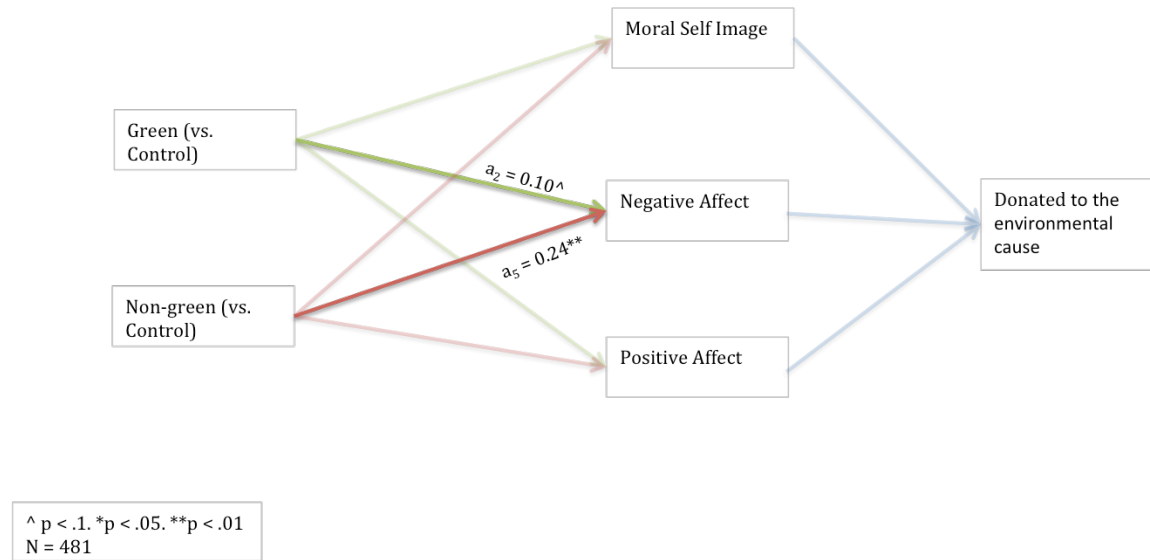
Among the moderate identifiers, there were no differences in donations among any of the three conditions. This also contradicts the significant differences found in the prior two models, but the pattern of means was consistent across the models.

4.2. Analysis of mediation effects

Though I found no evidence pointing to negative spillover effects, I explored the possible influence of factors in addition to environmental identity – namely positive and negative affect and moral self-image – in moderating the influence of experimental condition on donation behaviors via a mediation analysis. A parallel multiple mediation logit model with bias-corrected asymmetric bootstrapping of the 95% confidence interval (CI) based on 10,000 bootstrap samples was conducted (PROCESS, Model 4 v. 2.15). Multi-categorical independent variables were accounted for by replicating the technique used in Hayes and Preacher (2014). The experimental factor was dummy coded, and the control condition was used as the reference category.

This model accounted for roughly 2% of variance (Nagelkerke R^2), less than the variance explained by the model without the mediators (see Figure 7).

Figure 7. Full model mediation analysis

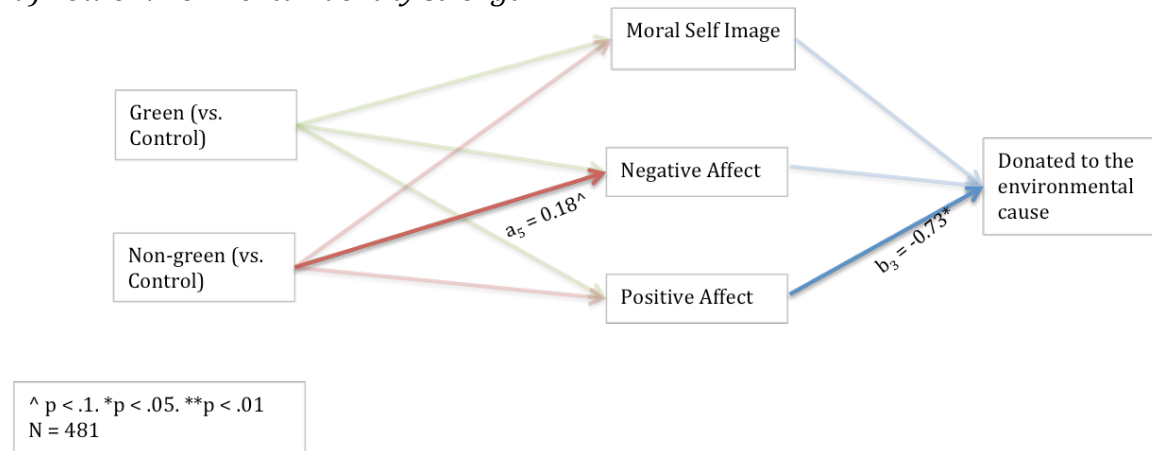


The model indicated that experimental condition had a significant impact on negative affect. Both the green condition ($p = 0.07$) and the non-green condition ($p < 0.01$) generated significantly more negative affect than the control. However, the effect of negative affect on donations to the environmental cause was not significant and thus, there was no mediation.

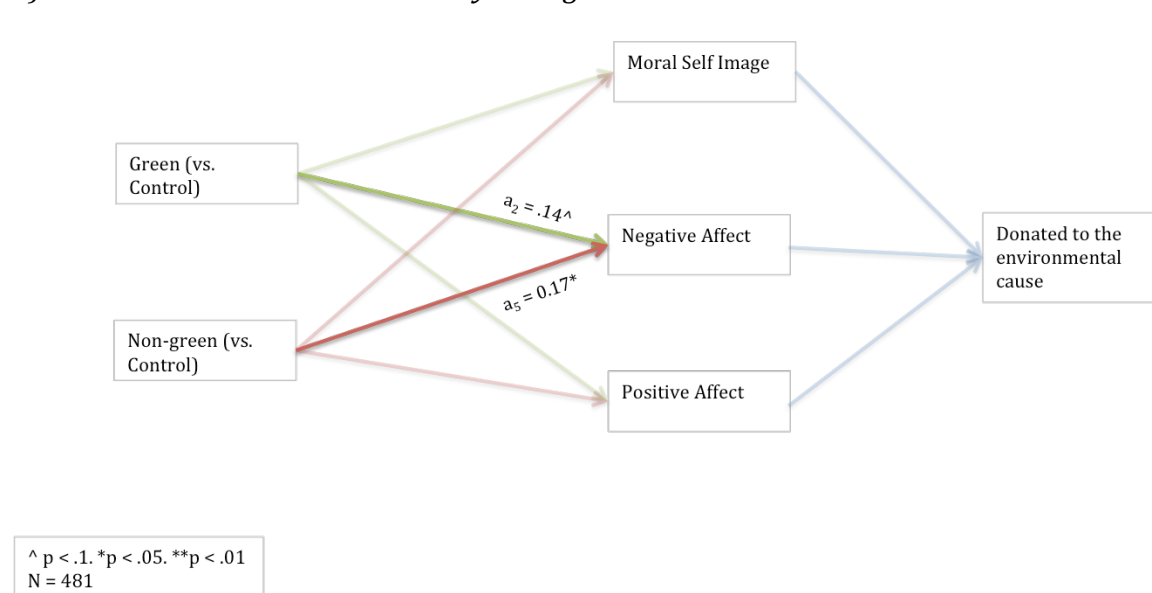
Next, mediation models were calculated separately for each of the three identity strength groups (see Figures 8a-c). These three models generated similar effects as were found in the full model; that is to say, there was no complete or partial mediation within any of the environmental identity strength groups.

Figure 8. General identity strength mediation analyses

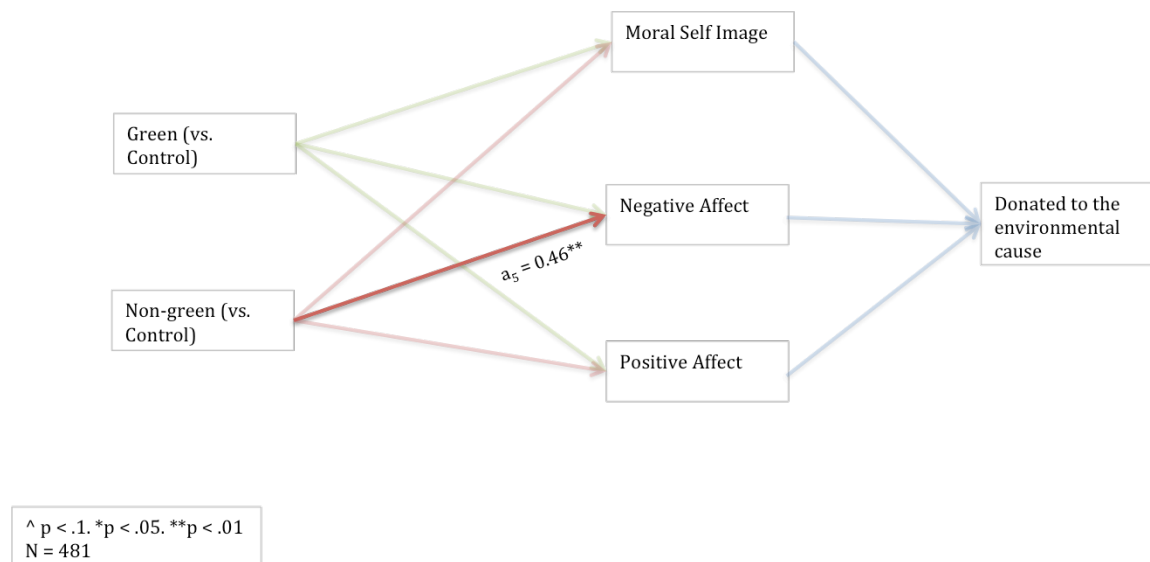
a) Low environmental identity strength



b) Moderate environmental identity strength



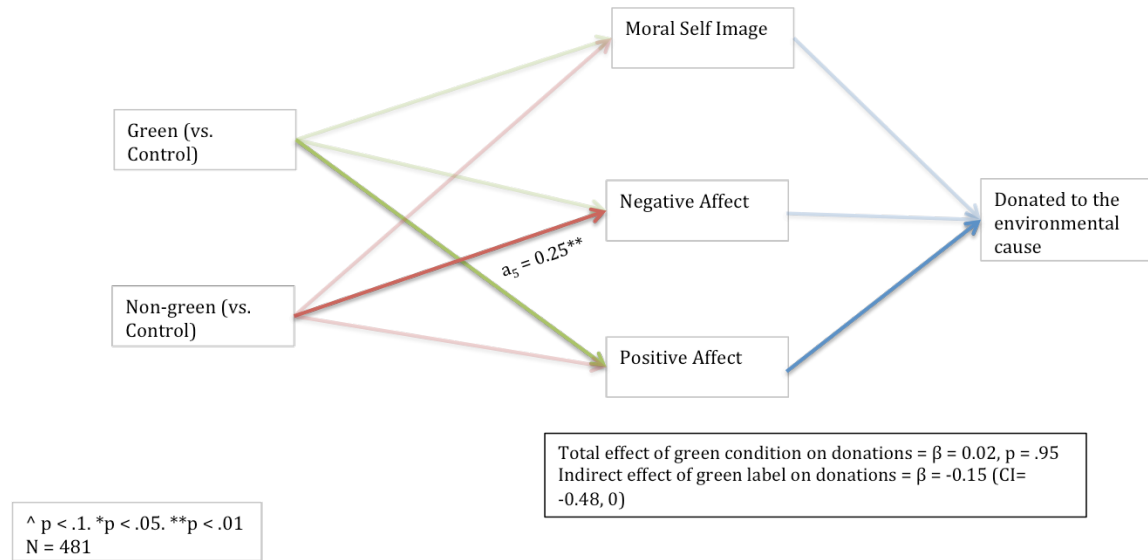
c) High environmental identity strength



The three within-identity group models were replicated using the consumer identity and relative identity measures as the basis of the identity groups. For the strong consumer identity measure, the green condition positively predicted positive affect ($p = 0.04$) and positive affect negatively predicted donations to the environmental cause ($p = 0.04$). The indirect effect of the green label on donation behavior, mediated through positive affect, was significant, $\beta = -0.15$ (Confidence Interval = $-0.48, 0$). The total effect of the green label on donation behavior was not significant, $\beta = 0.02$ (Confidence Interval = $-0.74, 0.78$), suggesting that positive affect fully mediates the effect of green label on donation. These results are summarized in Figure 9.¹

¹ Mediation analyses for all other environmental identity strength groups for my alternative measures of environmental identity did not provide evidence for full mediation. These results are shown in Appendix B.

Figure 9. High consumer environmental identity strength mediation analysis



4.3. Secondary dependent variable analyses

To further examine the predictive ability of the above variables on spillover to pro-environmental behaviors, a two-way univariate analysis of variance (ANOVA) test was conducted on two secondary dependent variables: environmental policy support and amount of attention environmental issues should receive from the United States President and Congress. These variables were highly correlated $r(416) = 0.61$, $p < 0.01$. Again, sex and political ideology were entered as control variables in these analyses. These results are summarized in Table 7.

Table 7.

Effect of experimental condition and environmental identity strength on environmental policy support and environmental issue attention (ANOVA)

Predictor	Environmental Policy Support				Environmental Issue Attention			
	SS	df	MS	F	SS	df	MS	F
Constant (corrected)	78.33	10	8.55	9.03**	57.60	10	5.76	7.49**
Sex (ref = female)	.32	1	.12	.36	.06	1	.06	.08
Political Identity	3.04	1	3.21	3.50^	10.52	1	10.52	13.68**
Condition (Label)	.73	2	.26	.42	2.82	2	1.41	1.84
Environmental Identity Strength	68.51	2	37.69	39.49**	41.26	2	20.63	26.83**
Condition x Environmental Identity Strength	2.18	4	.79	.63	1.73	4	.43	.56
Error	350.42	404	.87		344.43	448	.77	
Total (corrected)	428.75	414			402.03	458		

^ p < .1. *p < .05. **p < .01

For environmental policy support, environmental identity strength elicited a significant main effect, $F(2, 404) = 39.49$, $p < 0.01$. Political identity was also marginally significant, $F(1, 404) = 3.50$, $p = 0.06$. The interaction between environmental identity strength and experimental condition was not significant, $F(4, 404) = 0.63$, $p = 0.64$.

For the test of suggested attention environmental issues should receive, similarly, environmental identity strength elicited a significant main effect, $F(2, 448) = 26.83$, $p < 0.01$. Political identity was highly significant, $F(1, 448) = 13.68$, $p < 0.01$. The significance of political identity for both secondary dependent variables is not surprising, given that these questions both dealt with politically relevant aspects of individuals' environmental concern. The interaction between environmental identity strength and experimental condition was not significant, $F(4, 448) = 0.56$, $p = 0.69$.

5. DISCUSSION

5.1. Key findings

This study sought to investigate how labeling a person as environmental or not influences her decision to engage in pro-environmental behaviors, and how such a label affects individuals of different environmental identity strengths. Through an experimental manipulation, I assigned either a “green”, “non-green”, or no label to all participants and examined if this label interacted with the strength of one’s pre-existing environmental identity in determining his or her propensity to donate to an environmental cause over other non-environmental charity options.

Per my primary analysis using a general measure of environmental identity, I found a significant main effect of environmental identity strength, as anticipated in Hypothesis 1, such that as identity strength increases, so does the likelihood that one will engage in a pro-environmental action (i.e., a donation). This finding makes sense, given evidence from past research that stronger environmental identities manifest in identity-consistent pro-environmental behaviors (e.g. Fielding et al., 2008). In support of Hypothesis 2 I also found a marginally significant main effect of condition. However, planned comparisons indicated that there was not a significant difference in donations between the green and control groups, and thus there was no evidence for either positive or negative spillover. However, there was evidence that those who received the non-green label were less likely to make an environmental donation, which supports past researchers’ findings that behaviors can be primed by strategically framing the messages or labels that precede them (e.g. Uskul and Oyserman, 2010).

Among individuals with strong environmental identities, an analysis of the general environmental identity measure indicated a non-significant trend whereby those who received a green label were more likely to donate than were those in the control condition ($p = 0.11$). Though there is not statistical significance to support H3a, the trend suggests the plausibility of positive spillover. Donations for the non-green condition did not differ significantly from either the control or the green condition, and thus there is no support for H3b. However, the fact that this group did not demonstrate a lower likelihood of pro-environmental actions compared to those who did not receive a label indicates that they did not appear to feel “off the hook” despite the non-green label.

When considered together, these findings for strong environmental identifiers are important in two ways: 1) they suggest that a person with a strong environmental identity will be more likely to engage in behaviors that are loyal to that identity regardless of the label they receive for previous behaviors and 2) they also hint that reinforcing that person’s environmental identity could be an effective way to boost her likelihood of engaging in subsequent pro-environmental behaviors. Point 1 speaks to the main effect of environmental identity, and proposes that increasing the strength of one’s environmental identity might increase his pro-environmental behaviors. Given that identities are rooted in the values one endorses, one way that PEBs might be encouraged is through programs and policies which help to construct pro-environmental values and identities by facilitating access to and care for nature (Clayton, 2003, Clayton and Opatow, 2003, Hinds and Sparks, 2008, Pyle, 1978). This might look like implementing hands-on nature education programs in schools or elsewhere (for a review of the relationship between school gardening programs and pro-environmental behaviors, see Blair, 2009), improving access to green

spaces and thus, improving mental and physical health, through better environmental design and urban planning (Barton and Pretty, 2010, Bratman, Daily, Levy, and Gross, 2015), or providing mental health or therapy services that empower individuals to see the link between self-understanding and natural spaces (Clayton, 2003, Herzog, Black, Fountaine, and Knotts, 1997). Point 2 speaks to the marginally significant main effect of condition. While there was no increase in donations relative to the control after applying a green label per that effect, there was evidence that a green label is superior to a non-green label. This suggests that efforts to highlight environmental identities with labels might be effective in encouraging consistent pro-environmental behaviors. For example, perhaps store receipts could state, “You purchased \$X of sustainable products today!” Similar strategies have been demonstrated in co-operative grocery stores, by providing the dollar amount of local products a person purchased at the bottom of the receipt (Lebens, 2010). These findings may also alleviate concerns about greenwashing, a phenomenon whereby companies tout the green qualities of their products in order to take advantage of an expanding market for sustainable products (Delmas and Burbano, 2011). As mentioned previously, some are skeptical that this practice may actually result in rebound behaviors if individuals feel they have done their part by the mere act of purchasing green products (e.g. Gillingham et al., 2015, Wagner, 2011). My results suggest that labeling individuals as green may actually encourage subsequent green behaviors.

For the other two identity strength groups, my findings diverged somewhat from my hypotheses. The weak environmental identity strength group provided no indication of negative spillover in the green label condition as anticipated in Hypothesis 4a. Instead, weak environmental identifiers who received a green label were equally as likely as weak

environmental identifiers in the control condition to donate to the environmental cause. Thus, these data do not provide evidence for an identity threat effect that leads to negative spillover, but rather suggest that being labeled pro-environmental has little effect on those with weak environmental identities. However, weak environmental identifiers who received a non-green label were actually *less* likely to donate to the environmental cause (mean difference = 0.16, $p = 0.02$), failing to support Hypothesis 4b that they would donate at the same rates as those in the control condition. Because the non-green label did not give this group a reason to believe they had just performed a PEB, this is not indicative of a negative spillover effect. However, this finding, especially when combined with H4a, suggest that identities which may conflict with environmental goals – here, the money-prioritizing “cost-conscious” label and the materialistic “trendy” label – should not be made salient among those who are known to have weak environmental identities.

A similar effect was found among moderate environmental identifiers. Contrary to Hypothesis 5a, there was no indication of positive spillover for those in the green condition. Rather, this group was equally as likely to donate to the environmental cause as the control group. The lack of evidence for positive spillover is particularly noteworthy because this group is perhaps the most important on a practical basis; because of their fluctuating or less extreme opinions regarding themselves as environmental identifiers, I anticipated that this group would be much more susceptible to the influence of labels than they actually were. This evidence suggests that applying a green label to uncommitted individuals is not effective in swaying them. However, similar to the weak identifier group, the non-green label actually reduced the likelihood of donating to the environmental cause among moderate environmental identifiers (mean difference from control = 0.12, $p = 0.08$),

providing support for Hypothesis 5b. Once again, I anticipate this was due to a label priming effect. As such, non-green labels should be avoided for those with moderate environmental identities.

Despite only one instance of a trend toward positive spillover in this experimental test of identity strength and manipulation, my inability to create any instance of negative spillover is equally important. In other words, the green label did not *reduce* the likelihood of the PEB2 for any identity strength levels, suggesting that applying a green label can encourage, but not discourage, PEBs. On the other hand, applying a non-green label seems to detract from one's likelihood to engage in a PEB for all but strong environmental identifiers, and thus should be avoided.

Environmental consumer identity was analyzed in addition to the general environmental identity measure because it provides an indication of individuals' environmental self-concepts that is more uniquely tailored to the framing of this study as a "consumer preferences task". In these analyses I once again found a significant main effect of environmental identity strength, as anticipated in Hypothesis 1, whereby increasing identity strength points toward increased likelihood that one will engage in PEB2. In support of Hypothesis 2, I also found a marginally significant main effect of condition. Planned comparisons indicated that there was only a significant difference in donations between the green and non-green groups (mean difference = 0.13, $p = 0.02$).

A close examination of the interaction effects produced by the measure of environmental consumer identity indicates that the trend toward positive spillover demonstrated through the general environmental identity measure was suppressed by this alternative measure, providing no support for H3a. In fact, there were no significant or

near-significant trends one way or another; neither of the experimental groups differed from the control condition in donation rates, which suggests that neither positive nor negative spillover resulted from receiving a green label. As such, neither H3a nor H3b are supported.

The different pattern of results observed with the general identity and consumer identity measures may suggest that when individuals identify strongly as environmental consumers, they are less likely to be swayed by environmental labels than they are if they merely think of themselves as generally pro-environmental. One possible explanation lies in the evidence I found for a mediating effect of positive affect on donation rates for the green experimental condition. For the strong environmental consumer identifiers, the green label positively predicted positive affect ($p = 0.04$) and positive affect negatively predicted a decline in donation rates ($p = 0.04$). The indirect effect of the green label on donation, through mediation of positive affect, was significant. Given that the total effect of the green label on donation behavior was also insignificant, there is evidence that positive affect fully mediated the effect of the green label on donations to the environmental cause. Perhaps the strong environmental consumers, upon receiving a green label, felt such a boost in their positive moods that they believed their environmental goals to be sufficiently addressed and thus, these individuals did not feel the need to engage in subsequent PEBs. The mediating effect of positive affect may have manifested only in the analysis of the environmental consumer identity because consumer actions are more noticeable than general environmental actions and thus, more likely to result in positive feelings.

There was also no support for the hypotheses that weak environmental identifiers who received the green label would be less likely to donate (H4a) and that weak

environmental identifiers who received a non-green label would be equally as likely to donate (H4b), based on the environmental consumer identity measure. Participants in both experimental conditions demonstrated no differences in donation patterns from those in the control condition.

Similarly, there was no support for the hypotheses that moderate environmental identifiers who received a green label would be more likely to donate (H5a) and that moderate identifiers who received a non-green label would be less likely to donate (H5b) based on the environmental consumer identity measure. The only significant mean difference for moderate environmental identifiers indicated that those in the green condition were more likely to donate than were those in the non-green condition (mean difference = 0.14, $p = 0.04$).

My other alternative measure of environmental identity, relative environmental identity, was analyzed because it demonstrates how much a person prioritizes the environment as part of their identity relative to other identity aspects. The main effect of environmental identity strength was once again significant, as anticipated in Hypothesis 1. The main effect of condition was marginally significant, supporting Hypothesis 2. Per this measure, there was also a higher propensity of those in the green condition to donate than those in the non-green condition (mean difference = 0.14, $p = 0.02$), and there was a lower propensity for those in the non-green condition to donate than those in the control group (mean difference = 0.11, $p = 0.04$).

The interaction analysis pointed to conflicting results for strong relative environmental identifiers, compared to the general and consumer measures. Given the exploratory nature of this measure and the possibility for divergent findings in the

interaction term, I made no a priori hypotheses regarding this measure. Still, there was no evidence to support H3a or H3b. Planned comparisons indicated that, for the strongly identified, those who received a non-green label were marginally significantly less likely to donate than were those in the control condition (mean difference = 0.23, $p = 0.07$). My inability to replicate the trend towards positive spillover among strong identifiers hinted by the general environmental identity measure suggests that this near significant trend may, in fact, be unreliable. However, the different patterns may also be a function of the way identity was measured. It is possible that individuals' environmental identities are informative of their environmental behaviors when considered in isolation, as was demonstrated in my analysis of general environmental identity, but when environmental identities are considered in relation to non-environmental aspects of a person's identity, the environmental aspects are not weighted as heavily in a person's decision to engage in PEBs.

Once again, there was no evidence in support of H4a-b based on the relative environmental identity measure. Participants in both experimental conditions demonstrated no differences in donation patterns from those in the control condition. Similarly, there was no support for H5a-b based on the relative environmental identity measure.

While my tests of mediation showed no evidence that negative emotion and moral self-image mediated donations to the environmental cause regardless of the measure of environmental identity used, I did find a consistent pattern that the non-green condition predicted negative affect. However, negative affect was in no cases a significant predictor of donations. Future studies should continue to examine possible mediation effects (for a

review, see Truelove et al., 2014) in tests of how identity strength and identity labels influence behavioral spillover. However, a more rigorous test of these mediators should be adopted. For example, my measure of positive and negative affect simply asked participants to rate the extent to which they felt a variety of emotions at that moment: guilty, fearful, proud, ashamed, calm, afraid, happy. Given the subjective and contextual nature of emotions (e.g. Larsen and Fredrickson, 1999) it would be presumptuous to conclude that this measure alone provides a completely reliable indication of one's emotional state. Further, a person could feel an emotion for many reasons other than a label-induced reaction (e.g. perhaps one feels guilty for not obeying a stop sign earlier in the day, or happy for receiving a pay increase), and asking the question in this way does not account for these extraneous factors. A similar critique can be made of the measure for moral self-image, which asked participants to indicate agreement with the following statements: I am compassionate, ...fair, ...selfish, ...moral, ...immoral. Future research should continue to investigate possible mediation effects, but should seek more rigorous measures of these constructs.

5.2. Insights and implications

This study provides further evidence regarding the role played by identity in behavioral spillover processes. Past research has provided correlational evidence for the link between environmental identities and environmental behaviors (Whitmarsh and O'Neill, 2010), and has indicated that identity effects – at least for Democrats – may actually lead to *negative* spillover (Truelove et al., 2016). This study adds to the growing body of research that aims to examine the causal basis of behavioral spillover. The directionality of that spillover, i.e. whether it was positive, negative, or nonexistent, may, as indicated by

these results, depend on how the concept of environmental identity is defined and measured.

The fact my three separate measures of environmental identity provided tenuous and, at times, conflicting results indicates that great care needs to be taken in determining how to frame environmental identities when using them to label individuals. My measure of general environmental identity, which did not directly take into account one's environmental consumer behaviors, makes the most promising case for positive spillover. This is in contrast with my findings for the measure of environmental consumer behavior, which pointed toward no spillover. Together, these findings suggest that perhaps individuals think of their environmental consumer identities as separate from their more general environmental self-concepts. As such, this demonstrates the need to better incorporate environmental consumer identities into the wider definition of environmental identities, or to examine more closely how these identities relate or differ. Similarly, the fact that relative environmental identity, which takes into account the non-environmental aspects of one's self-concept, did not provide evidence for positive spillover, may indicate that for those individuals strongly identified based on the relative identity measure, there is some external factor that causes the environmental aspects of their identities to be particularly salient. Given that there is no a priori theoretical basis for this relative measure, I can only speculate on what this external factor may be; perhaps these individuals are the most committed to environmental goals. Considering that this group of strong relative environmental identifiers had higher donation rates than did the strong identifiers for the general or consumer measures, and that they also seemed to react most to the inconsistent identity label, it is plausible that there is something inherently different

in how this group prioritizes the environment versus how other groups prioritize the environment.

Appealing to a person's environmental identity is one strategy that may be used to "nudge" consistent environmental behaviors. It is possible that many Americans do not engage in PEBs because they do not think of themselves as "environmentalists". In these findings, receiving a non-green label was consistently associated with lower rates of donations. A recent Gallup poll indicated that since 1989, the number of Americans willing to say they consider themselves environmentalists has decreased from 76% to 42% (Gallup, Inc., 2016). While individuals may claim environmental identities due to their simple, everyday pro-environmental behaviors, larger "environmentalist" ideals may be seen as goals with which they do not want to identify. Indeed, researchers have found that many have negative perceptions of environmental activists (Bashir et al., 2013). In highlighting the environmental aspects of individuals' identities, these identities may become more normalized. Using labels to demonstrate environmental identities can be one way to encourage those who have not fully embraced those identities.

5.3. Limitations and future research

This study provided an examination of how identity labeling affects behavioral spillover among a general American audience. While this study intended to provide nuance to the growing body of work on behavioral spillover by exploring identity's role in spillover processes, it is important to recognize that my results may not transfer to different cultures. Researchers have pointed to cross-cultural variation in, for example, awareness of climate change (see, e.g. Leiserowitz, 2007, Pew 2006), the perceived seriousness of global warming (Leiserowitz, 2007, GlobeScan, 2000, 2006), and environmental concern (see, e.g.

Schultz and Zelezny, 1999, Noe and Snow, 1990, Schultz, Unipan, and Gamba, 2000, Dunlap and Mertig, 1995). While the variation between cultures should certainly be addressed before international-scale conclusions can be made, there is also a need to better understand behavior within cultures. This research applies to a U.S. environmental behavior context only, but it provides an important glimpse into the function of environmental identities on environmental behaviors among the American population.

Another limitation of this study was that my measure of PEB1 was not in fact a behavior, but was a label reacting to one's prior behavior. Stronger effects may have been found – perhaps especially among moderate environmental identifiers – had participants engaged in a true pro-environmental behavior. Future studies of identity labeling could apply labels based on deliberate actions; however, this approach could also undermine a randomized experimental manipulation. As such, multiple methods should be used to understand the impacts of green labels. This study is one attempt that prioritizes the use of an experimental design to examine causal relationships, but other methodologies would add to our understanding of the phenomena studied here.

Concerns about participant suspicion regarding the environmental theme of the study led me to further disguise this environmental theme by adding several unrelated questions following the first pilot. While I think this helped somewhat, I do still suspect that a subset of the participants caught on to the environmental theme of the study and as such, these participants' responses may have been biased due to social desirability to demonstrate their "pro-environmental credentials". Social desirability bias is the phenomenon by which survey takers respond to self-report items in ways that make them appear more favorable. Researchers have developed scales to detect and control for this

type of response bias, and such measures might be included in future studies of environmental identity (Barger, 2002, Ballard, 1992).

My primary dependent measure – donating a small amount of money to an environmental cause – may elicit some skepticism regarding the measure’s ability to generalize to behaviors outside of the immediate experimental context. My dependent measure may pose problems first in that it is a very small donation, and second, in that the donation is made by the researchers on behalf of participants, and thus does not come directly out of participants’ wallets. As such, the behavior may be seen as relatively inconsequential. Despite those concerns, there is increasing indication that donations to environmental organizations are a valid measure of pro-environmental behavior (Clements, McCright, Dietz, and Marquart-Pyatt, 2015, Benz and Meier, 2008). Clements et al (2015) claim that environmental donation measures hold three forms of validity: face validity, in that they allow participants to engage in the environmentally significant behavior of supporting an environmental organization, concurrent criterion-related validity, in that intentions correlate with actual behaviors, and construct validity, in that the value orientation predicting environmental donations in their analyses has also been demonstrated to predict other pro-environmental behaviors. Given the mix of opinions regarding the validity of donation behaviors as a measure of pro-environmental behaviors in other contexts, as well as the recent empirical attention on specifically addressing the validity of donation measures, my ability to make extensive generalizations regarding the predictive ability of donation behaviors to other pro-environmental behavior contexts may be somewhat limited. As I did with this analysis, future studies might explore secondary dependent measures.

The design of this research and the dependent measure used also inhibited my ability to draw conclusions regarding spillover over a longer period of time. Donations took place mere minutes after the experimental manipulation, so I cannot draw conclusions regarding long-term spillover. Future research should investigate whether similar findings manifest after more extended periods of time.

This study contributes to existing literature on spillover in pro-environmental behaviors by considering the effects that identity strength and identity labeling have on secondary PEBs. A trend toward positive spillover was indeed found among those with strong general environmental identities who received an identity consistent label. My ability to make specific policy recommendations is somewhat limited by the fact that my results were variable, depending on which measure of environmental identity was used. In light of this, future research efforts should continue to seek better understanding of how environmental identity labels influence environmental behavior spillover. The fact that I did not find evidence for negative spillover among those with weak or moderate environmental identities is promising, and future research should explore ways in which these groups' tendencies toward no spillover might actually be shifted toward positive spillover.

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Appendix A. Screenshots

1. Product choice task example



University of Colorado
Boulder

Please review the information provided on both of these lip balms and select the one you would be more likely to purchase.

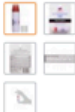
Burt's Bees - Beeswax Lip Balm Tube, .15 oz sticks
from [Burt's Bees](#)
★★★★☆ 36 customer reviews




About the Product

- Beeswax lip balm from Burt's Bees
- 100% natural
- Antioxidant vitamin E soothes lips
- Refreshes skin with peppermint oil

Neutrogena Norwegian Formula Lip Moisturizer, SPF 15, 0.15 Ounce by [Neutrogena](#)
★★★★☆ 4 customer reviews




About the Product

- PABA-free
- Fragrance free
- Dermatologist recommended
- Conditions and protects dry, chapped lips
- No waxy feel

2. Consumer profiles

These are the three types of consumers whose opinions we were interested in.



COST-CONSCIOUS CONSUMERS

Primarily influenced by low prices



GREEN CONSUMERS

Primarily influenced by societal or environmental impacts



TRENDY CONSUMERS

Primarily influenced by what is popular

>>

3. Donation options

We are donating \$0.25 on behalf of each of this study's participants to a variety of organizations.

Please review the three organizations listed below. You may choose to donate to one of these organizations. This donation does not come from your earnings in this study.



Charitable Service Trust

- ☐ The Disabled American Veterans Charitable Service Trust supports physical and psychological rehabilitation programs that provide direct service to ill, injured, or wounded veterans. The Trust accepts gifts through workplace giving campaigns, including the Combined Federal Campaign and United Way, employee matching gift programs, and similar special giving arrangements, and provides a variety of direct services for America's sick and injured veterans.



Protecting nature. Preserving life.

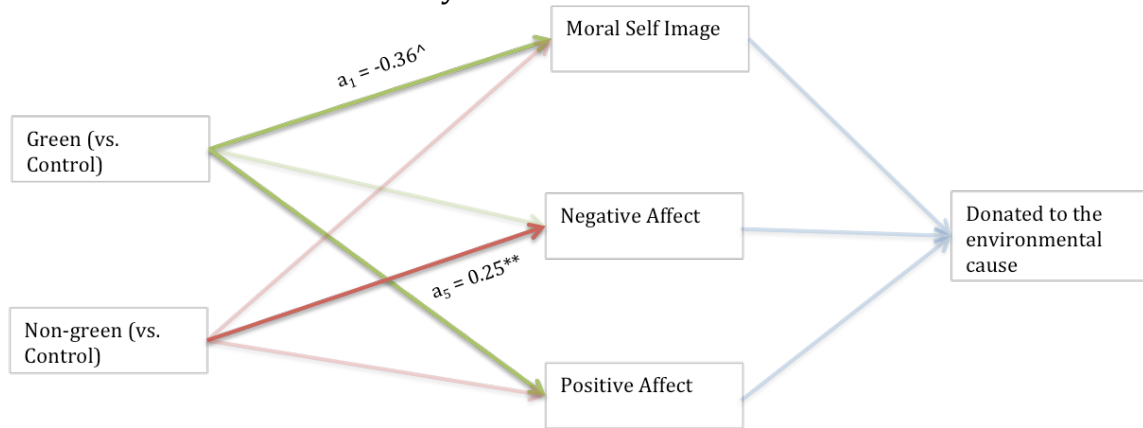
- ☐ The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends. Our vision is a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives.



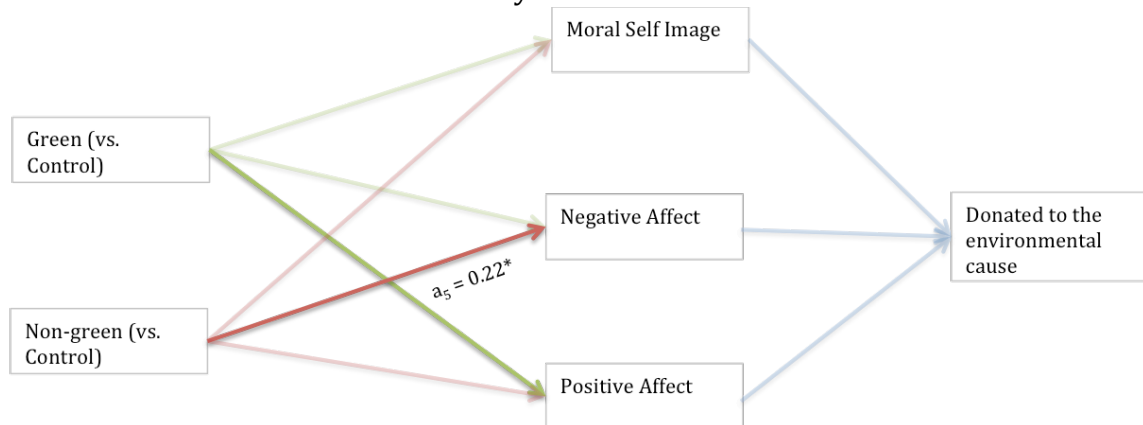
- ☐ The American Red Cross exists to provide compassionate care to those in need. Our network of generous donors, volunteers and employees share a mission of preventing and relieving suffering, here at home and around the world, through five key service areas: disaster relief, supporting America's military families, lifesaving blood, health and safety services, and international services.

Appendix B. Alternative environmental identity measures mediation analyses

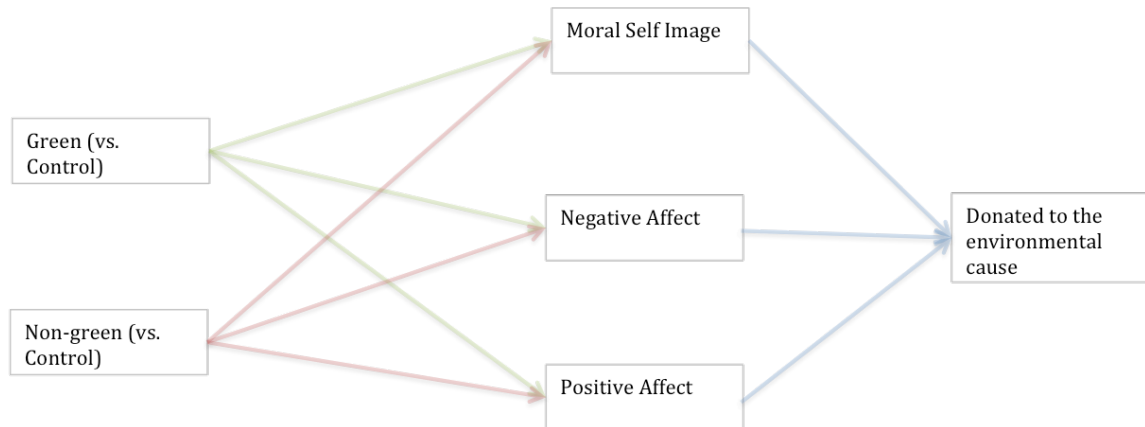
1. Low environmental consumer identity



2. Moderate environmental consumer identity

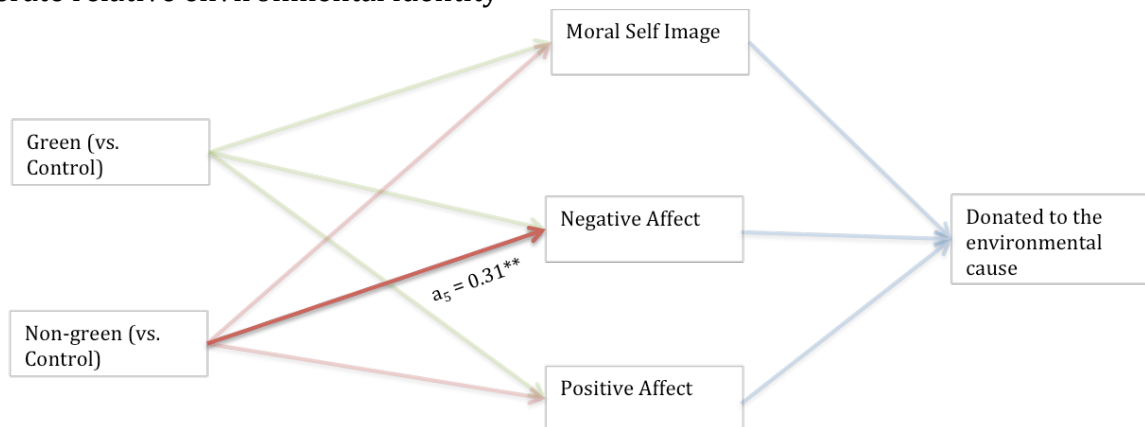


3. Low relative environmental identity



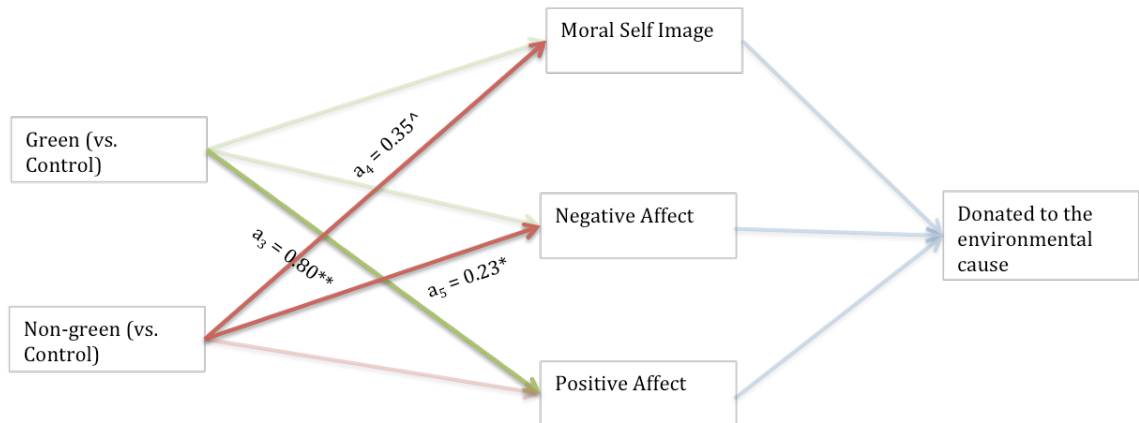
$^{\wedge} p < .1$. $^*p < .05$. $^{**}p < .01$
N = 481

4. Moderate relative environmental identity



$^{\wedge} p < .1$. $^*p < .05$. $^{**}p < .01$
N = 481

5. High relative environmental identity



$^{\wedge} p < .1$, $^* p < .05$, $^{**} p < .01$
N = 481

Appendix C. Continuous generalized linear models with environmental identity and political ideology as continuous predictors

Table 4b.

Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (continuous general environmental identity predictor)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Predictor	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
Constant	-.50*	.21	-.49*	.20	-.52*	.21	-.51*	.21	-.52*	.21
Sex (ref = female)	-.02	.21	-.02	.21	-.04	.21	-.02	.21	-.03	.21
Political Identity	.53**	.11	.52**	.11	.66**	.20	.56**	.11	.67**	.19
Condition (Label) (ref = control)										
Green	.17	.25	.15	.25	.21	.25	.17	.25	.22	.25
Non-green	-.45^	.25	-.51^	.26	-.44^	.26	-.44^	.25	-.50^	.27
Environmental Identity Strength	.63**	.11	.48**	.17	.63**	.11	.65**	.11	.52**	.17
Condition x Environmental Identity Strength										
Green X Environmental Identity Strength			.17	.26					.14	.26
NonGreen X Environmental Identity Strength			.32	.26					.32	.26
Condition x Political Identity										
Green X Political Identity					-.37	.26			-.36	.26
NonGreen X Political Identity					-.02	.27			.03	.28
Environmental Identity Strength x Political Identity							-.15	.11	-.16	.11
Summary statistics (block)	χ^2	df	χ^2	df	χ^2	df	χ^2	df	χ^2	df
Likelihood ratio test	71.01**	5	72.51**	7	73.35**	7	72.52**	6	76.31**	10

Note: ^ p < .1. *p < .05. **p < .01

Table 5b.

Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (continuous environmental consumer identity predictor)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Predictor	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
Constant	-.55**	.21	-.54**	.21	-.56**	.21	-.55**	.21	-.56**	.21
Sex (ref = female)	.01	.21	.01	.21	.00	.21	.00	.21	-.02	.21
Political Identity	.49**	.11	.49**	.11	.59**	.20	.53**	.11	.65**	.20
Condition (Label) (ref = control)										
Green	.21	.26	.21	.25	.25	.25	.22	.26	.27	.25
Non-green	-.38	.25	-.41	.26	-.38	.26	-.37	.25	-.39	.27
Environmental Identity Strength	.65**	.11	.60**	.17	.65**	.11	.67**	.11	.63**	.17
Condition x Environmental Identity Strength										
Green X Environmental Identity Strength			.01	.25					-.02	.25
NonGreen X Environmental Identity Strength			.18	.29					.18	.29
Condition x Political Identity										
Green X Political Identity					-.30	.27			-.35	.27
NonGreen X Political Identity					.02	.27			.00	.28
Environmental Identity Strength x Political Identity							-.14	.12	-.16	.11
Summary statistics (block)	χ^2	df	χ^2	df	χ^2	df	χ^2	df	χ^2	df
Likelihood ratio test	73.03**	5	73.50**	7	74.83**	7	74.49**	6	77.17**	10

Note: ^ p < .1. *p < .05. **p < .01

Table 6b.

Generalized linear model with logit link function - Effect of experimental condition and identity strength on environmental charity donations (continuous relative environmental identity predictor)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Predictor	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)	B	SE(B)
Constant	-.50*	.21	-.50*	.21	-.52*	.22	-.50*	.21	-.52*	.22
Sex (ref = female)	-.02	.22	-.02	.22	-.04	.22	-.02	.22	-.04	.22
Political Identity	.45**	.12	.45**	.12	.58**	.20	.48**	.12	.57**	.21
Condition (Label) (ref = control)										
Green	.11	.26	.13	.26	.17	.26	.11	.26	.20	.26
Non-green	-.50*	.26	-.51^	.26	-.49^	.27	-.49^	.26	-.49^	.27
Environmental Identity Strength			.84**	.19	.80**	.12	.84**	.13	.90**	.19
Condition x Environmental Identity Strength										
Green X Environmental Identity Strength			-.13	.30					-.17	.29
NonGreen X Environmental Identity Strength			.01	.28					-.02	.28
Condition x Political Identity										
Green X Political Identity					-.36	.28			-.33	.28
NonGreen X Political Identity					.00	.29			.05	.29
Environmental Identity Strength x Political Identity							-.17	.14	-.18	.13
Summary statistics (block)	χ^2	df	χ^2	df	χ^2	df	χ^2	df	χ^2	df
Likelihood ratio test	86.60**	5	86.85**	7	88.76**	7	88.04**	6	90.61**	10

Note: ^ p < .1. *p < .05. **p < .01