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Don't be satisfied, identify! Strengthening positive spillover by connecting pro-environmental behaviors to an "environmentalist" label

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Abstract

Theoretically, performing pro-environmental behaviors can lead to positive spillover (increased future pro-environmental behaviors or strengthened environmental attitudes) by increasing someone's acceptance of an environmental self-identity, or negative spillover by alleviating guilt motivations which fuel some environmental actions. Labeling someone an "environmentalist" in connection to performance of pro-environmental behaviors could strengthen the positive spillover route through emphasizing environmental self-identity rather than guilt reduction. In Study 1, participants perceiving that they performed many pro-environmental behaviors reported greater environmental self-identity strengthening their environmental attitudes, but simultaneously reported a reduction in guilt weakening their environmental attitudes. Since both positive spillover and negative spillover routes were active, there was not a significant total spillover effect from pro-environmental behavior to environmental attitudes. In Study 2, however, labeling those who perceived they performed many pro-environmental behaviors as "environmentalists" led to stronger environmental self-identity with no simultaneous reduction of guilt, increasing the total positive spillover.

Keywords: pro-environmental behaviour; spillover effects; labeling; environmental self-identity; guilt; environmental attitudes

Don't be satisfied, identify! Strengthening positive spillover by connecting pro-environmental behaviors to an "environmentalist" label

1. Introduction

What is an environmentalist? Perhaps this is someone who bicycles to work, purchases produce from local farms, and avoids bottled water and Styrofoam at all costs. Maybe this person is also very concerned and vocal about climate change and is a supporter of renewable energy technologies. This description demonstrates that when a label such as “environmentalist” is applied to someone, it comes with a whole set of behavioral and attitudinal expectations. Similarly, when people come to identify as environmentalists, they can be motivated to live up to this same set of expectations. So how do people come to think of themselves as environmentalists?

1.1 Past Behavior

One way is through performing pro-environmental behaviors. Self-perception theory suggests that we come to know ourselves the same way we get to know other people, by observing the implications of our own behaviors (Bem, 1972). Therefore, performing pro-environmental behaviors may lead people to see themselves as “environmentalists” or “green.” Indeed, when people perceive that they have acted environmentally-friendly in the past, they are likely to report a stronger environmental self-identity (Chaiken & Baldwin, 1981; Poortinga, Whitmarsh, & Suffolk, 2013; van der Werff, Steg, & Keizer, 2014a, 2014b) and greater moral obligation to continue acting environmentally-friendly (van der Werff, Steg, & Keizer, 2013a).

A growing body of research has examined behavioral spillover, focusing on how the performance of a pro-environmental behavior influences someone’s future environmental behaviors or environmental attitudes, such as policy support (Truelove, Carrico, Weber, Raimi, & Vandenberg, 2014). Some research finds that people who perceive that they have acted

environmentally-friendly in the past are more likely to perform other pro-environmental behaviors, indicating positive spillover from past behavior to future behaviors (Cornelissen, Pandelaere, Warlop, & Dewitte, 2008; Lanzini & Thøgersen, 2014; Thøgersen & Ölander, 2003; van der Werff, Steg, & Keizer, 2013a, 2013b). Performance of pro-environmental behaviors can also lead to more positive attitudes towards environmental policies, indicating positive spillover from past behavior to environmental attitudes (Thøgersen & Noblet, 2012; Poortinga et al., 2013).

However, positive spillover is not consistently found. Performing pro-environmental behaviors sometimes has the opposite effect, making people feel less obligated to perform other pro-environmental behaviors (Klößner, Nayum, & Mehmetoglu, 2013; Thøgersen & Ölander, 2003), and may actually lead them to increase their resource consumption (Tiefenbeck, Staake, Roth, & Sachs, 2013). Individuals may also point to past pro-environmental behaviors as an excuse to avoid performing other, more difficult behaviors (Diekmann & Preisendörfer, 1998). These cases of negative spillover can be explained by thinking about the motivations behind pro-environmental behaviors. Pro-environmental behaviors may be viewed as part of a contribution ethic, and once people perform one environmental “good deed,” they feel justified slacking off on other environmental actions (Thøgersen & Crompton, 2009), or feel licensed to act immorally in the future (Mazar & Zhong, 2010). Additionally, pro-environmental behaviors may often be performed for non-environmental reasons such as to save money (e.g., Evans et al., 2013) or to gain status (e.g., Griskevicius, Tybur, & van den Bergh, 2010). In these cases, there would be little expectation for spillover to other environmental behaviors or attitudes in either direction, since the individual is not linking their actions to environmental concerns in the first place.

Therefore, performing pro-environmental behaviors can lead to positive spillover (increase in future pro-environmental behaviors or strengthening of environmental attitudes) in some

circumstances, and negative spillover (decrease in future pro-environmental behaviors and weakening of environmental attitudes) in others. Theoretically, performing pro-environmental behaviors can lead to positive spillover by increasing someone's acceptance of an environmental self-identity, or negative spillover by alleviating negative feelings such as guilt which fuel some environmental actions. (for a review, see Truelove et al. 2014). Thus, purposefully linking people's past pro-environmental behaviors to an environmental self-identity may increase the likelihood of positive spillover. One way to do this is through actively labeling people "environmentalists" in connection to their past behavior.

1.2 Labeling

Our self-identities, or the way we label ourselves, are impacted by our personal values and beliefs, but also by our social interactions including the expectations or labels we receive from others (Gatersleben, Murtagh, & Abrahamse, 2014; Whitmarsh & O'Neill, 2010). If someone accepts a label that they receive from others, this can create an expectation for the self to behave in ways consistent with that label. For example, research specifically examining the behavioral effects of receiving trait labels such as "helpful" or "tidy" found that these labels led people to perform behaviors congruent with the label (Burger & Caldwell, 2003; Goldman, Seever, & Seever, 1982; Miller, Brickman, & Bolen, 1975). In terms of environmental labels, one study found that when people were labeled "very concerned with the environment, and ecologically conscious" after making an eco-friendly purchasing decision, they were more likely to choose other eco-friendly products on a subsequent purchasing task (Cornelissen, Dewitte, Warlop, & Yzerbyt, 2007).

Similarly, labeling people "environmentalists" should directly strengthen their environmental self-identity, defined as the extent to which you view yourself as the kind of person who acts

environmentally-friendly (van der Werff et al., 2013b). Although the research on environmentalist labeling is scarce, environmental self-identity has been found to be an important factor when examining whether pro-environmental behaviors will lead to positive spillover. Indeed, environmental self-identity is a predictor of pro-environmental behaviors and environmental attitudes such as purchasing environmentally-friendly products, switching to green energy, making energy-saving transportation choices, and supporting environmental political policies (Bannon, DeBell, Krosnick, Kopp, & Aldhous, 2007; Chaiken & Baldwin, 1981; Gatersleben et al., 2014; van der Werff et al., 2013a; 2013b; Whitmarsh & O'Neill, 2010). Environmental self-identity can also help explain the link between people's personal pro-environmental behaviors and their environmental political attitudes (Lacasse, 2015), and a slightly more specific "environmental activist" self-identity can predict environmental activism behaviors (Fielding, McDonald, & Louis, 2008).

Certainly, the term "environmentalist" is a bit loaded and does not have universally positive connotations. For example, one study found that college students described environmentalists as more eccentric and militant, and less personable than typical students (Bashir, Lockwood, Chasteen, Nadolny, & Noyes, 2013). However, students only expressed reduced interest in affiliating with an environmentalist who attended protests and rallies, but were still interested in affiliating with an environmentalist who helped raised money for grassroots environmental groups. Therefore, it seems that the negative connotations are more related to a specific type of activist-environmentalist, but not necessarily connected to environmentalists who perform more conventional pro-environmental behaviors. For this reason, the term "environmentalist" as applied to someone after they perform conventional pro-environmental behaviors may often be interpreted positively.

1.3 Guilt

On the other hand, emotional responses stemming from perception of one's own past pro-environmental behaviors can also motivate future pro-environmental behaviors and attitudes. Specifically, people may feel guilty if they perceive they are failing to act environmentally-friendly. Guilt is often a significant factor in people's decisions to perform pro-environmental behaviors (for a meta-analysis, see Bamberg & Möser, 2007). Being reminded of past environmentally harmful behaviors can lead people to perform more pro-environmental behaviors (Dickerson, Thibodeau, Aronson, & Miller, 1992; Kantola, Syme, & Campbell, 1984; Osbaldiston & Schott, 2012), and being reminded of how one's ingroup is involved in environmental degradation leads to feelings of guilt, which in turn predicts willingness to repair damage caused by the group, to conserve energy, or even to pay green taxes (Ferguson & Branscombe, 2010; Harth, Leach, & Kessler, 2013). However, once a pro-environmental behavior is performed, the guilty feeling may be alleviated, and thereby the motivation to perform additional pro-environmental behaviors can be reduced as well. Indeed, one study found that feeling guilt predicted performance of a pro-environmental behavior in the moment, but did not predict performance of pro-environmental behavior 2.5 hours later (Bissing-Olson, Fielding, & Iyer, 2016). Therefore, if an initial pro-environmental behavior is motivated by guilt, negative spillover is a likely consequence.

1.4 Current Research

Two experimental studies were conducted to examine how perception of one's past pro-environmental behaviors may spillover into their environmental attitudes. The environmental attitudes examined were (1) concern about a specific environmental issue (climate change) and (2) support for sustainability policies that could be locally implemented. The studies also examined if

environmental self-identity and guilt serve as mediators that help explain why past behavior can spillover into people's environmental attitudes. Study 1 simply examined spillover from past behavior to current attitudes through environmental self-identity and guilt, and Study 2 investigated if labeling someone an environmentalist when they perceive that they perform many pro-environmental behaviors strengthened the positive spillover route through environmental self-identity and weakened the negative spillover path through guilt. This research will advance the current spillover literature by measuring both the positive and negative spillover paths simultaneously, and by empirically examining the theorized mechanisms behind each type of spillover. This will allow for comparison of the relative effects of each spillover path on environmental attitude change. It will also specifically examine a labeling treatment to see if receiving a label based upon one's past pro-environmental behaviors alters the spillover effects through these two pathways.

2. Study 1

In Study 1, perception of one's past pro-environmental behaviors was manipulated by controlling whether participants remembered performing many pro-environmental behaviors or few pro-environmental behaviors. Reminding people of their many pro-environmental behaviors in this way should lead to positive spillover via strengthening participants' environmental self-identity and simultaneously to negative spillover through reducing participants' guilt motivation. Therefore, it was predicted that both positive and negative spillover routes would be activated in participants. Specifically:

H1: Many behaviors participants will report stronger environmental self-identity than few behavior participants, which will in turn lead to stronger environmental attitudes (positive spillover route).

H2: Many behaviors participants will report less feelings of guilt than few behavior participants, which will in turn lead to weaker environmental attitudes (negative spillover route).

H3: The total spillover effect from past pro-environmental behaviors to environmental attitudes will be small and will reflect the difference between the two routes.

H4: Guilt and environmental self-identity will be negatively correlated, since the past behavior manipulation should impact each variable in opposite directions.

2.1 Participants & Study Design

A sample of 120 American adults were recruited via Amazon's MTurk crowd sourcing tool to participate in this online experiment. Six participants completed less than 50% of the questionnaire items and were removed from analysis. The remaining 114 participants were 60% male and 40% female; ranging in age from 19-60, $M = 31.54$ years; and were 76% White, 11% Asian, 5% African American, 3% Latino, and 2% multiracial. Fifty-three percent of participants were liberal-leaning, 22% were conservative-leaning, and 25% were "middle-of-the-road." Participants were randomly assigned to one of the two conditions in this between-subjects design: (1) many behaviors condition, $n = 63$, or (2) few behaviors condition, $n = 51$. This sample size would be able to pick up an effect size of $d = 0.54$ with a two tailed test, $\alpha = .05$, and $power = .80$.

2.2 Past Behavior Manipulation

The experimental manipulation used to alter participants' perception of their own pro-environmental behavior was similar to manipulations used in past research (Chaiken & Baldwin, 1981; Lacasse, 2015; van der Werff et al., 2014b). The manipulation was imbedded in a behavior checklist questionnaire participants filled out indicating whether or not they perform five different pro-environmental behaviors. The items included on the questionnaire included statements such as "I purchase environmentally-friendly cleaning products" or "I unplug appliances from the wall

when they are not in use,” and participants indicated whether each statement was “true” or “not true” (see Appendix for complete manipulation & questionnaires). The instructions for the questionnaire were manipulated in the two conditions. Participants in the many behaviors condition were told to indicate a behavior was true if they performed the behavior “at least occasionally,” and therefore these participants could easily report that they performed many of the pro-environmental behaviors. However, participants in the few behaviors condition were told only to indicate a behavior was true if they performed the behavior “a majority of the time,” making it difficult for them to report performing the pro-environmental behaviors. At the end of the questionnaire, participants tallied and reported the total number of behaviors they indicated as “true.”

2.3 Measures

Following the past behavior manipulation, participants filled out a series of questionnaire measures. Unless otherwise indicated, participants rated each questionnaire item on a scale from 0(Strongly disagree) to 10(Strongly agree). Participants completed an environmental self-identity scale including three items such as “I am the type of person who acts environmentally friendly” (van der Werff et al., 2013a), and a total score was calculated by averaging the three items ($\alpha = .96, M = 5.95, SD = 2.45$). Participants were then asked to how much they agree with the statement “I feel guilty” when thinking about how they responded to the environmental behaviors questionnaire ($M = 2.59, SD = 2.69$).

Lastly, participants reported their environmental attitudes, starting with participants’ concern about a specific environmental issue, climate change. Although this construct certainly contains an affective component, environmental concern is generally considered an attitude since it is an evaluation of facts or behaviors which have an impact on the environment (Fransson &

Gärling, 1999). Participants responded to four items such as “I am concerned about the potential negative impacts of climate change,” and a total score was calculated by averaging the four items ($\alpha = .96, M = 6.97, SD = 2.75$).

The other measure of environmental attitudes was participants’ support for different sustainability policies that could be implemented in their local community (adapted from Leiserowitz, Maibach, Roser-Renouf, & Smith, 2011). Participants were presented with seven different possible policies and indicated how much they would support each on a scale from 0(Strongly oppose) to 10(Strongly support). The questionnaire included items such as, “Installing bike lanes on city streets and increasing the number of bike racks available, to make bicycling a more convenient transportation choice,” and a total score was calculated by averaging the seven items ($\alpha = .82, M = 6.88, SD = 1.85$).

2.4 Results

A series of t-tests indicated that the manipulation was effective in that those in the many behaviors condition reported performing a greater number of pro-environmental behaviors than those in the few behaviors condition (see Table 1). As hypothesized, those in the many behaviors condition reported significantly greater environmental self-identity and significantly lower guilt than those in the few behaviors condition. However, concern about climate change and policy support were not significantly different for the two conditions.

Pearson’s correlations revealed that as hypothesized, environmental self-identity and guilt had a moderately-sized negative correlation in the many behaviors condition, $r(61) = -.29, p = .02$, but contrary to the hypothesis, the two had practically no correlation in the few behaviors condition, $r(49) = .05, p = .74$. This indicates that reporting many past green behaviors led to the

predicted negative relationship between guilt and environmental self-identity, but reporting few behaviors did not.

Since the manipulation altered feelings of environmental self-identity and guilt in opposite directions, it was possible that the manipulation still impacted climate change concern and policy support, but did so differently through these two mediators. Therefore, indirect effect analyses were conducted using the INDIRECT macro to SPSS (Preacher & Hayes, 2008), using bootstrapping with 5,000 iterations. The past behavior manipulation was dummy coded with the few behaviors condition = 0 and the many behaviors condition = 1, and all variables were standardized prior to analysis so that the results would provide standardized coefficients. The first analysis examined the indirect effect of the past behavior manipulation on climate change concern through environmental self-identity and guilt each as mediators (see Figure 1). Past behavior had a significant positive effect on environmental self-identity and a significant negative effect on guilt. Additionally, both environmental self-identity and guilt positively predicted climate change concern. As hypothesized, the tests of indirect effects demonstrated that there was a positive indirect effect on climate change concern through environmental self-identity (95% *CI*: 0.02 to 0.24) and a negative indirect effect from past behavior on climate change concern through guilt (95% *CI*: -0.11 to -0.002). The contrast between the two indirect effect paths was statistically significant (95% *CI*: 0.03 to 0.29), which is not surprising given the significant indirect effects in opposite directions. Since the past behavior manipulation had opposing impacts on climate change concern through each mediator, the total spillover effect from past behavior to climate change concern was small and not statistically significant (see Figure 1).

A similar pattern was found when investigating the indirect effect of the past behavior manipulation on policy support. Again, past behavior had a significant positive effect on

environmental self-identity ($\beta = .21, p = .02$) and a significant negative effect on guilt ($\beta = -.18, p = .049$), and both mediators positively predicted policy support: environmental self-identity ($\beta = .51, p < .001$) and guilt ($\beta = .23, p = .01$). The test of indirect effects demonstrated that there was a positive indirect effect from past behavior on policy support through environmental self-identity (95% *CI*: 0.01 to 0.23), and a negative indirect effect on policy support through guilt (95% *CI*: -0.12 to -0.004). Again, the contrast between the two indirect effect paths was statistically significant (95% *CI*: 0.04 to 0.29), and the total spillover effect from past behavior to policy support was small and was not statistically significant ($\beta = .08, p = .43, R^2 \text{ for model} = .28$).

2.5 Discussion

Study 1 revealed that perception of past pro-environmental behavior directly impacted people's environmental self-identity and their feelings of guilt, indirectly impacting concern about climate change and policy support through these two mediators. This offers initial evidence that when people are reminded of their past pro-environmental behaviors, both positive and negative spillover processes occur. Perceiving that you perform many pro-environmental behaviors leads you to see yourself as an environmentally responsible person, thereby leading to behavioral consistency and greater environmental concern and policy support. But it also reduces feelings of guilt, perhaps because you to feel you have already done many environmental "good deeds," thereby allowing you to express less environmental concern and policy support. Since these two processes operate in opposite directions, the overall spillover effect was small.

The negative correlation between environmental self-identity and guilt in the many behaviors condition indicates these processes may be acting in tandem when people are reminded that they perform many pro-environmental behaviors. Their environmental self-identity strengthens and guilt decreases. However, a reminder that one performs few pro-environmental

behaviors does not lead to a consistent increase in guilt and decrease in identity since there is no correlation between these two variables. This may mean that these two processes are operating separately among different individuals in the few behaviors condition.

In Study 2, the goal was to strengthen the positive spillover route, and induce participants in the many behaviors condition to interpret their past pro-environmental behavior as reflection of an environmental self-identity by labeling them environmentalists. Alternately, participants in the few behaviors condition would similarly receive a message that their behavior reflected their standing as an environmentalist, indicating that their current behavior was not sufficient and they needed to do more to become an environmentalist. Therefore, rather than having both positive and negative pathways operate (whether in tandem or among different individuals), the goal of adding the labeling treatment was to demonstrate an overall positive spillover effect from perception of past behavior to environmental attitudes through the strengthened environmental self-identity pathway.

3. Study 2

The past behavior manipulation from Study 1 was used again, but this time it was followed with a labeling treatment. Pairing perception that one performs many pro-environmental behaviors with an environmentalist label should theoretically strengthen the positive spillover route, and reduce the likelihood of negative spillover (Truelove et al., 2014). Therefore, it was hypothesized that:

H5: Many behaviors participants will report stronger environmental self-identity than few behavior participants, which will in turn lead to stronger environmental attitudes (positive spillover route).

H6: Many behaviors participants will not report less guilt than the few behavior participants, thereby halting the negative spillover route.

H7: The total spillover effect from past pro-environmental behaviors to environmental attitudes will be positive.

H8: Guilt and environmental self-identity will not be correlated, since the past behavior manipulation should have a strong impact on environmental self-identity but not on guilt.

3.1 Participants & Study Design

A sample of 67 undergraduate students from a liberal arts university in the U.S. (63% female and 37% male; ages 18-22 years; 72% White, 11% Asian, 6% African American, 11% Latino) participated in this online experiment for course credit. Seventy-eight percent of participants were liberal-leaning, 12% were conservative-leaning, and 10% were “middle-of-the-road.” Participants were randomly assigned to one of the two conditions in this between-subjects design: (1) many behaviors condition, $n = 30$, or (2) few behaviors condition, $n = 37$. This sample size would be able to pick up an effect size of $d = 0.70$ with a two tailed test, $\alpha = .05$, and $power = .80$.

3.2 Past Behavior and Labeling Manipulation

This experimental manipulation included two parts. The first part was the past behavior manipulation within the pro-environmental behavior checklist questionnaire, as used in Study 1. The only change was that the questionnaire was extended to contain 18 pro-environmental behavior items rather than five (see Appendix for complete manipulation & questionnaires).

After participants filled out the behavior questionnaire, the labeling treatment part of the manipulation occurred. Many behavior participants viewed a green campaign message which among other things labeled them with the statement “You are an environmentalist.” Few behavior participants viewed a more typical green campaign message that expressed they still needed to do

more to become an environmentalist, stating “We should all work on becoming environmentalists.”

3.3 Measures

After the manipulation, participants filled out a series of questionnaires similar to Study 1. They responded to the same questionnaires about environmental self-identity ($\alpha = .88$, $M = 5.72$, $SD = 1.67$), guilt ($M = 4.03$, $SD = 1.81$), and concern about climate change ($\alpha = .81$, $M = 7.75$, $SD = 1.51$).

Since the participants were college students, the policy support questionnaire was changed to measure support for different sustainability policies that could be implemented on their campus. They were provided with seven different policies suggested as ways to help reduce greenhouse gas emissions associated with climate change, and participants responded to each policy on a scale from 0(Strongly oppose) to 10(Strongly support). The questionnaire included items such as, “To help reduce the carbon footprint of diners on campus, a ‘meat-free Mondays’ policy will be implemented. Dining facilities will serve a wide variety of vegetarian foods and offer only meat substitute products on Mondays.” A total score was calculated by averaging the seven items ($\alpha = .68$, $M = 6.38$, $SD = 1.64$).

3.4 Results

A series of t-tests were conducted. The manipulation again altered how many pro-environmental behaviors participants reported. Those in the many behaviors condition reported completing a greater number of pro-environmental behaviors than those in the few behaviors condition (see Table 1). As hypothesized, the many behavior participants reported stronger environmental self-identity than few behavior participants, and the two conditions did not significantly differ in feelings of guilt, although unexpectedly participants in the many behaviors

condition actually reported greater guilt than the few behaviors condition. Additionally, those in the many behaviors condition reported significantly greater concern about climate change but did not report significantly greater policy support than those in the few behaviors condition.

Pearson's correlations revealed small, non-significant positive correlations between environmental self-identity and guilt in the many behaviors condition, $r(28) = .19, p = .32$, and in the few behaviors condition, $r(32) = .19, p = .27$. The correlations are small and are the same for each condition, but the positive direction was not predicted.

To examine the same spillover model used in Study 1 and see if the past behavior and labeling manipulation impacted climate change concern and policy support through its influence on environmental self-identity and guilt, indirect effect analyses were conducted using bootstrapping with 5,000 iterations. Again, the manipulation was dummy coded, with the few behaviors condition = 0 and the many behaviors condition = 1, and all variables were standardized prior to analysis. As hypothesized, the manipulation had a significant positive effect on environmental self-identity, and a positive but non-significant impact on guilt (see Figure 1). Environmental self-identity positively predicted climate change concern, while guilt's relationship was still positive, but non-significant. The tests of indirect effects demonstrated that there was a positive indirect effect on climate change concern through environmental self-identity (95% *CI*: 0.01 to 0.29) and a weaker, non-significant positive indirect effect through guilt (95% *CI*: -0.01 to 0.10). However, the contrast between the two indirect effect paths was not statistically significant (95% *CI*: -0.01 to 0.28), and since both the environmental self-identity path and the guilt path were in the same direction, this indicates that the environmental self-identity path was not significantly stronger than the guilt path. Overall, there was a total positive spillover effect from past behavior to climate change concern through the mediators.

A similar pattern with weaker effects was found when investigating the indirect effect of the past behavior manipulation on policy support. Again, past behavior had a significant positive effect on environmental self-identity ($\beta = .27, p = .04$), and a weaker, non-significant positive impact on guilt ($\beta = .11, p = .41$). Environmental self-identity positively predicted policy support ($\beta = .58, p < .001$) while guilt again had a weak positive relationship ($\beta = .12, p = .27$). The test of indirect effects demonstrated that there was a positive indirect effect from past behavior on policy support through environmental self-identity (95% *CI*: 0.03 to 0.32), and a weaker, non-significant positive indirect effect on policy support through guilt (95% *CI*: -0.02 to 0.10). In this case, the contrast between the two indirect effect paths was statistically significant (95% *CI*: 0.01 to 0.30), indicating that the environmental self-identity path was significantly stronger than the guilt path. Even so, in this case a total positive spillover effect from past behavior to policy support was small and not statistically significant ($\beta = .17, p = .20, R^2 \text{ for model} = .38$).

3.5 Discussion

This study found that adding a labeling treatment to the past behavior manipulation altered its spillover effects. Labeling people “environmentalists” after they remembered performing many past pro-environmental behaviors strengthened their environmental self-identity, which in turn increased both their concern about climate change and their support for different sustainability policies on campus. Guilt was no longer reduced by perceiving that one performs many pro-environmental behaviors, and interestingly guilt was actually somewhat boosted in the many behaviors condition. This is particularly surprising since the labeling message given to those in the few behaviors condition emphasized their need to do more to help the environment to become an environmentalist, and therefore could have been guilt evoking. The statistical power in Study 2 was relatively lower than Study 1, making interpretations of statistical significance difficult,

particularly when comparing the two studies. The observed increased guilt response may have been statistically significant with a larger sample size and therefore is worth exploring a bit.

The label of “environmentalist” may have led participants to take the reflection on their past behaviors more seriously. As mentioned earlier, the term “environmentalist” comes with a large set of behavioral and attitudinal expectations, a difficult standard to live up to. Being labeled an environmentalist may communicate to people all the additional behaviors expected of them, and remind them that there is still much to do to live up to the label. Therefore, guilt may continue to motivate them to the same or perhaps even greater extent than to those reminded that they perform few behaviors and still need to work towards becoming an environmentalist. Future research should investigate if the environmentalist label actually induces greater guilt, or if interpreting one’s past behavior in terms of an environmental self-identity simply reduces the likelihood that one considers their behavior as part of a contribution ethic, diminishing the negative spillover route.

Due to the lack of any negative spillover pathway, there was now an overall positive total spillover effect from past behavior to concern about climate change, and a weaker positive but non-significant total spillover effect to policy support.

4. General Discussion

Taken together, these studies demonstrate that perception of past pro-environmental behavior can impact people’s environmental attitudes in terms of concern about specific issues such as climate change as well as support for sustainability policies that would directly impact their lives. They also provide evidence for two routes through which past pro-environmental behaviors can either lead to positive spillover or negative spillover. Specifically, Study 1 indicates that when people perceive that they perform many pro-environmental behaviors, this triggers two

opposing influences on their environmental attitudes. Their environmental self-identity is strengthened leading to greater climate change concern and policy support, but their feelings of guilt are weakened leading to reduced climate change concern and policy support. Both of these positive and negative spillover mechanisms have been suggested by past researchers (Truelove et al., 2014), and environmental self-identity and guilt are both well-documented predictors of pro-environmental attitudes and behavior (Bannon et al., 2007; Ferguson & Branscombe, 2010; Harth et al., 2013; van der Werff et al., 2013b; Whitmarsh & O'Neill, 2010). However, this research provides empirical evidence that reminders of past behaviors can activate both pathways.

This may help explain the varied positive and negative spillover effects reported in past research. Depending upon the initial behavior itself, the situation in which the initial behavior was performed, and the measured spillover behavior or attitude, researchers may have been investigating a scenario in which the guilt and environmental self-identity pathways were weaker or stronger. The total spillover effects observed likely reflected the difference between the two pathways. Indeed, spillover effects through these mechanisms may be even stronger when examining actual behaviors rather than a past behavior manipulation, as used in this research. The manipulation did successfully alter the number of behaviors people in each condition reported on average, but there were still some participants in the many behavior condition who reported few behaviors, and visa-versa. This variability likely muted the effects of past behaviors on the other variables, but also makes the effects found more reliable.

On the other hand, Study 2 suggests that remembering past pro-environmental behaviors in combination with receiving an environmentalist label is an effective way to increase the likelihood of positive spillover. When people perceive that they perform many pro-environmental behaviors and are labeled environmentalists, this strengthens the positive spillover route through

stronger environmental self-identity and weakens the negative spillover route since guilt is no longer reduced, and is actually somewhat strengthened. This finding further supports the connection between pro-environmental behaviors, environmental identity, and environmental political attitudes (Lacasse, 2015). More broadly, it offers an additional demonstration of how interpretation of our past behavior can alter the way we view ourselves and influence our future attitudes and behaviors (Albarracín & McNatt, 2005; Bem, 1972; Burger & Caldwell, 2003; Cornelissen et al., 2007; 2008).

These findings support the predictions made by self-perception theory, but could also be explained a few other ways. Although not designed like a traditional self-affirmation exercise, reflecting on past pro-environmental behaviors and/or receiving the environmentalist label may affirm that one does truly value the environment, boosting environmental self-identity and opening one up to greater consideration of environmental threats and relevant policy solutions, particularly in a liberal-leaning sample (Sparks, Jessop, Chapman, & Holmes, 2010; van Prooijen, Sparks, & Jessop, 2013). This behavioral reflection and/or environmentalist label may also boost feelings of pride, which can strengthen their environmental self-identity and instigate further pro-environmental actions (Bissing-Olson et al., 2016; Harth et al., 2013). Self-perception may serve as a better explanatory theory for those who do not initially have strong attitudes or self-identity about environmental issues and therefore look to their actions to decide their attitudes. Self-affirmation and pride may better explain those who already consider themselves environmentally concerned. Either way, the key to positive spillover seems to be through strengthening one's environmental self-identity.

One notable finding is that the positive spillover pathway through environmental self-identity was relatively stronger than the pathway through guilt in terms of the confidence intervals

estimating the indirect effects through each mediator. This is not surprising in Study 2, where the labeling treatment was specifically intended to strengthen the positive spillover pathway through environmental self-identity, but this was also true in Study 1 in which only perception of past behaviors was manipulated. This difference may be partially due to the definition of environmental self-identity, which indicates the person acts environmentally friendly, directly linking it to past behaviors. However, it may also mean that perception of past pro-environmental behaviors influences environmental self-identity more consistently across individuals in the samples than it influences guilt. In Study 1, the negative correlation between guilt and environmental self-identity in the many behaviors condition gives some indication that both mechanisms are in effect at the same time, while the lack of correlation in the few behavior condition suggests that individuals may differ in their responses. Future spillover research should specifically examine if individuals differ in their guilt and identity responses to reminders of their past pro-environmental (or environmentally harmful) behaviors, and see if one of these responses is more widely found depending upon the population examined.

Indeed, one limitation of this research is that participants in Study 2 were almost entirely political liberals and Study 1 also featured a liberal-leaning sample. There is some evidence that spillover from past pro-environmental behaviors to environmental attitudes may depend upon political orientation. For example, when liberals are reminded of their failures to perform pro-environmental behaviors, they respond with stronger political concern about environmental issues and greater policy support while conservatives do not (Lacasse, 2015). Since the term “environmentalist” can hold negative connotations (Bashir et al. 2013; Corbett, 2006), the political-leaning of the sample may also be important in terms of how people respond to labeling. In the U.S., liberals are more likely to consider the label “environmentalist” positive and therefore

may be more likely to willingly accept the label. For these reasons, the findings from this research should not be generalized beyond a liberal-leaning population. Future work should examine how environmentalist labeling impacts spillover for different segments of the population. Specifically, research should investigate whether the label causes anger or reactance among political conservatives leading to negative spillover.

Another limitation is that there was not a true control condition in Study 1 or Study 2. Therefore, it is unclear whether the many behaviors condition or few behaviors condition had a stronger effect on the variables compared to baseline levels. It would be difficult to design an intermediate control condition in which participants reported their “actual” past pro-environmental behaviors in a way that was not influenced towards one of the two already existing conditions by the instructions. Additionally, a control condition in which participants did not report on their past pro-environmental behaviors at all would alter the way those participants responded to the guilt measure, rendering that measure unable to be compared to the other two conditions. Therefore, the two condition past behavior manipulation was designed similar to manipulations used in past research (Chaiken & Baldwin, 1981; Lacasse, 2015; van der Werff et al., 2014b). Future spillover research could address this issue through a repeated measures design, providing questionnaires both before and after participants perform a pro-environmental behavior or receive an environmentalist label, examining changes from baseline.

Additionally, Study 2 was specifically designed to examine the effect of labeling people “environmentalists” based upon their previous pro-environmental behaviors, providing people with a label to match their many behaviors and purposefully withholding that label from those with few behaviors. Therefore, Study 2 does not parse apart the effect of the past behavior manipulation from the labeling treatment, or look at the effect of labeling alone. The effects of the Study 2

manipulation were likely stronger than would be found if participants received a label that did not match their behavior (e.g., if an environmentalist label was given to someone in the few behaviors condition), or if labels were manipulated alone. However, the labeling treatment was specifically added to the past behavior manipulation for the purpose of seeing if this strengthened the positive spillover route, to address if labeling people in a way that matches their perceived past behavior has spillover effects that differ from a sole focus on past behavior (as in Study 1). In general, labeling does seem to be most effective when the label is supported with behavioral evidence (Cornelissen, et al. 2007), therefore labeling people as environmentalists without any reference to past behavior may be ineffective. People may also be less likely to accept a label that seems to be applied too broadly to be meaningful or that specifically contradicts their perception of their past behaviors. Future research could examine the effects of a labeling treatment alone without reference to past behaviors as well as other labeling techniques to see which lead to greater acceptance of the label and which have the greatest influence on behaviors and attitudes.

This work has implications for organizations aiming to gain support for environmental legislation, and can help address the debate about whether encouraging people to perform small pro-environmental behaviors will ultimately benefit the environment. Some have suggested that it is beneficial to promote small pro-environmental behaviors since they can serve as a gateway through which people will become more personally and politically engaged in environmental issues (Roberts, 2007; Willis & Schor, 2012). Others have critiqued the emphasis on “going green” because it can lead people to focus too much on their individual behaviors and take away from larger-scale political actions needed to address global environmental problems (Maniates, 2001; Wagner, 2011). This research suggests that pro-environmental behaviors have the potential to increase environmental concern and policy support, but will not necessarily do so. Moving

forward, environmental campaigns trying to garner support for new policies could consider labeling people as environmentalists after reminding them of their past pro-environmental behaviors. Identifying with this label may motivate people to live up to the set of expectations we all hold of environmentalists, and therefore show support for such campaigns. Both theoretically and empirically, labeling seems to be one important way to create positive (rather than negative) spillover.

References

- Albarracín, D., & McNatt, P. S. (2005). Maintenance and decay of past behavior influences: Anchoring attitudes on beliefs following inconsistent actions. *Personality and Social Psychology Bulletin*, *31*, 719-733, doi:10.1177/0146167204272180.
- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, *27*, 14-25, doi:10.1016/j.jenvp.2006.12.002.
- Bannon, B., DeBell, M., Krosnick, J. A., Kopp, R., & Aldhous, P. (2007). *Americans' evaluations of policies to reduce greenhouse gas emissions*. Stanford, CA: Stanford University.
- Bashir, N. Y., Lockwood, P., Chasteen, A. L., Nadolny, D., & Noyes, I. (2013). The ironic impact of activists: Negative stereotypes reduce social change influence. *European Journal of Social Psychology*, *43*, 614-626, doi:10.1002/ejsp.1983.
- Bem, D. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 6, pp.1-62). New York: Academic Press.
- Bissing-Olson, M. J., Fielding, K. S., & Iyer, A. (2016). Experiences of pride, not guilt, predict pro-environmental behavior when pro-environmental descriptive norms are more positive. *Journal of Environmental Psychology*, *45*, 145-153, doi:10.1016/j.jenvp.2016.01.001.
- Burger, J. M., & Caldwell, D. F. (2003). The effects of monetary incentives and labeling on the foot-in-the-door effect: Evidence for a self-perception process. *Basic and Applied Social Psychology*, *25*, 235-241, doi:10.1207/S15324834BASP2503_06.

- Chaiken, S., & Baldwin, M. W. (1981). Affective-cognitive consistency and the effect of salient behavioral information on the self-perception of attitudes. *Journal of Personality and Social Psychology, 41*, 1-12, doi:10.1037/0022-3514.41.1.1.
- Corbett, J. B. (2006). *Communicating nature: How we create and understand environmental messages*. Washington, D.C.: Island Press.
- Cornelissen, G., Dewitte, S., Warlop, L., & Yzerbyt, V. (2007). Whatever people say I am, that's what I am: Social labeling as a social marketing tool. *International Journal of Research in Marketing, 24*, 278-288, doi:10.1016/j.ijresmar.2007.05.001.
- Cornelissen, G., Pandelaere, M., Warlop, L., & Dewitte, S. (2008). Positive cueing: Promoting sustainable consumer behavior by cueing common environmental behaviors as environmental. *International Journal of Research in Marketing, 25*, 46-55, doi:10.1016/j.ijresmar.2007.06.002.
- Dickerson, C. A., Thibodeau, R., Aronson, E., & Miller, D. (1992). Using cognitive dissonance to encourage water conservation. *Journal of Applied Social Psychology, 22*, 841-854, doi:10.1111/j.1559-1816.1992.tb00928.x.
- Diekmann, A., & Preisendörfer, P. (1998). Environmental behavior: Discrepancies between aspirations and reality. *Rationality and Society, 10*, 79-102, doi:10.1177/104346398010001004.
- Evans, L., Maio, G. R., Corner, A., Hodgetts, C. J., Ahmed, S., & Hahn, U. (2013). Self-interest and pro-environmental behaviour. *Nature Climate Change, 3*, 122-125, doi:10.1038/nclimate1662.

- Ferguson, M. A., & Branscombe, N. R. (2010). Collective guilt mediates the effect of beliefs about global warming on willingness to engage in mitigation behavior. *Journal of Environmental Psychology, 30*, 135-142, doi:10.1016/j.jenvp.2009.11.010.
- Fielding, K. S., McDonald, R., & Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology, 28*, 318-326, doi:10.1016/j.jenvp.2008.03.003.
- Fransson, N., & Gärling, T. (1999). Environmental concern: Conceptual definitions, measurement methods, and research findings. *Journal of Environmental Psychology, 19*, 369-382.
- Gatersleben, B., Murtagh, N., & Abrahamse, W. (2014). Values, identity and pro-environmental behaviour. *Contemporary Social Science, 9*, 374-392, doi:10.1080/21582041.2012.682086.
- Goldman, M., Seever, M., & Seever, M. (1982). Social labeling and the foot-in-the-door effect. *The Journal of Social Psychology, 117*, 19-23, doi:10.1080/00224545.1982.9713402.
- Griskevicius, V., Tybur, J. M., & van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology, 98*, 392-404, doi:10.1037/a0017346.
- Harth, N. S., Leach, C. W., & Kessler, T. (2013). Guilt, anger, and pride about in-group environmental behaviour: Different emotions predict distinct intentions. *Journal of Environmental Psychology, 34*, 18-26, doi:10.1016/j.jenvp.2012.12.005.
- Kantola, S. J., Syme, G. J., & Campbell, N. A. (1984). Cognitive dissonance and energy conservation. *Journal of Applied Psychology, 69*, 416-421, doi:10.1037/0021-9010.69.3.416.

- Klößner, C. A., Nayum, A., & Mehmetoglu, M. (2013). Positive and negative spillover effects from electric car purchase to car use. *Transportation Research Part D: Transport and Environment*, *21*, 32-38, doi:10.1016/j.trd.2013.02.007.
- Lacasse, K. (2015). The importance of being green: The influence of green behaviors on Americans' political attitudes toward climate change. *Environment and Behavior*, *47*, 754-781, doi:10.1177/0013916513520491.
- Lanzini, P., & Thøgersen, J. (2014). Behavioural spillover in the environmental domain: an intervention study. *Journal of Environmental Psychology*, *40*, 381-390, doi:10.1016/j.jenvp.2014.09.006.
- Leiserowitz, A., Maibach, E., Roser-Renouf, C., & Smith, N. (2011). Global warming's six Americas: May 2011. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change. Retrieved from http://www.climatechangecommunication.org/images/files/6_Americas_May_2011_final.pdf
- Maniates, M. F. (2001). Individualization: Plant a tree, buy a bike, save the world? *Global Environmental Politics*, *1*, 31-52, doi:10.1162/152638001316881395.
- Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science*, *21*, 494-498, doi:10.1177/0956797610363538.
- Miller, R. L., Brickman, P., & Bolen, D. (1975). Attribution versus persuasion as a means for modifying behavior. *Journal of Personality and Social Psychology*, *31*, 430-441, doi:10.1037/h0076539.
- Osbaldiston, R., & Schott, J. P. (2011). Environmental sustainability and behavioral science: Meta-analysis of proenvironmental behavior experiments. *Environment and Behavior*, *44*, 257-299, doi:10.1177/0013916511402673.

- Poortinga, W., Whitmarsh, L., & Suffolk, C. (2013). The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects. *Journal of Environmental Psychology, 36*, 240-247, doi:10.1016/j.jenvp.2013.09.001.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879-891, doi:10.3758/BRM.40.3.879.
- Roberts, D. (2007, September 11). The power of voluntary action: Social scientists respond to Mike Tidwell. *Grist Magazine*. Retrieved from <http://www.grist.org/article/the-power-of-voluntary-actions/>
- Sparks, P., Jessop, D. C., Chapman, J., & Holmes, K. (2010). Pro-environmental actions, climate change, and defensiveness: Do self-affirmations make a difference to people's motives and beliefs about making a difference? *British Journal of Social Psychology, 49*, 553-568, doi:10.1348/014466609X471976
- Thøgersen, J., & Crompton, T. (2009). Simple and painless? The limitations of spillover in environmental campaigning. *Journal of Consumer Policy, 32*, 141-163, doi:10.1007/s10603-009-9101-1.
- Thøgersen, J., & Noblet, C. (2012). Does green consumerism increase the acceptance of wind power? *Energy Policy, 51*, 854-862, doi:10.1016/j.enpol.2012.09.044.
- Thøgersen, J., & Ölander, F. (2003). Spillover of environment-friendly consumer behavior. *Journal of Environmental Psychology, 23*, 225-236, doi:10.1016/S0272-4944(03)00018-5.
- Tiefenbeck, V., Staake, T., Roth, K., & Sachs, O. (2013). For better or for worse? Empirical evidence of moral licensing in a behavioral energy conservation campaign. *Energy Policy, 57*, 160-171, doi:10.1016/j.enpol.2013.01.021.

- Truelove, H. B., Carrico, A. R., Weber, E., Raimi, K. T., & Vandenberg, M. P. (2014). Positive and negative spillover of pro-environmental behavior: An integrative review and theoretical framework. *Global Environmental Change, 29*, 127-138, doi:10.1016/j.gloenvcha.2014.09.004.
- van der Werff, E., Steg, L., & Keizer, K. (2013a). It is a moral issue: The relationship between environmental self-identity, obligation-based intrinsic motivation and pro-environmental behaviour. *Global Environmental Change, 23*, 1258-1265, doi:10.1016/j.gloenvcha.2013.07.018.
- van der Werff, E., Steg, L., & Keizer, K. (2013b). The value of environmental self identity: The relationship between biospheric values, environmental self identity and pro-environmental preferences, intentions and behaviour. *Journal of Environmental Psychology, 34*, 55-63, doi:10.1016/j.jenvp.2012.12.006.
- van der Werff, E., Steg, L., & Keizer, K. (2014a). Follow the signal: When past pro-environmental actions signal who you are. *Journal of Environmental Psychology, 40*, 273-282, doi:10.1016/j.jenvp.2014.07.004.
- van der Werff, E., Steg, L., & Keizer, K. (2014b). I am what I am by looking past the present: The influence of biospheric values and past behaviour on environmental self-identity. *Environment and Behavior, 46*, 626-657, doi:10.1177/0013916512475209.
- van Prooijen, A. M., Sparks, P., & Jessop, D. C. (2013). Promoting or jeopardizing lighter carbon footprints? Self-affirmation can polarize environmental orientations. *Social Psychological and Personality Science, 4*, 238-243, doi:10.1177/1948550612450465

Wagner, G. (2011, September 8). Going green but getting nowhere. *The New York Times*, pp.

A29. Retrieved from: http://www.nytimes.com/2011/09/08/opinion/going-green-but-getting-nowhere.html?_r=0

Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours.

Journal of Environmental Psychology, 30, 305-314, doi:10.1016/j.jenvp.2010.01.003.

Willis, M. M., & Schor, J. B. (2012). Does changing a light bulb lead to changing the world?

Political action and the conscious consumer. *The Annals of the American Academy of Political and Social Science*, 644, 160-190, doi:10.1177/0002716212454831.

Table 1

Responses in Study 1 and 2 as a Function of Past Behavior Manipulation

Outcomes	Study 1				Study 2			
	Many Behaviors Condition (<i>n</i> =63)	Few Behaviors Condition (<i>n</i> =51)	<i>t</i>	<i>d</i>	Many Behaviors Condition (<i>n</i> =30)	Few Behaviors Condition (<i>n</i> =37)	<i>t</i>	<i>d</i>
Behaviors	3.08 (1.42)	1.76 (1.26)	5.17***	0.978	10.47 (2.94)	7.56 (2.95)	4.00***	0.988
Environ. Self-Iden.	6.14 (2.18)	5.11 (2.69)	2.22*	0.428	6.16 (1.29)	5.40 (1.80)	1.95 [†]	0.485
Guilt	2.37 (2.56)	3.40 (2.99)	-1.99*	0.373	4.88 (2.43)	4.20 (2.56)	1.10	0.272
Concern	6.91 (2.92)	6.55 (3.00)	0.66	0.122	8.26 (1.26)	7.35 (1.77)	2.37*	0.592
Policy Support	6.92 (1.98)	6.62 (1.97)	0.80	0.152	6.67 (1.69)	6.11 (1.76)	1.26	0.325

Note: For each study, the table presents means with standard deviations in parentheses.

[†] $p < .06$, * $p < .05$; ** $p < .01$; *** $p < .001$

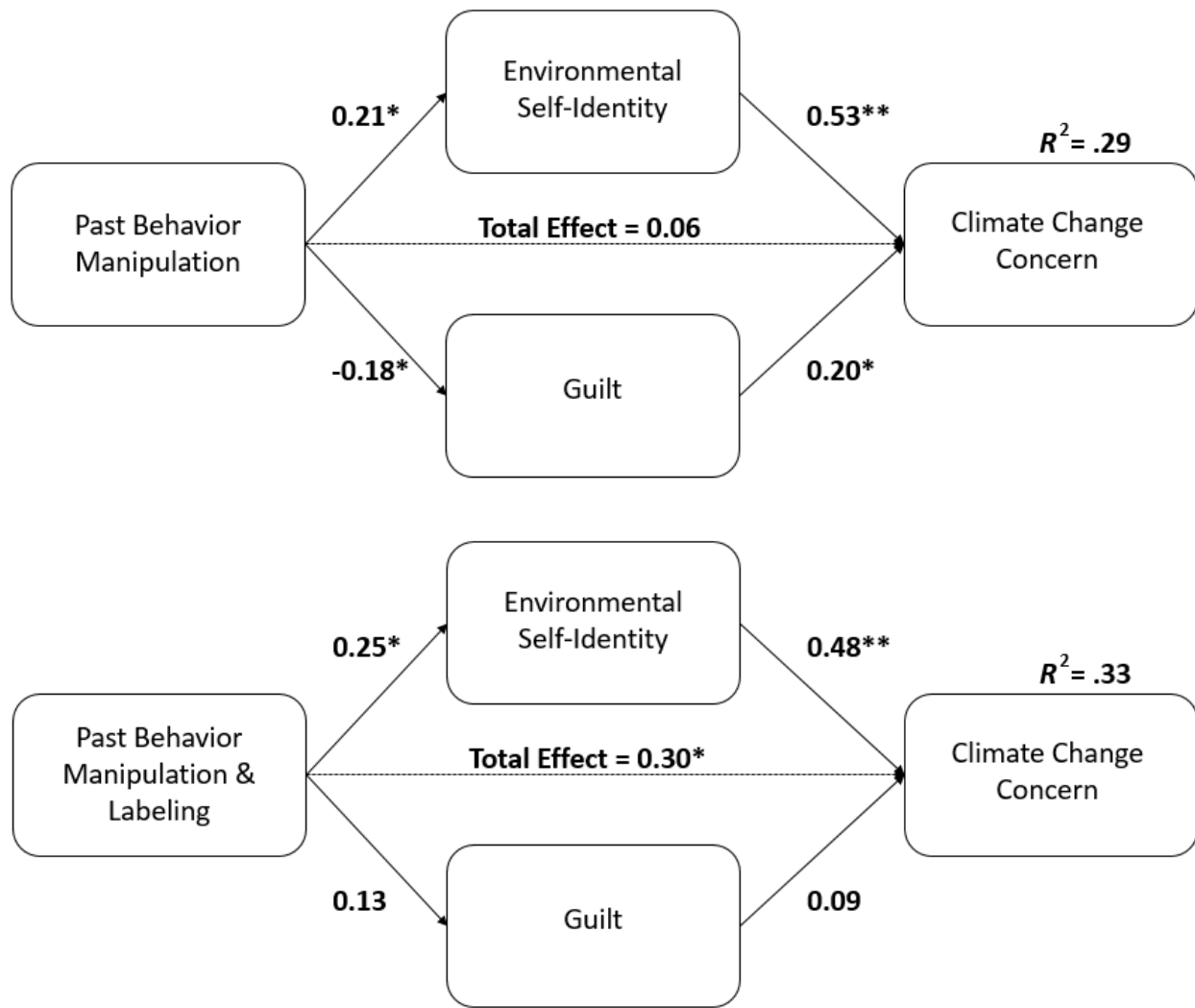


Figure 1. Model of indirect effects examining influence of past behavior manipulation on climate change concern through environmental self-identity and guilt. Study 1 is at the top and Study 2 is at the bottom. Direct effects (standardized regression coefficients) and total effect are depicted. Indirect effects and contrast effects are reported in the text. * $p < .05$; ** $p < .001$.

Appendix

Questionnaires used in Study 1 and Study 2

Study 1

A) Past Behavior Manipulation

Many Behaviors Condition Instructions: The following is a list of behaviors that are related to a person's carbon footprint and environmental impact. Each of these behaviors decrease the amount of greenhouse gas emissions released into the atmosphere, and limit a person's individual impact on climate change. If you perform the behavior at least occasionally, then mark "true" for you. Otherwise mark that the behavior is "not true" for you.

Few Behaviors Condition Instructions: The following is a list of behaviors that are related to a person's carbon footprint and environmental impact. Each of these behaviors decrease the amount of greenhouse gas emissions released into the atmosphere, and limit a person's individual impact on climate change. If you perform the behavior a majority of the time, then mark "true" for you. Otherwise mark that the behavior is "not true" for you.

- 1) I unplug appliances from the wall if they are not in use
- 2) I purchase environmentally-friendly cleaning products
- 3) I eat meatless meals
- 4) I take showers that last less than 5 minutes
- 5) I purchase local or organic foods

Responses: True or Not True

Behavior Manipulation Check: Please type out the number of environmental behaviors from the list that you indicated "True" for: _____

B) Environmental Self-Identity (van der Werff et al., 2013a)

Instructions: Please read each statement, and indicate how much you agree or disagree with it.

- 1) Acting environmentally-friendly is an important part of who I am.
- 2) I am the type of person who acts environmentally-friendly
- 3) I see myself as an environmentally-friendly person.

Responses: 0(Strongly disagree) to 10(Strongly agree)

C) Guilt

Instructions: Please report how much you agree or disagree with the following statement based on how you are feeling right now, when you think about how you responded to the environmental behaviors questionnaire.

- 1) I feel guilty

Responses: 0(Strongly disagree) to 10(Strongly agree)

D) Environmental Attitude: Concern about Climate Change

Instructions: Please read each statement, and indicate how much you agree or disagree with it.

- 1) I am concerned about the potential negative impacts of climate change.
- 2) I am not really worried about climate change. (reverse scored)
- 3) Climate change is a serious problem.
- 4) I am worried about the potential negative impacts of climate change.

Responses: 0(Strongly disagree) to 10(Strongly agree)

E) Environmental Attitude: Policy Support (*starred items adapted from Leiserowitz et al., 2011)

Instructions: Several different policies have been implemented in local communities across the country to help reduce greenhouse gas emissions that are linked to climate change. Please read the details of each policy, then indicate how much you would support or oppose it being implemented in your local community. If a similar policy is already in place in your community, please still indicate how much you support or oppose it.

- 1) Installing bike lanes on city streets and increasing the number of bike racks available, to make bicycling a more convenient transportation choice*
- 2) Increasing regulations so that new homes will be more energy efficient: This would increase the initial cost of a house, but would also lead to savings on utility bills*
- 3) Changing zoning rules to require that neighborhoods have a mix of housing, offices, schools, and stores close together, to encourage walking and decrease car use*
- 4) Applying a 15-cent fee to single-use plastic bags from grocery and retail stores, to reduce plastic waste and encourage people to bring reusable bags
- 5) Building a wind turbine in your local area, to reduce reliance on fossil fuels
- 6) To reduce emissions and pollution, passing a "No Idling" law that requires the engines of cars and trucks to be turned off when the vehicle is stationary at a loading zone, parking or servicing area, or other off-street areas
- 7) Providing curbside pick-up for compost along with trash and recycling, to be used for agricultural projects and to reduce the size of landfills

Responses: 0(Strongly oppose) to 10(Strongly support)

Study 2

A) Past Behavior Manipulation - Same instructions, response options, and behavior manipulation check as Study 1. But in Study 2, the number of behavior items was increased to 18.

- 1) I unplug appliances from the wall if they are not in use

- 2) I purchase environmentally-friendly cleaning products
- 3) I eat meatless meals
- 4) I take showers that last less than 5 minutes
- 5) I purchase local or organic foods
- 6) I purchase clothing at second hand stores
- 7) I wash my clothing in cold water, instead of warm or hot
- 8) I bring my own reusable drinking container to the café
- 9) I avoid buying products that do not have recyclable packaging
- 10) I turn the water off while brushing my teeth or shaving
- 11) I recycle pieces of aluminum, glass, plastic, paper, and cardboard
- 12) I turn off the lights when I am the last one to leave a room
- 13) I participate in environmentally-concerned groups on campus
- 14) I print on both sides of the paper
- 15) I bring my own bag when shopping
- 16) I power down my computer when I am done using it
- 17) I purposefully look to buy products with less packaging
- 18) I reuse old notebooks for a different class when they are less than half filled

Labeling Treatment: Following their completion of the behavior checklist, participants received one of the following labeling messages, depending upon their experimental condition:

Many Behaviors Condition Label Message



Few Behaviors Condition Label Message



Labeling Manipulation Check: Please read what is written in the image above. Then, type out the words from the bottom line of the image (i.e., the words that are written in bright green font):

B) *Environmental Attitude: Policy Support*

Instructions: Several different policies have been implemented on university campuses across the country to help reduce greenhouse gas emissions that are linked to climate change, and make their

campuses more sustainable. Please read the details of each policy, then indicate how much you would support or oppose it being implemented in on our campus.

- 1) To reduce the use of paper on campus, all the paper towel dispensers in bathrooms will be removed and replaced with energy-efficient electric hand driers.
- 2) To help reduce the amount of electricity wasted on campus, motion-censor lights will be installed in the hallways and stairwells of most on-campus housing buildings (dormitories and apartments) so that lights will automatically turn off after 15 minutes with no motion detected.
- 3) One goal is to support the local community farms that grow fresh produce. One way to do this is for all students to attend a two-hour compost training session and then installing composting bins in all on-campus housing units (dormitories and apartments). The compost will be delivered to the community farms to use as natural fertilizer.
- 4) To help reduce plastic waste on campus, silverware will be added to the current Reusable To-Go Container program. Students who return their reusable to-go container and silverware will be given a clean container and silverware to take with them. The take-out fee will be raised from \$0.60 to \$1.00 to encourage the use of the reusable to-go containers and silverware.
- 5) To help reduce the carbon footprint of diners on campus, a “meat-free Mondays” policy will be implemented. Dining facilities will serve a wide variety of vegetarian foods and offer only meat-substitute products on Mondays.
- 6) To reduce the amount of energy spent on temperature control of buildings, adjust thermostats around campus so that the academic buildings and on-campus housing units (dormitories and apartments) heat up to a maximum of 68 degrees in the winter.
- 7) To reduce gasoline use and encourage the use of shared transportation services, the campus shuttle service will be expanded. The shuttle will now drive from 8am-4am, and the route will be extended to take students to grocery stores, office appointments, and other residences within 2 miles of campus. To fund this service, the price of a one-year parking pass will be increased from \$100 to \$200 for any students who wish to park a car on campus.

Responses: 0(Strongly oppose) to 10(Strongly support)