An Examination of the Effects of Environmental Identity and Perceived Responsibility for Environmental Degradation on Consumers' Feeling of Collective Guilt

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ABSTRACT

With widespread fears of climate change, global warming, and policymakers calling for reducing our consumption, it is important that we have an understanding of antecedents of consumers' environmentally-friendly consumption behaviors. In this research, we conduct two studies to examine the interaction effect of environmental identity and perceived responsibility for global warming on consumers' collective guilt and its subsequent effect on intentions to engage in environmentally-friendly behaviors. Further, we examine a mechanism by which the feeling of collective guilt may be avoided by some. Extending the study by Ferguson and Branscombe (2010), we show that when environmental degradation is perceived to be caused by humans (as opposed to natural factors), it leads to a feeling of collective guilt among those who identify highly with the environment. This collective guilt encourages environmentally-friendly consumption behavior. Those who do not identify with the environment as much tend to avoid the feeling of collective guilt through moral disengagement, that is, cognitively justifying the human behavior that adversely impacts the environment. Our results indicate that such consumers are less likely to engage in environmentally-friendly consumption behavior.

INTRODUCTION

Environment-related topics such as global warming, climate change, fossil fuels, the ozone layer, and greenhouse gases have become a noteworthy part of everyday conversations. Rarely does a day go by without the popular press discussing the environment. The environmental phenomena of global warming and climate change have become a major threat and challenge to mankind in recent years, and a series of consequences suspected to have been caused by global warming already pose a significant risk to natural systems. These consequences include, but are not limited to, a rise in sea level, the loss of polar ice, melting of continental glaciers, changes in precipitation patterns, extinction of certain species, acidification of oceans, and more (Intergovernmental Panel on Climate Change, 2007a, 2007b; National Research Council, 2010a, 2010b). As a major reason behind these changes, scientists have identified human behavioral factors responsible for the emission of the greenhouse gases that cause global warming. For instance, as much as 38% of carbon dioxide emissions in the U.S. can be traced to direct energy use in homes and in non-business travel (Gardner and Stern, 2008; U.S. Energy Information Administration, 2007).

The need for understanding "psychological or human dimensions" as they relate to environmental degradation such as global warming has been emphasized in social science, as found in the American Psychology Association's task force report (2009) and in the American Psychologist's special issue on climate change (2011). Although the natural sciences have long studied environmental systems, the role of psychological or human dimensions in an environmental context has begun to receive a significant degree

of attention only during the last quarter century. This field of science, specially developed by a group of "environmental psychologists," has focused on: understanding the human activities that affect environmental degradation; understanding the consequences of these activities in terms of the way they directly and indirectly affect people; the human responses to anticipated and experienced environmental change; and ways to help people respond effectively.

Environmental psychologists initially studied the psychological or human dimensions as they related to an environmental context, using a cognitive and rational stance, as in the cases of applying such theoretical frameworks as the Theory of Planned Behavior (Ajzen, 1988, 1991), the Norm Activation Model (Schwartz, 1977; Schwartz and Howard, 1981), and other various forms that extended those models (e.g., Guagnano et al., 1995; Harland et al., 1999; Heath and Gifford, 2002; Stern et al., 1993, 1995). Since the importance of emotion in explaining environmental behavior was proposed by many scholars during the '90s (e.g., Vining and Ebreo, 1990, 1992; Dickerson et al., 1992; Dickerson et al., 1992), emotion-based environmental studies have gradually increased their influence in the literature of environmental psychology, although most studies to date have been exploratory, rather than theory-based (Steg and Vlek, 2009). Specifically, the experience of guilt has been studied with the main suggestion of having a positive effect on pro-environmental behavior (e.g., Ageyeman, 2002; Bamburg and Moser, 2007; Dickerson et al., 1992; Kaiser and Shimoda, 1999; Vining and Ebreo, 1990, 1992, and 2002; Widegren, 1998).

However, the experience of guilt has always been limited to personal locus (i.e., guilt stemming from one's personal behavior) and has not been extended to a collective locus (i.e., guilt stemming from collective behavior of one's identified group). Namely, guilt-based environmental studies have dealt only with emotional reaction to a discrepancy between how one thinks one should behave in terms of environmentally responsible behavior versus how one actually behaved, but have not yet examined the emotional reaction to a discrepancy between how one thinks one's group should behave versus how the group actually behaved in its relationship with the natural environment. To remedy this gap, Ferguson and Branscombe (2010) studied the experience of guilt stemming from humans' collective responsibility for environmental degradation (in their study, global warming). Their study suggests that the belief that mankind as a whole is responsible for global warming facilitates the experience of collective guilt and the experience of collective guilt in turn leads to pro-environmental behavior. According to Wohl, Branscombe, and Klar (2006), the concept of collective guilt is defined as "a negative emotion that people experience when their group as a whole is seen as being responsible for causing harm against other group." Contemporary environmental degradation is believed to be a cumulative effect caused by the entire human race and the consequences of the degradation risk to the well-being of humans as a whole group (American Psychological Association, 2009). Therefore, in an environmental context, the group perspective towards the emotion of guilt needs to be deepened by continuous research efforts in terms of its distinct methods of psychological regulation and behavior consequences (Ferguson and Branscombe, 2010).

In line with the aforementioned need for continuous research efforts, as its main goal, the present study seeks to extend the work of Ferguson and Branscombe (2010) by adding the effect of group identity onto the formation of collective guilt in an environmental context. Although the concept of collective guilt fundamentally derives from people's self-categorization at the group level and the perception of their group as being responsible for harmful events (Branscombe, Doosje, and McGary, 2002), the study of Ferguson and Branscombe (2010) did not explicitly include the effect of group identity but instead suggested it as a future research need. Although their study stated that the study was based on an American identity, because it limited its study participants to a sample of American citizens, it did not measure or empirically manipulate the identity. In response to this research gap, the present study examines the interaction effect of group identity (new study antecedent) and human responsibility belief for environmental degradation (existing antecedent in the 2010 study) on collective guilt. In order to represent the group identity that people may form in an environmental context, the present study uses the concept of "environmental identity," suggested by Clayton and Opotow (2003). The authors define the environmental identity as "a sense of connection to some part of the non-human natural environment, based on history, emotional attachment, and/or similarity, that affects the ways in which we perceive and act towards the world." Namely, environmental identity refers to the inclusion of aspects of nature in a person's self-concept (i.e., Am I part of nature?). To conclude, the present study investigates how environmental identity influences the effect of human responsibility belief for environmental degradation on collective guilt.

As its second goal, this study investigates a possible mechanism underlying the interaction effect of environmental identity and human responsibility belief on collective guilt. In particular, the present study investigates how environmental identity and human responsibility belief jointly affect moral justification of humans' environmentally harmful behaviors, followed by an examination of whether the moral justification affects collective guilt. We hypothesize moral justification as a mediating variable that connects the interaction between environmental identity and human responsibility to collective guilt.

People are motivated to keep their positive moral stance to their own group (Tajfel and Turner, 1986; Taylor and Brown, 1988), and this motivation facilitates group members' efforts to justify their group's morally wrongful behaviors in its relationship with other groups (Doosje et al., 2006). In the same vein, people are motivated to keep their positive moral stance to mankind in its relationship with the natural environment, and this motivation drives them to morally justify humans' environmentally wrongful behaviors. On the other hand, people may identify themselves with nature, which is represented as environmental identity in this study. This identification to nature motivates them to be reluctant to accept the moral justification for humans' environmentally harmful behaviors. Considering these two conflicting forces towards moral justification of humans' environmentally harmful behaviors, the present study investigates how environmental identity and perceived human responsibility for environmental degradation jointly influence moral justification of humans' environmentally harmful actions and examines whether the moral justification mediates the interaction effect of environmental identity and human responsibility belief on collective guilt.

In particular, the present study uses the "moral disengagement mechanisms" suggested by Bandura (1999) to represent the moral justification of humans' environmental harms. According to Bandura's social cognitive theory (1996), people possess a moral regulatory system in which their own moral standards regulate their behaviors and thoughts through self-monitoring and reaction processes. Bandura (1999) suggested that the moral regulatory system can be deactivated by using cognitive reinterpretation of immoral events, and thus, people can perform immoral acts without consciously going against their own moral standards. Bandura (1999) proposed the moral disengagement as a selective deactivation process of the moral regulatory system, with eight different cognitive routes that lead to justification of immoral actions. To conclude, the present study investigates whether moral disengagement mediates the interactive effect of responsibility belief (of whether nature or humans are causing environmental degradation) and environmental identity on collective guilt.

The present work comprises two separate studies dedicated to each study goal: Study 1 examines the interaction effect of environmental identity and human responsibility belief on collective guilt; Study 2 investigates moral disengagement of humans' environmental harms as a mechanism that underlies the interaction effect of environmental identity and human responsibility belief on collective guilt. The study concerning the formation of collective guilt has been densely focused on intergroup relations literature. For this reason, a brief literature review precedes the study proposals.

LITERATURE REVIEW

Collective Guilt

Social groups sometimes commit harm against members of other social groups, and when reminded of those actions or when directly accused of wrongdoing, either by the victims or by third parties, group members may experience a negative emotional reaction based on their group membership. Such negative emotional reaction has long been studied in the literature on intergroup relations under the title of "*collective guilt"* with the purpose of explaining intergroup conflicts and reconciliation processes. According to a study by Wohl, Branscombe, and Klar (2006), the psychological construct of collective guilt is defined as a "negative emotion that people experience when their in-group as a whole is seen as being responsible for causing harm against another group(s)." Although there has been debate among scholars (e.g., Gilbert, 2002) about whether individuals should feel guilt for the actions of their group, the validity of collective guilt as a psychological construct has been supported as being distinguished from personal guilt. For example, Doosje et al. (1998) provide evidence that collective guilt can be experienced even though personal responsibility is clearly removed from the harm done by the in-group against the other group. In their study, participants received fictitious information that their group had a history of mistreating another group. As a result, these participants reported feelings of collective guilt, even when they had been told that their own behavior towards members of another group had not been biased. The study of Branscombe, Slugoski, and Kappen (2004) also illustrates the uniqueness of collective versus personal guilt. In their study, white American participants reported feelings of

both personal and collective guilt in regards to their relative advantages as a majority racial group over minority racial groups. The study found only a weak relationship between the state of personal guilt and collective guilt (r=.22).

In reviewing previous studies concerning collective guilt, Wohl, Branscombe, and Klar (2006) summarized the literature by suggesting that when people are confronted with harmful in-group actions against an out-group, the degree to which collective guilt will be experienced depends on the extent to which the following conditions hold true: (a) people self-categorize as a member of the in-group, (b) self-categorized group members perceive their group to be responsible for the actions deemed to be harmful to the out-group, (c) in-group members perceive the harm committed to be illegitimate or immoral, and (d) the perceived difficulty and costs to the in-group of correcting the wrongs committed are close to the ideal point over the continuum of the nonlinear relationship between cost and motivation. As per the behavioral consequences of experiencing collective guilt, the studies of Doosje et al. (1998, 2004) demonstrate that collective guilt predicts specific reparations for the harmed group. Others have found that collective guilt predicts support for affirmative action for the historically harmed group (e.g., Branscombe et al., 2004; Iyer et al., 2003; Swim and Miller, 1999).

The Effect of In-Group Responsibility Belief on Collective Guilt

In order for a person to experience feelings of collective guilt, they must be willing to accept responsibility for their in-group's actions, even if they themselves had no part in the event. Branscombe et al. (2004) referred to the belief that a group can be

held accountable for the actions of its members as ‘whole group accountability,’ and found that agreement with this belief is positively correlated with the extent to which people report feeling collective guilt. Suggesting in-group responsibility belief as a key antecedent to feeling of collective guilt, Wohl et al. (2006) argued that, in the absence of in-group responsibility belief, there is no basis for feelings of collective guilt. This experience of collective guilt can result from acknowledging the actions committed or the passive benefits gained as a result of existing, ongoing inequality between the groups. For example, the study of Doosje et al. (1998) suggested that Dutch people feel collective guilt when they accept the responsibility for the harm they did through colonization of Indonesia, while the study of Branscombe (1998) has shown that the collective guilt of a male group becomes significant when the disadvantage of a female group is based on the advantage benefiting the male group.

The effect of in-group responsibility belief on collective guilt has also been studied in the context of environment-related behavior, although to a limited degree. Clayton and Myers (2009) suggested that believing global warming is caused by humans might foster a sense of collective responsibility and willingness to engage in mitigation actions. Fergusson and Branscombe’s (2010) study suggested that human (versus natural) responsibility belief for global warming facilitates collective guilt, which mediates the effect of responsibility belief on pro-environmental behavior.

The Effect of Group Identity on Collective guilt

The concept of collective guilt is fundamentally derived from people's identity with the group and the perception of their in-group as being responsible for wrongdoing against an out-group (Branscombe, Doosje, and McGary, 2002). Only when people categorize themselves as a member of a group do their group's actions have an impact on individuals' perceptions of themselves and of fellow group members (Wohl et al., 2006; Turner et al., 1987). If a person does not self-categorize as a member of a group, there is little basis for emotions that stem from being a member of that group (Branscombe, Doosje, and McGarty, 2002).

According to social identity theory (Tajfel and Turner, 1986), people are motivated to perceive their in-group positively. As a result, those categorized as members of an in-group will be seen as deserving of positive and fair treatment, whereas those categorized as members of an out-group may be seen as less deserving of the same treatment. However, the literature has produced an inconsistent history of study results concerning the effect of in-group identity on collective guilt. Some studies indicate positive relationships (e.g., Doosje et al., 2004), while others show negative relationships (e.g., Doosje et al., 1998), or no overall relationships of any kind (e.g., Branscombe, Slugoski, and Kappen, 2004). Arguing that the inconsistent results of these studies are based on a one-dimensional approach to group identification, Roccas et al. (2006) propose two modes of group identity: attachment and glorification. These authors suggest that attachment is positively related to collective guilt for an in-group's past infractions, whereas glorification is negatively related to it. The main difference between

those two identities is that glorification focuses on the superiority of in-group over out-group and emphasizes unconditional loyalty and obedience to the in-group, whereas attachment lacks such a blind loyalty, thereby allowing for critical evaluation of the in-group and its actions.

Distinguished from the in-group identification view (i.e., in-group members' identity to their own group), the shared identification view (i.e., in-group members' shared identity to an out-group) has also been studied in the literature through the study framework of the Common In-Group Identity Model (e.g., Gaertner and Dorvideo, 2000; Gaertner et al., 1990; Gaertner et al., 1989). This model proposes that if existing boundaries between groups are eliminated so that both groups are included in one superordinate group, then group members' cognitive representations are transformed from two groups (us and them) to one inclusive group (we). This transformation to a common group has been suggested to facilitate the application of a common standard of justice to the newly included in-group members, resulting in improving intergroup attitudes (Gaertner and Dovidio, 2000), non-attitudinal domains such as emotion (Ray, Mackie, Rydell, and Smith, 2008), and action intentions (Kawakami and Dion, 1993). Specific to collective guilt emotion, the shared identity to an out-group has been suggested to positively related with collective guilt (e.g., Yzerbyt et al., 2003; Branscombe, 2003). The study of Branscombe (2003) suggests that the ease with which a harmed group can be re-categorized as member of a larger common group that encompasses the harming group should predict feelings of collective guilt among members of that harming group. This study measured the amount of collective guilt white Americans experience for harmful actions committed against groups that either could or

could not be easily re-categorized as in-group members. The first set of harmed groups consisted of racial subgroups under the superordinate category *Americans* (African Americans, Native Americans, and Mexican Americans) while the second set of harmed groups consisted of external national groups (Iraqis, Nicaraguans, and Cambodians). A greater degree of collective guilt was reported when the harmed group was an internal racial subgroup than when it was an external national group.

The Effect of Group Identity on Moral Justification

Social identity theory (Tajfel and Turner, 1986) suggests that group identities provide a defining context for the evaluation of justice and injustice, affecting the cognitive representation of sociopolitical events, and thus the evaluation of the fairness of a given situation, as well as what is perceived as a just resolution. People are motivated to maintain a belief that the groups with which they identify are morally good (Tajfel and Turner, 1986; Taylor and Brown, 1988). If members attach great importance to a particular group membership, they are less likely to accept the negative moral aspects of that group when confronted with information that portrays their in-group negatively (Branscombe et al., 1999). This unwillingness to accept negative moral aspects of their in-group then motivates people who identify highly with their group to employ moral justification strategies as defensive reactions to protect their positive moral stance to the in-group (Bandura, 1990, 1999; Doosje et al., 2006; Leidner et al., 2010).

In terms of emotional aspects, collective guilt constitutes an aversive emotion, and thus, group members should be highly motivated to alleviate it (Wohl et al., 2006).

Collective guilt studies in intergroup relations literature have portrayed the moral justification strategies (e.g., cognitive reinterpretation of the in-group's wrongdoings) as efforts to reduce the aversive emotion that people experience when perceiving their in-group as being responsible for harm against an out-group (Bizman, Yinon, and Krotman, 2001). Examining how appraisals of the legitimacy of gender inequality affect men's experience of collective guilt, the study of Miron, Branscombe, and Schmitt (2006) suggests that: (a) collective guilt results from self-focused moral distress (rather than from other-focused empathy) that is evoked by perceiving the in-group's unjust action; (b) in-group identity is positively related with the use of moral justification strategies for in-group's unjust actions, which leads to the reduction of the self-focused moral distress; and (c) moral justification strategies are negatively related with collective guilt and serve to mediate the joint effect of in-group action's illegitimacy and in-group identity on collective guilt. In other words, people who strongly identify with their group can reduce their own moral distress by using moral justification strategies for the in-group's harmful actions, and this reduced level of moral distress leads to less collective guilt (Doosje et al., 1988).

Deepening the understanding of the effect of group identity on moral justification and then on collective guilt, the study by Roccas et al. (2006) demonstrates how different modes of group identification (attachment versus glorification) relate to the use of moral justification strategies and to the ensuing feeling of collective guilt. In that study, attachment identification to a group is positively related to collective guilt, and the positive relationship is explained by the lower use of moral justification strategies for in-group's immoral actions, whereas glorification identity promotes the use of moral

justification strategies for in-group's immoral actions and thus is negatively related with collective guilt. These authors reason that the differential use of moral justification strategies is based on an ideal image of the group: attached identifiers focus more on what they "ideally would like it to be," while glorified identifiers focus more on "as it is."

Moral Disengagement Mechanisms

Even when members of a group cannot deny responsibility for the harm committed against another group, they can dispute the accuracy of the information concerning the in-group's harm done to the out-group, displace the responsibility for the harm done, and attribute the harmful behaviors to external circumstances, or even blame the victims for the harm. Such cognitive reinterpretations of an in-group's immoral actions have been studied in the literature as moral justification strategies to protect the in-group's moral integrity. Among the many different studies that have examined such cognitive reinterpretations of in-groups' immoral conduct (e.g., Diener, 1997; Kelman, 1973; Opotow, 1990; Staub, 1989), Bandura's moral disengagement mechanisms provide the most coherent framework to systematically analyze possible cognitive routes that lead to justification of wrongful actions (Detert, Trevino, and Sweitzer, 2008). Bandura (1999) developed the notion of moral disengagement as an extension of social cognitive theory. Social cognitive theory understands humans as proactively and intentionally acting, self-reflective and self-regulating individuals (Bnadura, 1986). This theory takes an agentic perspective, meaning people have the mechanisms that help them live in accordance with their moral standards. Moral standards are adopted in the course of socialization and thus act as guidelines for behavior. Moral agency (a person's ability to make moral judgments

and take actions that comport with morality) is governed by a self-regulatory process (a process to control one's emotions, behavior, and desires to be in accordance to some standards, ideals, or goals either stemming from internal or societal expectation). The self-regulatory process includes self-monitoring of one's conduct as well as self-reaction to that conduct in light of internal moral standards. According to social cognitive theory, most people develop personal standards of moral behavior that serve a self-regulatory role. These standards guide good behavior and deter bad behavior because individuals use their personal standards to anticipate, monitor, and judge their own actions. Individuals usually behave in ways that are consistent with their internal moral standards because they anticipate the positive and negative evaluations of their choices for personal conduct. However, this self-regulatory function operates only if it is activated. Bandura (1999) argued that moral self-regulation can be activated and deactivated selectively, and he proposed moral disengagement as the key deactivation process.

Bandura's (1999) disengagement mechanisms are categorized under four major loci: (a) behavior locus (the reconstrual of the conduct itself so that it is not viewed as immoral), (b) agency locus (the operation of the agency of action so that the perpetrators can minimize their role in causing harm), (c) outcome locus (the disregard or distortion of the consequences that flow from actions), or (d) recipient locus (devaluing victims and blaming them for what was done to them). (see Appendix A for the details of moral disengagement mechanisms.) In collective guilt research, Bandura's concept of moral disengagement has been applied to explain how people justify their in-group's immoral and inhuman conduct against other groups and thus retain their in-group identity and a positive moral stance to the group (e.g., Aquino et al., 2007; Leidner et al., 2010; Miron

et al., 2006; Roccas et al., 2006). For example, the study of Roccas et al. (2006), which focused on the moral disengagement mechanism of minimizing the perceived severity of moral violations committed by the in-group, suggests that people who are critically attached to their own group do not endorse the moral disengagement mechanism and consequently are likely to feel guilt for the group's wrongdoings, whereas people who identify blindly with the group employ the mechanism and consequently are less likely to feel collective guilt.

STUDY HYPOTHESES

Interaction Effect of Environmental Identity and Human Responsibility Belief

Examining the interaction effect of group identity and collective responsibility belief on collective guilt in an environmental context first requires considering the group identity that people may form in their relationship with the natural environment. Distinguished from a traditional social group, the natural environment lacks social elements and thus has not been defined as being hostile or in conflict with humans (Clayton, 2008). In addition, humans' harm on the natural environment has not been intentional (Ferguson and Branscombe, 2010). In contrast, the collective guilt studies in intergroup relations literature have focused on social group identification marked with intergroup conflicts and intentional harms.

By arguing that social science conceptualizes identity only within social processes and ignores the non-human context within which social interactions occur (Clayton and Opotow, 2003), several authors have examined the relevance of the human-nature connection to self and identity. Clayton and Opotow (2003) adopted the term "environmental identity" to refer to the inclusion of aspects of nature in a person's self-concept, and other authors have used the term "ecological self" or "ecological identity" to represent the human-to-nature connection (Neisser, 1997; Thomashow, 1995). In addition, Dutcher (2000) and Schultz (2001) used the Inclusion of Other in Self (IOS) scale (Aron, and Smollan, 1992) to measure the extent to which an individual includes nature within his or her cognitive representation of self.

This thesis chooses the conceptualization of environmental identity suggested by Clayton and Opotow (2003) to specify the group identity that people possess in their relationship with the natural environment. This choice is based on the fact that this conceptualization has more empirical support and places greater emphasis on emotional aspects rather than on cognitive representation. Clayton (2003) defined "environmental identity" as "a sense of connection to some part of the non-human natural environment, based on history, emotional attachment, and/or similarity, that affects the ways in which we perceive and act toward the world" (pp. 45-46). In essence, environmental identity is the belief that the natural environment is an important part of who we are. Clayton (2003) argued that environmental identity is similar to other collective identities (e.g., gender, ethnic identity, national identity) in that it offers a sense of connection and belonging to a group. She developed a 24-item Environmental Identity Scale (EID) and tested the scale over three different studies (Clayton, 2003), showing that EID is positively related to environmental behavior. In addition, Clayton's results suggested EID to predict pro-environmental decisions in environmental conflict scenarios and to correlate with a sense of moral obligation to protect the environment.

In comparison to the Common In-group Identity Model (e.g., Gaertner and Dorvideo, 2000; Gaertner et al., 1990; Gaertner et al., 1989) as a typical study framework to examine the effect of shared identity on collective guilt in intergroup relations literature, the conceptualization of environmental identity as a shared identity to the natural environment has unique features in terms of what types of groups are involved in the group identification process and how shared categorization is formed among the involved groups. First, the natural environment does not have social elements, and this

lack leads to a unidirectional group identification between humans and the natural environment (i.e., humans' identify with the natural environment but not vice versa); thus, the relationship remains free of intergroup conflict. Second, the natural environment is not positioned as an out-group but rather as a superordinate group by itself. Namely, the environmental identity represents a person's inclusion of aspects of nature in a person's self-concept (i.e., Am I part of nature?). Thus, the environmental identity is based on the inclusive categorization of humans in a superordinate group (i.e., nature) rather than humans considering nature as an out-group. To conclude, this thesis proposes that shared identity acts as a plausible variable to influence collective guilt, even though the shared identity with the environment is unidirectional (i.e., lacking in intergroup conflict) and inclusive (i.e., categorization to the superordinate group by itself).

Based on the aforementioned specification of environmental identity as a shared identity of humans to the natural environment, the effect of shared identity on collective guilt needs to be examined in order to specify the direction of the effect of environmental identity on the relationship between human responsibility and collective guilt. Social categorization theory (Turner et al., 1987) suggests that when we categorize ourselves as a member of a particular group, we feel kinship with others who are included as members of that in-group. This kinship does not extend to those categorized as members of another group. Social identity theory (Tajfel et al., 1986) also suggests that such closeness or inclusive categorization provides the background for members to make more favorable or positive evaluations of their in-group and its actions, and that when this positive stance to the in-group becomes threatened, the motivation to justify the in-group's actions needs to be followed. Therefore, collective guilt is relatively weak among people who identify

highly with their in-group and thus have more need to protect their positive stance towards that group (Branscombe, 2003). However, should members of the in-group adopt a more universalistic or inclusive categorization for a victimized group where members of the victimized group are categorized as in-group members, collective guilt stemming from the in-group's harm perpetrated on the victimized group is more likely to be higher among in-group members. Gaertner et al. (1994) suggests that when categorization is more inclusive in terms of the in-group member's identity towards the out-group, members of the out-group are included as members of a common in-group, and the positivity felt towards in-group members is extended to former out-group members. In particular, Gaertner's study suggested that inclusive categorization processes imply that a common standard of justice should be applied to the now-included in-group members (Dorvidio et al., 2004). Particular to the effect of shared identity on collective guilt, the studies of Branscombe (2003) and Yzerbyt et al.(2003) suggest that re-categorization of out-group members as members of the in-group predicts feelings of collective guilt. Therefore, this thesis proposes that environmental identity facilitates feeling of collective guilt. This proposal is based on the extension of in-group positivity (Gaertner et al., 1994) and the application of a common moral standard to the inclusively identified group (Dorvidio et al., 2004).

The effect of environmental identity on collective guilt needs to be qualified with the consideration of the effect of human responsibility belief on collective guilt. The collective guilt literature (e.g., Whol et al., 2006; Branscombe, 2004) suggests that the feeling of collective guilt requires acceptance of in-group responsibility for harm committed against an out-group. In the absence of the belief of human responsibility for

environmental degradation, there is little basis for feeling of collective guilt. Therefore this thesis hypothesizes a moderating effect of environmental identity on the relationship between the belief of human responsibility for environmental degradation and collective guilt rather than a moderating effect of human responsibility belief on the relationship between environmental identity and collective guilt because a moderating effect requires a base relationship that exists regardless of the inclusion of a moderator. In terms of the nature of the interaction between these two independent variables, the present study hypothesizes that the effect of human responsibility belief on collective guilt increases as a function of environmental identity. We expect that for low environmental identifiers, the belief of human responsibility for environmental degradation triggers a lower level of threat to their identity to nature but a higher level of threat to their identity to mankind (Tajfel et al., 1986), and thus, positivity to mankind and/or humans' moral standards are not applied to the natural environmental (Dorvidio et al., 2004), whereas for high environmental identifiers, the human responsibility belief triggers a lower level of threat to their identity to mankind but a higher level of threat to their identity to natural environment and thus, positivity to mankind and/or humans' moral standard is applied to the natural environment. That is to say, this thesis proposes that people with higher environmental identity are more likely to experience collective guilt than those with low environmental identity when humans are believed to be responsible for environmental degradation.

H1: When humans are believed to be responsible for environmental degradation, high environmental identifiers are more likely to experience collective guilt than low environmental identifiers.

In summary, this hypothesized interaction effect is intended to extend the study of Ferguson and Branscombe (2010), which proposed simply that human (rather than natural) responsibility belief facilitates the experience of collective guilt.

Mechanism Underlying the Interaction Effect

Environmental issues such as global warming receive moral considerations from the society which must deal with them (Clayton, 1996; Kahn, 1999). A survey of the voting public in the United States found that 64% of respondents agreed that protecting the environment represents a moral issue that involves beliefs about what is morally right or wrong (Henry J. Kaiser Family Foundation, 2000). Considering the existence this moral aspect in the evaluation of environmental issues, the present study aims to answer the question of how the interaction of environmental identity and human responsibility belief influences collective guilt by examining the effect of this interaction on moral judgments about humans' alleged harm to the environment.

In particular, the present study adopts Bandura's moral disengagement mechanisms to represent the evaluation of moral judgment about humans' environmental harms. Consistent with Kohlberg's (1969) focus on the *content* of moral justifications rather than its *source* (i.e., principles used for moral judgment), Bandura's moral disengagement conceptualization assumes that moral judgment is a controlled cognitive process and is dependent on the interpretation of the moral judgment context. Bandura (1991) suggests that internalization of moral standards does not create an immutable internal moral control system. The self-regulatory mechanism governing moral conducts

does not operate unless it is activated, and there are many psychological routes (i.e., moral disengagement mechanisms) by which the moral regulatory system can be selectively deactivated (Bandura, 1999). Adopting Bandura's view to cognitive processing for moral judgment and different cognitive routes to justify immoral actions, this thesis considers that the interaction of environmental identity and human responsibility belief for environmental degradation influences the defining context for moral judgment concerning humans' environmental harms, and the defining context for the moral judgment influences the use of moral disengagement mechanisms.

People are motivated to maintain a belief that the groups with which they identify are morally good (Tajfel and Turner, 1986; Taylor and Brown, 1988). In the same vein, people are motivated to maintain a belief that mankind as a whole is morally good in its relationship with the natural environment. When the moral value of a group becomes threatened, members of the group are inclined to display defensive reactions to protect their group's moral integrity (Tajfel et al., 1986). Applying this concept in the environmental context, when humans are accused of being responsible for current environmental problems, the moral integrity of mankind becomes threatened, and people are motivated to justify humans' environmental harms by using moral disengagement mechanisms, resulting in protecting their positive moral stance to mankind in its relationship with the natural environment. Therefore, the present study proposes that human responsibility belief for environmental degradation is positively related with the use of moral disengagement mechanisms. If human responsibility is not believed responsible for environmental degradation, there is little basis to activate the moral

disengagement mechanisms because there is no threat to humans' moral integrity (Bandura, 1990, 1999; Doosje et al., 2006; Leidner et al., 2010).

In terms of the effect of environmental identity on moral disengagement, this thesis proposes that environmental identity is negatively related with the use of moral disengagement mechanisms. Social identity theory (Tajfel and Turner, 1986) suggests that group identity provides a defining context for the evaluation of justice and injustice. In particular, common in-group identity theory in intergroup relations literature suggests that the positivity felt towards in-group members is extended to members of an out-group by forming a shared identity to that out-group (Gaertner et al., 1994), and the shared identity to the out-group facilitates the application of a common standard of justice for out-group members (Dorvidio et al., 2004). Specific to collective guilt, group identity has been suggested to influence the use of moral disengagement (e.g., Aquino et al., 2007; Leidner et al., 2010; Miron et al., 2006; Roccas et al., 2006). However, the direction of effect has been suggested to depend on the quality of the group identity. For example, the study of Roccas et al. (2006) demonstrated that attached identity is negatively related with the use of moral disengagement, which explains the identity's positive effect on collective guilt; glorified identity, on the other hand, is positively related with the use of moral disengagement, which explains the identity's negative effect on collective guilt. Therefore, the present study's proposed negative effect of environmental identity on moral disengagement is based on the concept that environmental identity facilitates the extension of in-group positivity and/or moral application scope to the natural environment. This extension of positivity and/or moral application scope allows a different context for moral judgment about humans' environmental harms for those with

a different degree of environmental identity, and this moral judgment context influences the use of moral disengagement. So those who consider the natural environment within the scope of human justice (i.e., high environmental identifiers) are reluctant to use moral disengagement to justify humans' environmental harms whereas those who do not (i.e., low environmental identifiers) are motivated to use the moral disengagement.

Integrating the proposed relationships of moral disengagement with human responsibility belief for environmental degradation and with environmental identity, the present study hypothesizes that the positive effect of human responsibility belief on moral disengagement decreases as a function of environmental identity. In other words, compared to high environmental identifiers, low environmental identifiers are more likely to use moral disengagement mechanisms when humans are believed to be responsible for environmental degradation. This hypothesized negative moderating effect of environmental identity on the relationship between human responsibility belief and moral disengagement is reasoned on the basis that (a) low environmental identifiers respond to human responsibility for environmental degradation with a higher threat to their identity as a member of mankind but with a lower threat to their identity as a member of nature, whereas the reverse response occurs for high environmental identifiers; (b) the threat to human identity facilitates limiting in-group positivity and moral application scope to mankind and using moral disengagement of humans' environmental harms, while the threat to environmental identity facilitates extending the positivity and moral scope to the natural environment and causes a reluctance to use moral disengagement.

Relating the moral disengagement to collective guilt, the present study proposes that moral disengagement, a product of interaction of environmental identity and human responsibility belief, is negatively related with the experience of collective guilt as suggested in collective guilt research in terms of the effect of moral disengagement on collective guilt (e.g., Doosje et al, 1988; Miron et al., 2006; Roccas et al., 2006). Combining proposals of the moderating effect of environmental identity on moral disengagement and the negative effect of moral disengagement on collective guilt, we hypothesize that moral disengagement mediates the interaction effect of human responsibility belief and environmental identity on collective guilt. That is, the greater effect of human responsibility belief on collective guilt among high environmental identifiers is due to their less use of moral disengagement to justify humans' environmentally harmful actions.

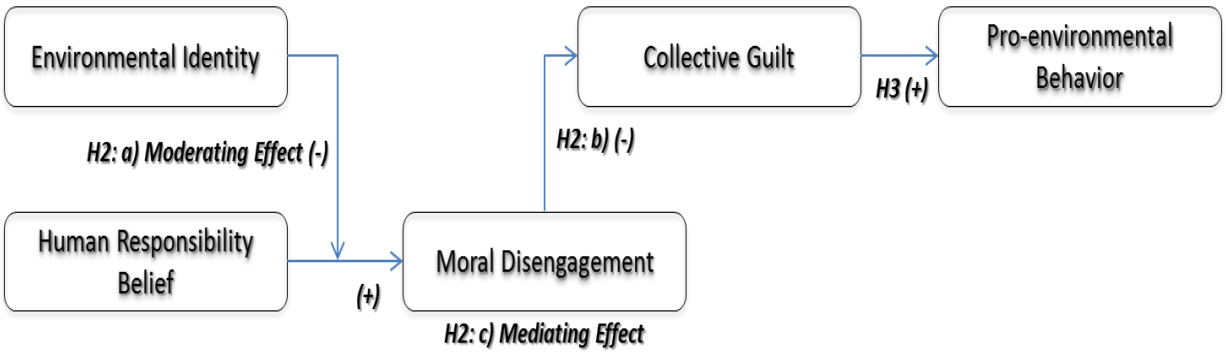
H2: Moral disengagement mediates the interaction effect of human responsibility belief and environmental identity on collective guilt (moral disengagement explains why high environmental identifiers experience higher level of collective guilt than low environmental identifiers when humans are believed to be responsible for environmental degradation).

In addition to the study hypothesis concerning the mechanism for formation of collective guilt, the present study hypothesizes the effect of collective guilt on pro-environmental behavior to support the empirical results found in the study of Ferguson and Branscombe (2010).

H3: Collective guilt is positively related with pro-environmental behavior.

In sum, the present study aims to examine how environmental identity and human responsibility belief are jointly related with collective guilt by examining (a) the interaction effect of environmental identity and human responsibility belief on moral disengagement, (b) the effect of moral disengagement on collective guilt, (c) the mediating role of moral disengagement, and finally (d) the impact of collective guilt on pro-environmental behavior. These hypotheses are summarized visually in Figure 1.

Figure 1: Hypotheses for Mechanism Underlying the Interaction Effect



STUDY 1

Study 1 aims to investigate the interaction effect of environmental identity and responsibility belief for environmental degradation on the feeling of collective guilt. Specifically, this thesis hypothesized the positive moderating effect of environmental identity on the relationship between responsibility belief and collective guilt. It is expected that high environmental identifiers experience higher degree of collective guilt than low environmental identifiers when humans are believed to be responsible for environmental degradation. To help participants relate to the study, a current and threatening environmental issue—global warming—was used as the example of environmental degradation. This hypothesis was tested by manipulating whether environmental degradation was attributed to human causes versus natural causes and by measuring individual difference variables of environmental identity and collective guilt.

Methodology

Participants

Participants were students in the Marketing Subject Pool (n = 144; 52.6% men, 47.4% women). Students earned course credit for participating in the study, as per the subject pool policy. Human ethics approval was received prior to running the experiment.

Design and Procedure

Hypothesis 1 (H1) was tested using a between-subject experimental design. Responsibility belief for environmental degradation was manipulated by preparing two responsibility conditions (i.e., human responsibility versus natural responsibility) for global warming, while environmental identity was measured. Once participants entered the lab, they were randomly assigned to either the human-responsibility or the natural-responsibility experimental condition, and they completed a measure of environmental identity, which was followed by the reading of an excerpt from a fictitious research article and then by the dependent measures (collective guilt and pro-environmental behavior). After participants had completed the questionnaire, they were thoroughly debriefed.

The manipulation of responsibility was performed with two different versions of a fictitious research article excerpt (see Appendix B). The current status and effect of global warming were explained identically in both versions, followed by two different causes being provided for global warming (i.e., human factors versus natural factors). Supported by fictitious scientific data, each version of the fictitious article argued either for human factors or natural factors being responsible for environmental degradation. Study participants completed the manipulation checks immediately after reading the excerpt,. The two manipulation check questions asked them to indicate the extent to which humans and natural forces respectively were responsible for global warming. The two articles were pretested, with samples drawn from the same population in which the main study was conducted. The pretest showed that manipulation of responsibility for

global warming was significant (human responsibility belief manipulation check: $F_{1, 26 =} 5.02$, $p < 0.05$, $M_{\text{human responsibility condition}} = 6.30$ versus $M_{\text{natural responsibility condition}} = 4.84$; natural responsibility belief manipulation check: $F_{1, 26 =} 4.08$, $p < 0.05$, $M_{\text{human responsibility condition}} = 3.30$ versus $M_{\text{natural responsibility condition}} = 4.56$)[1].

Instruments

Environmental identity: Eleven items from Clayton et al.'s (2011) Environmental Identity Scale were used. Respondents indicated their agreement with each of the items on a 7-point scale. These items represented four different subscales: salience of the identity (e.g., "I spend a lot of time in natural settings"), the identification of oneself as a group member (e.g., "I think of myself as a part of nature, not separate from it"), agreement with an ideology associated with the group (e.g., "Behaving responsibly toward the Earth – living a sustainable lifestyle – is part of my moral code"), and the positive emotions associated with the collective (e.g., "I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings"). The items were averaged to form the environmental identity measure (Cronbach's $\alpha = 0.86$).

Collective guilt: Three items from the study of Doosje et al. (2004) were used to measure the experience of collective guilt. Using a 7-point scale, participants were asked to express the extent to which, as a member of mankind, they feel *guilty*, *regretful*, and

[1] Two manipulation check items were also used in the pretest: one for human responsibility belief and another for natural responsibility belief. Responses were on 7-point scales ranging from1 (strongly disagree) to 7 (strongly agree).

remorseful about the effect of global warming on the environment. The phrase "*as a member of humankind*" was inserted in each item to make collective responsibility (rather than personal responsibility) salient. These items were averaged to form the collective guilt measure (Cronbach's $\alpha = 0.95$).

Results and Discussions

The analysis excluded 11 participants from the original 144 responses due to recall test failure (recall success rate: 92.6%). ANOVAs were performed on the manipulation check for both the human responsibility belief ($F_{1, 131} = 16.7$, $p < 0.01$) and the natural responsibility belief ($F_{1, 131} = 42.96$, $p < 0.01$). Participants in the human responsibility condition reported that humans were more responsible for global warming ($M = 6.02$) than did those who read that global warming was caused by natural factors ($M = 5.00$)[2]. Similarly, for the natural responsibility belief manipulation check, participants in the natural responsibility condition reported that natural factors were more responsible for global warming ($M = 5.20$) than did participants who read that global warming was caused by human factors ($M=3.45$).

In order to test the interaction effect of environmental identity and responsibility belief on collective guilt, a regression analysis was performed with responsibility belief, environmental identity, and product term of them as independent variables, and collective guilt as a dependent variable ($F_{3, 129} = 2.73$, $p < 0.05$). Because the moderator (i.e.,

[2] Responses for two manipulation checks (human responsibility belief and natural responsibility) were provided on 7-point scales ranging from1 (strongly disagree) to 7 (strongly agree).

environmental identity) was a continuous variable and independent variable (i.e., responsibility condition) was a categorical variable, environmental identity was standardized before entering into the regression equation, and the effect of responsibility belief on collective guilt was estimated at three different levels of the standardized score (-1, 0, and +1) of environmental identity (Aiken and West, 1991). This analysis yielded a significant interaction effect of environmental identity and responsibility belief on collective guilt ($\beta = -0.174$, $p < 0.05$). No main effects emerged for the responsibility belief ($\beta = 0.104$, $p > 0.1$), or the environmental identity ($\beta = 0.131$, $p > 0.1$), meaning that the effect of human responsibility belief or of environmental identity on collective guilt is through their significant interaction. In addition to the regression analysis, GLM analysis was performed to test the main effect of human responsibility on collective guilt[3]. The GLM analysis yielded a main effect of human responsibility belief ($F_{1,116} = 4.4$, $p < 0.05$) on collective guilt. Participants who read that global warming was caused by humans reported more collective guilt (M=4.61) than those who read that global warming was caused by nature (M=4.23)

The effect of responsibility belief on collective guilt at three different levels of environmental identity (low, moderate, and high) is displayed in Figure 2. Three levels of environmental identity were set to represent one standard deviation below the mean, the mean, and one standard deviation above the mean. Low level of environmental identity demonstrated significant difference of collective guilt between two different

[3] GLM analysis tests the effect of each factor after controlling for the other, but not controlling for the interaction whereas regression analysis tests the effect of each factor after controlling for the other and the interaction (see Huck, 2008).

responsibility belief conditions (β = 0.45, $p < 0.05$) and other two levels did not (β = 0.17, $p > 0.1$ for moderate level; β = -0.11, $p > 1$ for high level).

Figure 2: Direction of Interaction Effect on Collective Guilt

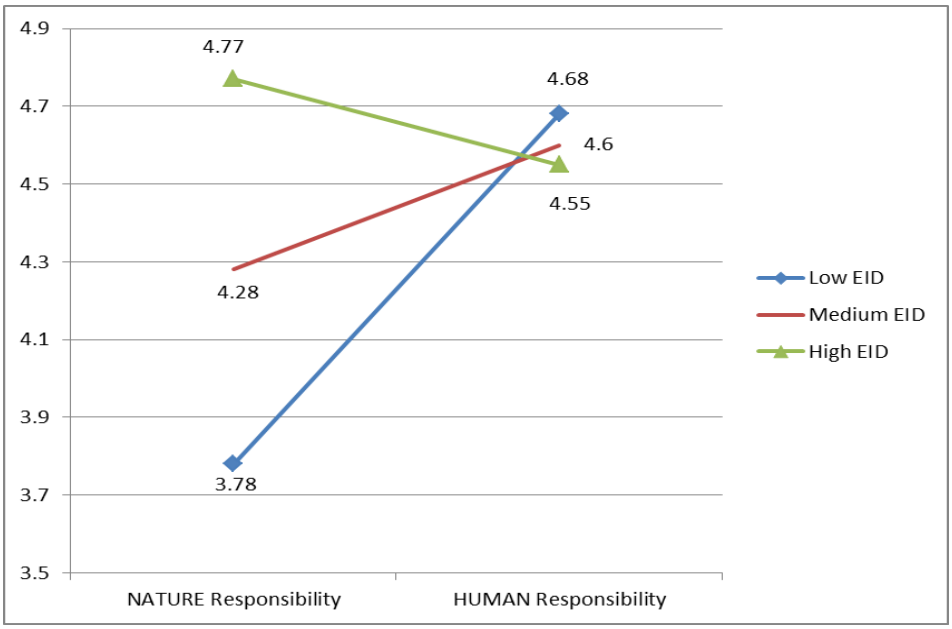
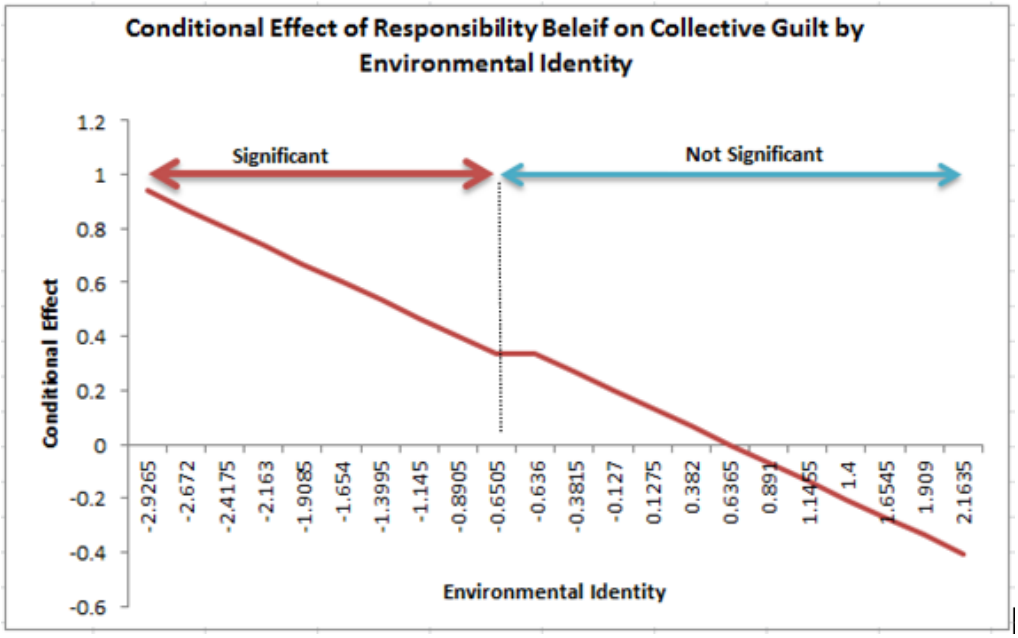


Figure 2 displays that, contrary to Hypothesis 1, the effect of human responsibility belief on collective guilt was greater among low environmental identifiers than among high environmental identifiers. To investigate this reverse direction of interaction effect in detail, the present study applied the Johnson-Neyman technique (see Bauer and Curran, 2005; Hayes and Matthes, 2009), which derives the value along the continuum of environmental identity, at which the effect of human responsibility on collective guilt transitions from *statistically significant* to *not significant* (see Figure 3). In other words, the Johnson-Neyman technique provides (a) mean differences of collective guilt between two responsibility conditions along the continuum of standardized score of environmental

identity and (b) statistical significances of the mean differences along the continuum. Compared to the traditional method of using only three levels of standardized score of environmental identity (-1 for low, 0 for moderate, and 1 for high levels) as shown in Figure 2, the Johnson-Neyman technique has the advantage of providing mean difference and its statistical significance across the whole spectrum of the moderating variable. The results of Johnson-Neyman test, as shown in Figure 3, demonstrated the same reverse direction of interaction effect, with the effect of human responsibility belief on collective guilt decreasing by the function of environmental identity. The test also demarcated the statistical significance region for the moderating effect of environmental identity. A standardized score of environmental identity of -0.65 was suggested as the demarcating point below which the moderating effect is significant and otherwise not significant (see Appendix C-1 for test results).

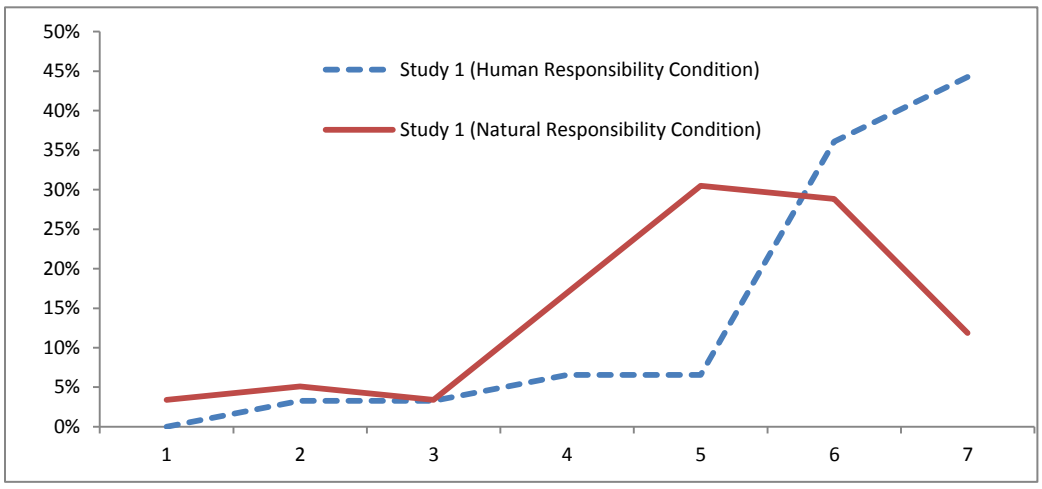
Figure 3: Direction of Interaction Effect on Collective Guilt: Johnson-Neyman Technique



Although limiting the test result interpretation to the significant range of environmental identity (i.e., below -0.65), the negative moderating effect of environmental identity on the relationship between human responsibility belief and collective guilt was consistent, and the direction of moderating effect was the opposite of the researcher's expectation that the effect of human responsibility belief on collective guilt is greater among high environmental identifiers than low environmental identifiers.

In order to resolve this contradictory result, a further investigation was conducted to assess whether the responsibility belief manipulation worked as per the researcher's expectation. Hence, the distribution of post-manipulation human responsibility belief was plotted for each responsibility manipulation condition. Figure 4 shows the distribution of participants' human responsibility belief after reading the responsibility manipulation excerpt.

Figure 4: Human Responsibility Belief after Manipulation



The chart demonstrates that participants in both conditions believed mainly that humans were responsible for global warming, and the supposed natural responsibility condition realistically manipulated participants towards believing in a mixed responsibility between humans and the natural environment. This dominant human responsibility belief for global warming accords with recent findings that a substantial portion of the public believes that human behavior is a main cause for environmental degradation (e.g., 79% across 22 countries in BBC Survey 2008; 75% in United States in 2010 IPCC survey) and, given that our study participants were university students, their age and education level are positively related with believing in human responsibility for environmental problems (e.g., Pew Research Center, 2009).

The analysis of post-manipulation human responsibility belief distributions demonstrated that the manipulation of human responsibility for global warming did not conform to the researcher's expectation and that a pre-existing human responsibility belief for global warming would influence the manipulation towards the direction of human responsibility belief.

Although these findings provided meaningful consideration points for further study, they did not explain the reverse direction of interaction effect. As a second approach to explain it, the researcher investigated any possible problems with the study's measurement scales, and found that the measure for collective guilt may not have actually measured collective guilt but instead measured a mixed valence of collective guilt and personal guilt. Collective guilt scale items were stated to express "the extent to which, as a member of mankind, they feel *guilty*, *regretful*, and *remorseful* about the effect of

global warming on the environment." Although the scale items included the phrase of "as a member of mankind" to make group identity salient, they did not specify what level (personal versus group) participants must consider in evaluating guilt feelings but instead took a neutral position concerning this level (i.e., asked for an evaluation of the effect of global warming on the environment). Namely, those items were supposed to use such phrases as "about humans' environmentally harmful behaviors" instead of "about the effect of global warming on the environment." Therefore, it is possible that the lack of specification of collective harms led participants to evaluate either personal guilt or collective guilt and the choice either for personal or collective guilt depended on the responsibility manipulation condition to which they had been assigned. The researcher supposes that the human responsibility manipulation made personal responsibility (rather than collective responsibility) more salient, whereas the natural responsibility manipulation made collective responsibility (rather than personal responsibility) more salient. This supposition was based on the reasoning that making participants believe that human behaviors were responsible for global warming encouraged participants to consider their personal environmental behaviors, whereas separating human behaviors from global warming discouraged participants from considering their personal environmental behaviors. In short, the researcher argues that the current study measured personal guilt, though not in a pure form, in the human responsibility manipulation condition and collective guilt, though not in a pure form, in the natural responsibility manipulation condition.

Combining this inconsistent measure of guilt (personal versus collective) with environmental identity, the researcher supposes that (a) low environmental identifiers

perceived high personal responsibility for environmental degradation than did high environmental identifiers; (b) this pattern of personal responsibility perception was based on actual environmental behaviors, as Clayton (2003) suggested the positive effect of environmental identity on pro-environmental behaviors; (c) salience of personal responsibility in human responsibility condition drove low environmental identifiers to feel more personal guilt compared to high environmental identifiers; (d) the salience of group responsibility in the natural responsibility condition facilitated the expected effect of environmental identity on collective guilt, which makes high environmental identifiers experience higher level of collective guilt than low environmental identifiers; and finally (e) the salience of group responsibility in the natural responsibility condition was based on the effect of a pre-existing responsibility belief on manipulation (i.e., mixed valence of human responsibility belief in natural responsibility manipulation condition). In short, we argue that the reverse direction of the interaction effect was based on the concept that, under the human responsibility manipulation condition, low environmental identifiers who tended to practice less pro-environmental behaviors felt higher levels of personal guilt than high environmental identity, and, under the natural responsibility manipulation condition, high environmental identifiers expressed higher levels of collective guilt than did low environmental identifiers.

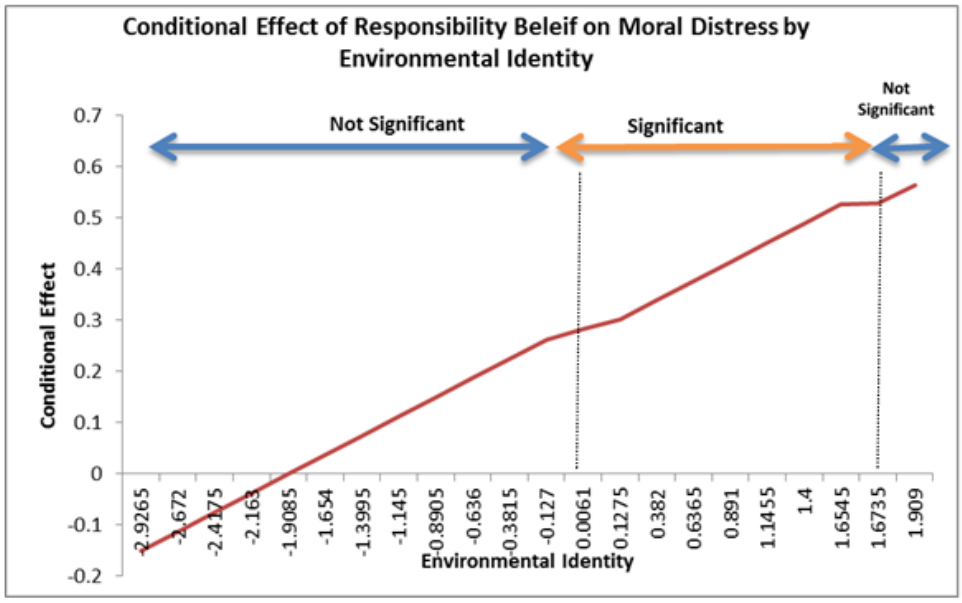
To support the aforementioned argument, we conducted additional regression analysis which used moral distress measure instead of collective guilt measure as a dependent variable. The moral distress was measured in this study as a contingency plan, using 5 items (distressed, upset, alarmed, troubled, disturbed, after reading the

manipulation research excerpt) used in the study of Miron et al. (2006) [4]. The study of Miron et al. (2006) suggests that collective guilt results from self-focused moral distress that is evoked by perceiving the in-group's unjust action and that the moral distress mediates the joint effect of in-group action's illegitimacy and in-group identity on collective guilt. Therefore, the current study sought to find the expected direction of interaction effect, positive moderating effect of environmental identity on the relationship between human responsibility belief and collective guilt, by using a surrogate measure (i.e. moral distress) for collective guilt. Although the regression analysis did not find significant effect of the interaction on moral distress ($\beta = 0.15$, $p > 0.1$), the direction of moderating effect conformed to the researcher's expectation, the effect of human responsibility on moral distress increasing by the function of environmental identity. The significance test of Johnson-Neyman technique was also applied and demonstrated that the moderating effect of environmental identity was significant over some range of standardized score of environmental identity (range from 0.0061 to 1.6735, see Appendix C-2 for test results), as displayed in Figure 5.

To conclude, this regression analysis and significance test of moderating effect provided some evidence to support the researcher's argument that the collective guilt measure used in this study did not measure collective guilt and needed to be corrected in the next study.

[4] Only three items out of five items were averaged to form moral distress measure due to lack of factor loadings – missing items including upset and disturbed.

Figure 5: Direction of Interaction Effect on Moral Distress



Conclusion

Study 1 sought to demonstrate that environmental identity moderates the effect of human responsibility belief on collective guilt. This research is noteworthy because the study of Ferguson and Branscombe (2010) was limited to suggesting the positive effect of human responsibility belief for environmental degradation on collective guilt, whereas the present study extended the work of these authors by (a) specifying the group identity that people form in their relationship with the natural environment, and (b) testing the moderating effect of that group identity on the relationship between human responsibility belief and collective guilt.

However, the study results demonstrated that the effect of human responsibility belief on collective guilt was greater among low environmental identifiers than it was among high environmental identifiers. This direction of interaction effect was the opposite of our expectation. Observing this contradictory study result, we argue that this result was based on using an inappropriate measure for collective guilt and its effect on the direction of interaction effect. In conclusion, Study 1 failed to test its intended study hypothesis, that is, the positive moderating effect of environmental identity on the relationship between human responsibility for environmental degradation and collective guilt, but instead helped us learn some lessons that should prove useful for future research.

Study 1 revealed two major consideration points that must be corrected. First, collective harm (i.e., humans' environmental harm) should be articulated in the collective guilt measurement scale items. Study 1 observed that the lack of articulation produced a chain of interaction effects among responsibility perspective (personal versus collective), responsibility manipulation conditions (human versus natural), and environmental identity (high versus low pro-environmental doers). In addition, the researcher suspected that the study's focus on environmental factors may have encouraged an increased sense of personal responsibility in the study participants. The present study measured environmental identity at the outset of the experiment, and this initial measurement may have provoked a heightened sense of personal responsibility among study participants, who then maintained that stance throughout the rest of the experimentation, thereby influencing the collective guilt measurement. Thus, future research must control the effect of personal responsibility on collective guilt.

Second, future research must also control for the effect of pre-existing responsibility belief for environmental degradation on the manipulation aspect of the experiment. The present study found that participants were not manipulated as intended by the experimental condition; instead, their post- manipulation belief was based on the interaction of pre-existing responsibility belief and manipulated responsibility belief. Therefore, participants' pre-existing responsibility belief must be measured and its effects on the study variables must be controlled.

Study 2 continues our endeavor to understand the interaction effect of environmental identity and human responsibility belief on collective guilt, first, by correcting all identified issues related with the contradictory direction of the interaction effect, and second, by testing moral disengagement as an underlying mechanism for the interaction effect of environmental identity and human responsibility belief for global warming on collective guilt. Study 2 was conducted with these changes.

STUDY 2

Study 2 focused on correcting the experimentation issues identified in Study 1 and then testing moral disengagement as a mechanism underlying the interaction effect of environmental identity and human responsibility belief on collective guilt. Therefore, the correction of issues found in Study 1 served as a prerequisite for testing the mediating effect of moral disengagement.

Observing the reverse direction of the interaction effect (i.e., greater effect of human responsibility belief on collective guilt among low environmental identifiers instead of among high environmental identifiers), Study 1 investigated the pattern of post-manipulation human responsibility belief distributions and then collective-guilt measurement scale, which provided three points that must be considered in order to properly test the intended study hypotheses. First, the collective guilt measure must make it clear we are referring to human's actions, not personal actions, in the scale items in order to clearly communicate which perspective of guilt to consider and thus avoid measuring personal guilt instead of collective guilt. Study 2 sought to resolve this issue by preparing a new collective-guilt measurement scale that clearly articulates humans' environment-related behavior. Second, personal responsibility aroused by measuring environmental identity at the initial stage of the experiment must be controlled in order to minimize its effect on the measurement of collective guilt. The resolution of this issue involved the insertion of a distractor task between the environmental identity measure and the human responsibility manipulation. Further, the structure of the study experiment had to be communicated to participants for them to believe that they were participating in

three separate mini-studies. Third, pre-existing beliefs regarding whether humans or natural causes are responsible for global warming had to be controlled in order to minimize its effect on manipulation and following dependent measures (i.e., collective guilt and moral disengagement). The effect of pre-existing belief was assessed by measuring the participant's level of belief prior to reading the responsibility belief manipulation article and then using the measure as a covariate in the hypotheses tests.

Methodology

Participants

Participants (n = 277; 54.2% men, 45.8% women) consisted of students in the Marketing Subject Pool, from the same population as in Study 1, but was administered during different semesters. Human ethics approval was received prior to implementing the experiment.

Design and Procedure

Consistent with Study 1, Study 2 was based on an experimental design that manipulated responsibility belief for global warming (human versus natural) and measured environmental identity prior to the main study. However, the study procedure and measures were modified in the following ways: adding a measurement for pre-existing human responsibility belief for global warming and a distractor task; preparing for a new collective measurement scale with the articulation of humans' harm on

environment and more scale items; and finally, using increased measurement scales for moral disengagement and pro-environmental behavior. The measurement of pre-existing responsibility belief was intended to control for its effect on responsibility manipulation, and the insertion of a distractor task was intended to minimize the personal responsibility aroused by measuring pre-existing responsibility belief and environmental identity at the initial stage of the experiment.

Once the participants entered the lab, the scales for pre-existing responsibility belief and environmental identity were administered, followed by the distractor task. The distractor task was based on 10 items for which the participants were requested to type the missing words into common English proverbs. Participants were then told to read the fictitious research-article excerpt, which was intended to manipulate responsibility belief for global warming (human versus natural). Soon after reading the research-article excerpt, each participant's extent of human responsibility belief for global warming, collective guilt, and moral disengagement were measured with respective scales. After the participants completed the questionnaire, they were thoroughly debriefed.

Study 2 used manipulation materials that were almost identical to those used in Study 1 (see Appendix B). Slight changes to the articles were made in order to further polarize the responsibility belief between the human condition and the natural condition (see Appendix D for a sample of the Study 2 questionnaire).

Instruments

Human Responsibility Belief: Study participants were asked three questions concerning the extent to which they agree that human behaviors and natural processes, respectively, are responsible for the effects of global warming. Each question was answered on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale was administered twice, once before the responsibility manipulation in order to measure pre-existing responsibility belief, and another time after reading the responsibility manipulation article in order to measure post-manipulation responsibility belief. Because respondents were asked to evaluate both human responsibility and natural responsibility, relative human responsibility belief was used, with the human responsibility belief score subtracted by the natural responsibility belief score for each scale item. The subtracted belief scores for three items were averaged to form the pre-existing human responsibility belief measure (Cronbach's $\alpha = 0.91$) and the post-manipulation human responsibility belief measure (Cronbach's $\alpha = 0.97$).

Environmental Identity: The same measurement scale from Study 1(11 items) was used for environmental identity. These items were averaged to form the environmental identity measure (Cronbach's $\alpha = 0.89$).

Collective guilt: With the intention of making collective responsibility (rather than personal responsibility) salient, a new collective guilt scale was prepared, with clear articulation of humans' harmful behavior on the natural environment. Based on the 5-item scale used by Doosje et al. (1998), a 7-item scale was prepared to evaluate the

degree to which human collective guilt was accepted by the participants ("I feel guilty about the negative things we human beings have done to the environment," "I feel regret for human beings' harmful actions toward the environment," " I believe I should repair the damage we human beings have caused to the environment," "I regret the bad outcomes in the environment that have been brought about by human beings," "I am disturbed by the negative effect our human behavior has had on the environment," "I am upset about the harmful impact our human behavior has had on the environment," and "I feel sorry about what we human beings have done to the environment."), on scales ranging from 1 (strongly disagree) to 7 (strongly agree). These items were averaged to form the collective guilt measure (Cronbach's $\alpha = 0.95$).

Moral Disengagement: Since moral disengagement in an environmental context has not been examined previously in the literature, Bandura's (1996) scale, which was developed for aggressive and violent behavior, needed to be customized from the original 32-item scale. Although there have been some attempts to study moral disengagement aside from aggressive and violent conduct (Bandura et al., 1996; Pelton et al. 2004; South and Wood, 2006), these attempts were bound within such social relations as corporate transgression and organizational corruption (Bandura, Caprara, and Zsolnai, 2000; Beu and Buckley, 2004; Moore, 2008; White, Bandura, and Bero, 2009), computer hacking (Rogers, 2003; Young, Zhang, and Prybutok, 2007), reaction to war (Aquino et al., 2007), peace and conflict (Jackson and Sparr, 2005; McAlister, 2001), and civic unethical behavior (Capara et al., 2009). In this study, the 32 items were customized to represent possible cognitive routes that lead to justification of humans' moral breach in their relationship with the natural environment to the extent possible (see Appendix E for the customized

scale). In order to check the construct validity of the customized scale, confirmatory factor analysis was applied. Utilizing the covariance residual matrix and model modification index available in measurement model estimation, the moral justification sub-factor (out of total eight sub-factors) was eliminated, thereby significantly improving the model fit ($\Delta א^2 = 76.10$, $p < 0.01$). All seven of the other sub-factors provided significant *t* statistics, demonstrating some evidence for convergent validity (see Appendix F). The scale also demonstrated some evidence for discriminant validity. When the standardized covariance between moral disengagment and each of three other study constructs (i.e. collective guilt, environmental identity, and environmental behavior) was contrainted to the unit rather than freely estimated, Chi-square estimates from all three contrainted models were significantly increased, which offered some evidence of discriminant validity of the scale (see Appendix F). In conclusion, the customized moral disengagment scale was reasonable, with the exclusion of the moral justification sub-factor, for use in our hypotheses testing. Four items corresponding to the moral justification sub-factor were removed before being averaged to form the moral disengagement measure (Cronbach's $\alpha = 0.93$).

Environment-Related Behavior: As Stern (2000) notes, different types of environmental behaviors often entail considerations other than environmental concern and attitude, such as direct economic benefits (e.g., turning off lights and appliances when not in use) and habitual behaviors. The research in environmental psychology literature also suggests that correlations among environmental behaviors in different situations or domains are small, non-existent, or perhaps even negative (Thogersen and Olander, 2006; Thogersen, 1999; Berger, 1997). Considering the diverse factors that can influence environmental

behaviors, this study used a measurement scale from the study of Lubell, Zahran, and Vedlitz (2007) that was empirically tested in global warming phenomena, which serves as the present study's experimental context for environmental degradation. Eight specific behaviors known to reduce the risk of global warming were measured on a 7-point scale in terms of intention to be involved in specific behaviors: insulate/weatherize home, adjust thermostat, plant trees, walk/ride bike, carpool, turn off electricity, buy low-emission vehicle, and recycle. Item for recycling behavioral intention was eliminated due to its weak and complex factor loading pattern[5]. The remaining seven items were averaged to form the environmental behavior measure (Cronbach's $\alpha = 0.79$).

Results and Discussions

Manipulation Checks and the Effect of Pre-Existing Responsibility Belief

A total of 230 responses were used for data analysis. The analysis excluded 47 responses from original 277 responses due to recall test failure (recall success rate: 83%). The recall test was based on 5 items. Participants who got more than three items incorrect were excluded from the data analysis. Respondents who failed the recall check showed a marginally significant difference between responsibility belief conditions ($F_{1, 45} = 3.19$, $p < 0.10$).

[5] Eigen value (communality) for the recycling behavior item is only 0.08. It is consistent with the suggestion (e.g., Setg et al., 2009) that recycling behavior is motivated substantially by non-environmental factors (e.g., habit and economic concern).

A general linear model (GLM) procedure was performed on the measure of post-manipulation human responsibility belief to check manipulation and examine the effect of pre-existing responsibility belief on the manipulation. This procedure used the responsibility manipulation condition as a categorical independent variable and the pre-existing responsibility belief as a continuous independent variable. As expected, there was a main effect of the manipulation condition on post-manipulation responsibility belief ($F_{1, 226} = 61.16$, $p < 0.01$). Participants who read that global warming was caused by human behaviors reported that humans were more responsible for the effect of global warming (M = 6.38) than did those who read that global warming was caused by natural phenomena (M = 3.75). In addition to the main effect of the manipulation condition on post-manipulation responsibility belief, this analysis yielded a significant main effect of the pre-existing responsibility belief on post-manipulation responsibility belief ($F_{1,226} = 122.22$, $p < 0.01$) and an interaction effect between pre-existing responsibility belief and manipulation condition on post-manipulation responsibility belief ($F_{1, 226} = 7.15$, $p < 0.05$). The GLM procedure was followed by regression analysis for each responsibility manipulation condition in order to examine the nature of the interaction effect of pre-existing responsibility belief and responsibility manipulation condition on post-manipulation responsibility belief, with pre-existing responsibility belief as independent variables and post-responsibility belief as a dependent variable. The effect of pre-existing responsibility belief on post-manipulation belief was stronger in the human responsibility manipulation condition ($\beta = 0.747$, $p < 0.01$) than in the natural responsibility manipulation condition ($\beta = 0.449$, $p < 0.01$). This interaction effect between pre-existing responsibility belief and responsibility manipulation condition on post-manipulation

responsibility belief implied that the mixed responsibility belief found in natural responsibility condition was based on convincing participants who dominantly believed in human responsibility for environmental degradation of contradictory responsibility belief (i.e., natural responsibility belief).

In conclusion, Study 2 found evidence that a pre-existing belief in human responsibility for environemtal degradation has an effect on responsibility manipulation. Additionally, our analysis showed that the effect of a pre-existing responsibility belief on manipulation was through both the main effect and the interaction effect.

Testing Interaction Effect (Hypothesis 1)

With a new measure for collective guilt, insertion of distractor task, and measurement of pre-existing responsibility belief for global warming, the regression analysis was used to test the hypothesized positive moderating effect of environmental identity on the relationship between human responsibility belief and collective guilt (H1). The regression analysis was performed on the measure of collective guilt, with the responsibility manipulation condition as categorical independent variable, and environmental identity and pre-existing responsibility belief as continuous independent variables ($F_{5, 225} = 8.99$, $p < 0.01$). The regression analysis also included a product term of responsibility belief and environmental identity to represent their interaction effect on collective guilt. The regression analysis results indicated a significant interaction effect of environmental identity and responsibility belief on collective guilt ($\beta = 0.384$, $p < 0.05$). In addition, the effect of pre-existing responsibility belief on collective guilt was

significant (β = 0.046, $p < 0.01$). When pre-existing responsibility belief was removed from the regression, the interaction effect became marginally significant (β = 0.277, $p < 0.1$).

The effect of human responsibility belief on collective guilt at three different levels of environmental identity (low, moderate, and high) is displayed in Figure 6. Three levels of environmental identity were set to represent one standard deviation below the mean, the mean, and one standard deviation above the mean. High level of environmental identity demonstrated significant difference of collective guilt between two different responsibility conditions (β = 0.6245, $p < 0.05$) and other two levels did not (β = 0.24, $p > 0.1$ for moderate level & β = -0.14, $p > 1$ for low level). In addition, Johnson-Neyman technique was used to provide statistical significance region of the interaction effect, as depicted in Figure 7.

Figure 6: Direction of Interaction Effect on Collective Guilt after Correcting Issues

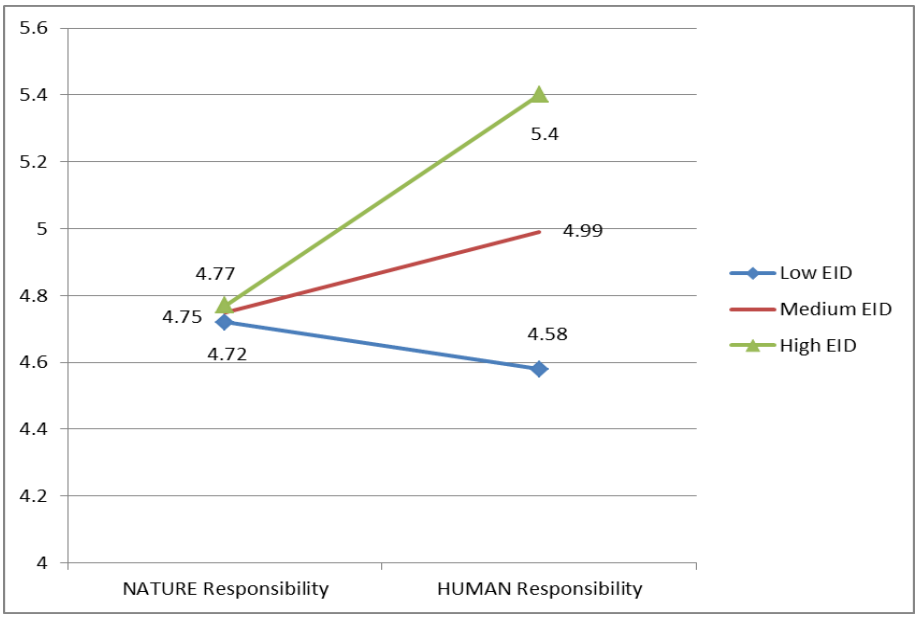
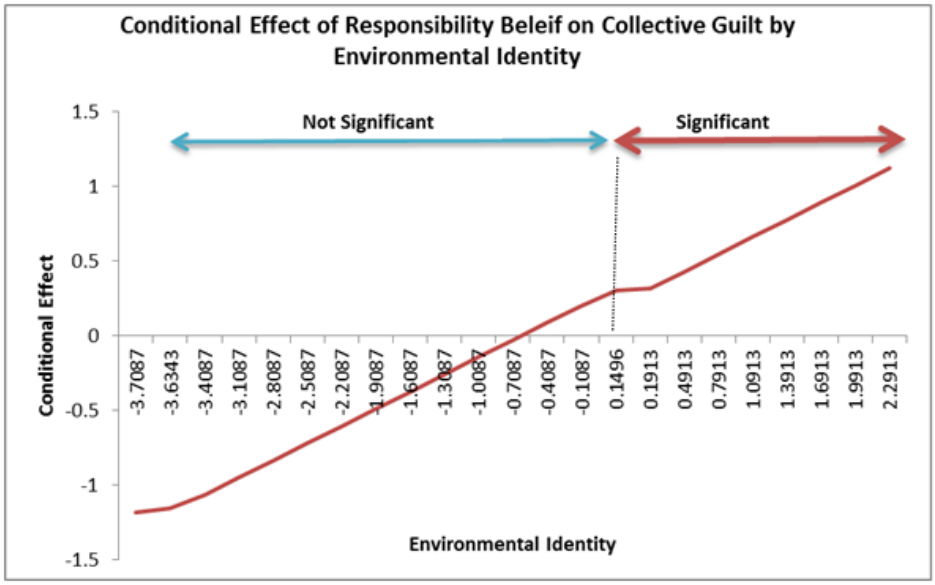


Figure 7: Direction of Interaction Effect on Collective Guilt after Correcting Issues: Johnson-Neyman Technique



Both tests consistently demonstrated an expected direction of interaction effect, with the effect of human responsibility belief on collective guilt increasing by the function of environmental identity. These test results suggest that the effect of human responsibility on collective guilt is greater among high environmental identifiers than among low environmental identifiers. The Johnson-Neyman test also demarcated the statistical significance region of the moderating effect. A standardized score of environmental identity of 0.1496 was suggested as the demarcating point above which the moderating effect was significant and otherwise not significant (see Appendix C-3 for test results).

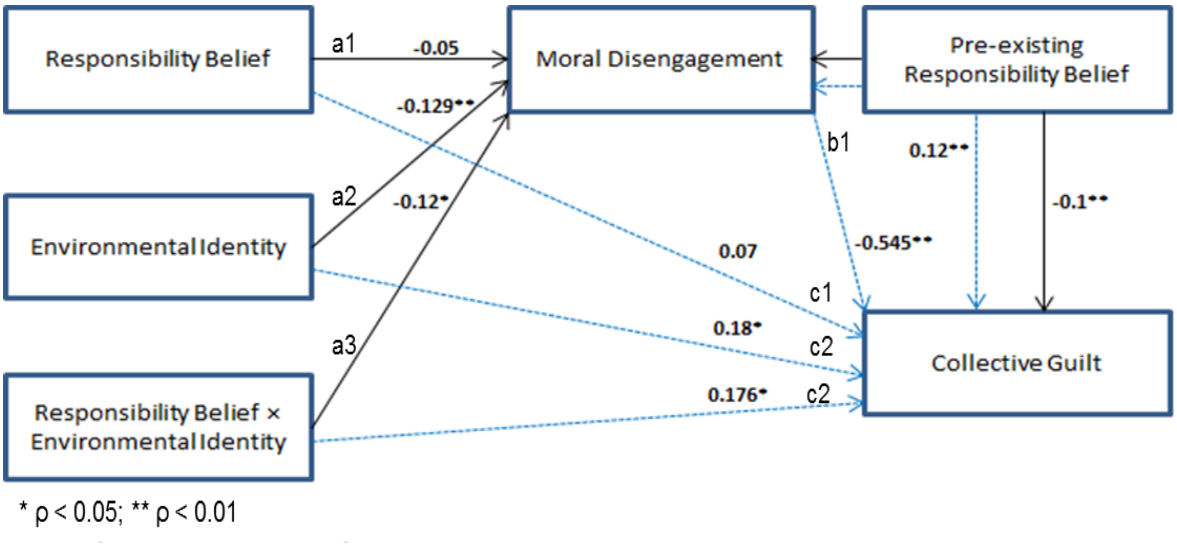
In conclusion, in Study 2, we found evidence to support the positive moderating effect of environmental identity on the relationship between human responsibility and collective guilt (Hypothesis1). By correcting the measure for collective guilt, inserting a

distractor task, and controlling for pre-existing responsibility belief, the direction of the interaction effect conformed to the study's expectation. In particular, the researcher noted that the removal of pre-existing responsibility belief as a covariate made the moderating effect of environmental identity marginally significant. This finding implies that study participants predominantly believed that humans were responsible for global warming, and this dominant belief resulted in a mixed responsibility belief in the natural responsibility condition. Further, the mixed responsibility belief, rather than expected natural responsibility belief, produced less distance from the human responsibility belief, which undermined the moderating effect of environmental identity.

Mediation Effect of Moral Disengagement

Study 2 tested moral disengagement's mediating role in the relationship between interaction of responsibility belief and environmental identity and collective guilt, using the Hayes and Preacher (2011) bootstrapping procedure (5,000 samples). Two regression models were estimated, as described in Figure 8, to quantify the mediating effect of moral disengagement: one model covered the relationship independent variables (environmental identity, responsibility belief, and their interaction) and moral disengagement ($F_{4, 225} = 5.16$, $p < 0.01$); the second model covered the relationship between moral disengagement and collective guilt and the direct effects from independent variables ($F_{5, 224} = 12.80$, $p < 0.01$). In Figure 8, the first model includes the path coefficients of a1, a2, and a3, and the second model includes the path coefficients of c1, c2, c3, and b1. Pre-existing responsibility belief was included as a covariate in both models.

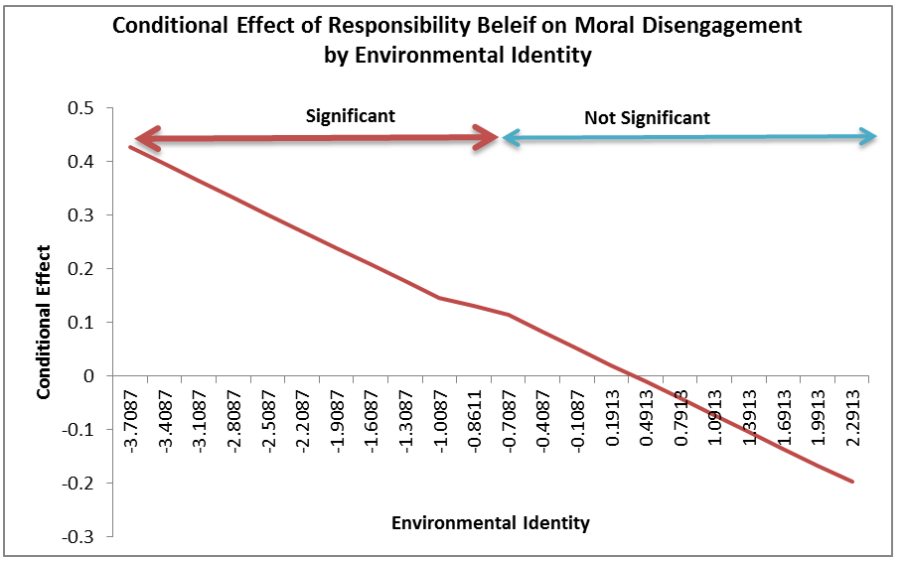
Figure 8: Models for Mediating Effect Test



The effect of the interaction between responsibility belief and environmental identity on moral disengagement (a3 in Figure 8) was -0.1199 and statistically significant ($p < 0.05$). Then, the effect of responsibility belief on moral disengagement was estimated at three different levels of the standardized score (-1, 0, and +1) of environmental identity in order to examine the direction of the interaction effect, together with a Johnson-Neyman test to examine the statistical significance region of the interaction effect.

Figure 9: Direction of Interaction Effect on Moral Disengagement

Figure 10: Direction of Interaction Effect on Moral Disengagement: Johnson-Neyman Technique



Both tests consistently demonstrated the expected direction of interaction effect, that is, the effect of human responsibility belief on moral disengagement decreasing by the function of environmental identity. These test results suggest that the effect of human responsibility on moral disengagement is greater among low environmental identifiers than among high environmental identifiers. In addition, the Johnson-Neyman test demonstrated a standardized score of environmental identity of -0.8611 as a demarcating point below which the moderating effect is significant and otherwise not significant (see Appendix C-4 for test results).

The effect of moral disengagement on collective guilt (b1 in Figure 8) was -0.545 and statistically significant ($p < 0.01$). The mediating effect of moral disengagement was derived by multiplying these two effects, which is 0.065 (i.e., -0.1199 × -0.545). A 95%

bootstrap confidence interval for this mediation effect was above zero (boot lower limit CI = 0.0016; boot upper limit CI = 0.1467). Therefore, we found evidence to support that the interaction effect between responsibility belief and environmental identity on collective guilt is explained by moral disengagement. Besides this indirect effect, the direct effect of the interaction between responsibility belief and environmental identity on collective guilt (c3 in Figure 8) was also significant ($\beta = 0.176$, $p < 0.05$), meaning that moral disengagement partially, rather than fully, mediates the interaction effect between responsibility belief and environmental identity on collective guilt.

Effect of Collective Guilt on Environmental Behavior

Simple regression analysis was performed, with collective guilt as an independent variable and environmental behavior as a dependent variable ($F_{1, 228} = 63.43$, $p < 0.01$). Collective guilt was significantly related with pro-environmental behavior ($\beta = 0.49$, $p < 0.01$).

In conclusion, the results of Study 2 support the interaction effect of responsibility belief and environmental identity on moral disengagment, the negative effect of moral disengagement on collective guilt, the mediation effect of moral disengagment in the relationship between the interaction of environmental identity and human responsibility and collective guilt, and finally the positive effect of collective guilt on pro-environmental behavior. In addion to testing the hypothesized relationships, Study 2 examined the effect of gender difference on collective guilt and moral disengagement.

Gender Effect on Collective Guilt and Moral Disengagement

Although the effect of *collective guilt* on pro-environmental behavior was not hypothesized in the present study, it was tested to support the empirical results found in the study of Ferguson and Branscombe (2010). Because *gender difference* in environmental behavior has received considerable attention and been supported by many empirical studies, (e.g., Zelezny et al., 2000; Davidson et al., 1996; Stern et al., 1993), Study 2 examined the effect of gender difference on collective guilt and moral disengagement. This examination was approached by two methods: performing simple regression analysis each for collective guilt and moral disengagement; and including a gender variable as a covariate in two existing hypothesized models (one for interaction effect on collective guilt and another for interaction effect on moral disengagement). Simple regression analysis results demonstrated that the effect of gender difference was not significant, both on collective guilt ($\beta = 0.356$, $p > 0.1$) and on moral disengagement ($\beta = -0.06$, $p > 0.1$)[6]. When the gender variable was included as a covariate, interaction effects in both the collective-guilt model and the moral-disengagement model were almost identical to the ones that lacked a covariate in terms of coefficient and statistical significance level. Therefore, Study 2 did not find a significant effect of gender difference on collective guilt and moral disengagement.

[6] Female was coded as +1 and Male was coded as 0.

Conclusion

After correcting the experimentation issues identified in Study 1, Study 2 provided evidence to support the hypothesized positive moderating effect of environmental identity on the relationship between human responsibility belief and collective guilt (H1). Namely, these study results suggest that the effect of human responsibility belief on collective guilt is greater among high environmental identifiers than it is among low environmental identifiers. The issue related to the collective guilt measure was resolved by preparing a new measurement scale with clearer articulation of humans' behavior in each scale item; the issue concerning personal responsibility arousal was treated by inserting a distractor task and structuring the study experiment to three mini-studies; and finally, the issue concerning a pre-existing responsibility belief was resolved by measuring the belief and including it as a covariate throughout the hypotheses testing process.

Two specific findings promote the need for further research efforts. First, Study 2 revealed the possibility that human responsibility negatively influences collective guilt among low environmental identifiers. Although this negative effect was located in the region of statistically insignificance (see Figure 7), it may be possible to see a significant negative effect by exposing study participants to a more extreme human responsibility condition. Second, this study found a strong influence of pre-existing responsibility belief on manipulation of human responsibility. Although the manipulation check demonstrated a statistically significant difference of responsibility belief between the two experimental conditions, the actual pattern of post-manipulation beliefs was quite different from the

expected pattern. Although Study 2 controlled for the effect of pre-existing belief on dependent variables by including the belief as a covariate, a question still remains in terms of the pre-existing belief's interactions with other independent variables. Therefore, further study should consider how to deal with these interactions and, furthermore, how to control for the pre-existing belief in the experiment.

Next, Study 2 provided the evidence to support that moral disengagement explains the interaction effect of environmental identity and human responsibility belief on collective guilt. Study results demonstrated that (a) the effect of human responsibility belief on moral disengagement is greater among lower environmental identifiers than it is among high environmental identifiers; (b) moral disengagement, as a product of moral judgment about humans' environmentally wrongful behaviors, has a negative effect on collective guilt; (c) and moral disengagement mediates the interaction effect of environmental identity and human responsibility belief on collective guilt. Interestingly, this study identified a finer point concerning the mediation effect of moral disengagement. The partial mediation (rather than full mediation) of moral disengagement suggests that the moral disengagement of humans' harm on the natural environment does not fully explain the mechanism underlying the interaction effect of environmental identity and responsibility belief on collective guilt. Therefore, further research efforts must be taken to examine alternative routes underlying the interaction effect on collective guilt.

Third, as suggested in Ferguson and Branscombe's study (2010), the present study results suggest that collective guilt positively influences pro-environmental

behavior. In addition, it did not find a significant effect of gender difference on collective guilt and moral disengagement.

Finally, Study 2 found some evidence to support the researcher's moral disengagement measurement scale that customized Bandura's original scale to fit to an environmental issue context. Confirmatory factor analysis results demonstrated convergent and discriminant validities for this measurement scale, although the analysis was based on a single study. However, out of suggested eight moral disengagement mechanisms, the moral justification mechanism needed to be removed from the hypothesis test due to its low statistical power and lack of data fit to model. The present study supposes that the lack of statistical power or data fit to the model of the moral justification sub-factor is based on the conceptual complexity of the construct. As its moral justification reasons, the customized moral judgment sub-scale applied costs of economic gain, of human well-being, of personal characteristic, and of national economic competitive advantage. Compared to other sub-scales, the customized moral judgment sub-scale depends on more social judgment matters than on individual psychology. Conclusively, the present study found that, in an environmental issue context, the moral disengagement mechanisms need to be approached with particular consideration of the unique factors in this context, and the current version of moral disengagement measurement scale must therefore be followed up by further research efforts.

CONTRIBUTIONS AND LIMITATIONS

This thesis makes four major contributions. First, it supports the plausibility of experiencing collective guilt in an environmental context. As an extension of the first collective-guilt study in an environmental context (i.e., that of Ferguson and Branscombe, 2010), this research provides further empirical evidence that collective guilt is a plausible emotion in humans' relationship with a non-social entity (i.e., the natural environment), which excludes such social elements as intergroup conflict and intentional harm. This attempt is consistent with the recommendation in the introductory article of the *American Psychologist* special issue on global climate change (Swim et al., 2011) that called for interdisciplinary research related to the environment. In that article, Swim et al. (2011) pointed out that, in order to more effectively address important behavior dimensions, the study needs more interdisciplinary scope and prioritizing of research topics. On the other hand, it is still far too early to have a clear understanding about the formation of collective guilt in an environmental context. Considering the four factors that were suggested in the study of Wohl et al. (2006) to facilitate collective guilt (i.e., responsibility, group identification, illegitimacy, and cost), the present study investigates only one combination: the interaction effect of responsibility and group identification. Future research efforts are therefore necessary to examine other meaningful aspects in order to deepen our understanding of the formation of collective guilt in an environmental context, which would ultimately help in designing more effective and sustainable environmental programs.

Second, this thesis provides evidence that the shared identity formed through inclusive categorization to a non-social entity (i.e., the natural environment) acts as a plausible variable to influence collective guilt, even though the shared identity is unidirectional (i.e., lacking intergroup conflict). Adopting the environmental identity suggested by Clayton and Opotow (2003), the present study empirically tested whether the shared identity to the natural environment interacts with human responsibility belief for environmental degradation to influence collective guilt. On the other hand, two particular study limitations need to be addressed by further study in terms of how to test the interaction effect on collective guilt. The first limitation is that human responsibility manipulations need to cover more extreme cases. The current study results show the possibility that human responsibility negatively influences collective guilt among low environmental identifiers. The researcher expects that the expansion of human responsibility to an extreme valence possibly leads to finding a significant negative effect of human responsibility belief on collective guilt among low environmental identifiers. Second, the effect of pre-existing human responsibility on manipulation was controlled for by treating the pre-existing belief as a covariate throughout the hypotheses testing process. However, the researcher expects that the treatment of pre-existing belief as a covariate did not eliminate its effect on study variables because the covariate takes care of only the main effect of the belief on dependent variables (i.e., collective guilt and moral disengagement) without considering the effects of the interactions between pre-existing belief and all other independent variables. Therefore, further study should consider how to take care of this interaction effect and, furthermore, how to control for the pre-existing belief in the study. Besides these two limitations, the shared identity view

also remains limited when considering all possible methods of group-identification in the domain of environmental issues. Given that contemporary environmental issues produce conflicting social opinions and political debate, it would make sense to investigate different methods of social identification among different populations in regards to dealing with such environmental issues (see Clayton 2006).

Third, this research highlights the way environmental identity and human responsibility belief for environmental degradation can jointly influence collective guilt. The study results suggest that those who identify highly with the natural environment are reluctant to use moral disengagement mechanisms to justify humans' moral breach in their relationship with the natural environment. This reluctance towards moral disengagement interacts with a belief in human responsibility for environmental degradation in such a way that the positive effect of human responsibility belief on the moral disengagement is negatively related with environmental identity. Thus, high environmental identifiers use less moral disengagement when humans are believed to be responsible for environmental degradation. In addition, the results of the present study show that the negative effect of moral disengagement on collective guilt, which has been suggested in intergroup relations literature, constitutes a valid relationship in an environmental context. Combining these two relationships, the present study finds evidence to support the concept that moral disengagement is a possible mechanism that underlies the interaction effect of environmental identity and human responsibility on collective guilt. In particular, the present study finds that moral disengagement partially (rather than fully) mediates the interaction effect of environmental identity and human responsibility belief on collective guilt. This partial mediation, rather than full mediation,

implies that moral disengagement is not the sole motivator underlying the interaction effect of environmental identity and human responsibility on collective guilt. As a promising alterative, a study of the emotion of empathy would make a useful contribution to collective-guilt research, in an environmental context. Consistent with this view, the study of Montada and Schneider (1989) suggests that empathy for the disadvantaged is positively correlated with existential guilt.

Finally, this research has examined the ways that moral disengagement mechanisms are expressed in an environmental context. Bandura's scale had to be customized to fit to an environmental-issue domain because the scale has not been applied in this context. While the results of this customization demonstrated some evidence of construct validity, the customized scale does possess some limitations. The researcher did not apply a psychometric approach in customizing and testing the scale; each of the original scale items was adapted based on the researcher's judgment. The appropriateness of the sub-factor loading patterns of the customized scale (in comparison to those in the original scale) was not thoroughly considered; and the validity and reliability of the customized scale were not tested through a reasonable number of repetitive samples. Accordingly, the present study's moral judgment sub-scale, out of eight suggested moral disengagement mechanisms, did not show sound construct validity. We did not perform any follow-up study to enhance the sub-scale. It is therefore necessary that this study should be followed up by further research, especially through a separate study dedicated to fine-tuning the scale for an environmental context.

IMPLICATIONS

Various environmental problems, such as global warming, water shortage, and loss of biodiversity, pose severe threats to environmental sustainability. Many of these problems are known to be rooted in human behavior and thus can be managed by changing the relevant behavior in an effort to reduce its environmental impact. Accordingly, various types of intervention programs exist to create awareness for environmental degradation and promote a positive attitude toward environmental conservation. In a U.S. national sample, as many as 77% of respondents identified themselves as being very much concerned about environmental protection (American Environmental Survey, 2006), and in another survey 96% of Europeans agreed that saving the planet represents an important goal (Attitudes of European Citizens towards the Environment, 2008).

On the other hand, many different survey reports and studies have also found that such concerns and attitudes do not translate into actual environmentally responsible behavior; in spite of their socially aware responses, people simply maintain their normal pattern of behavior, just as if these environmental issues did not exist (e.g. De Groot & Steg, 2007, 2008; Nordlund & Garvill, 2002). Around the world, increasing degrees of catastrophic environmental degradation have brought about many changes in regulations and social norms, along with intergovernmental efforts to manage and overcome the consequent threats to mankind. However, such efforts have been portrayed as an impediment to economic expansion, with many organizations considering such environmental conservation devices as nothing more than hurdles that must be overcome,

rather than adopting them as a vital and intrinsic part of their day-to-day operations. In the face of such dilemmatic phenomena, the present study attempts to provide some insight in terms of why this dilemma continues and how we can deal with it. The findings of this research suggest the following two general implications.

First, this thesis establishes *identity to the natural environment* – the individual's perceived connection with nature – as an antecedent of pro-environmental behavior. In comparison to environmental concern or attitude, environmental identity represents a motivation that is driven by an intrinsic connection to nature, a value that is reflected in the individual's view of the relationship between humans and nature. On the other hand, this degree of concern or attitude can be based on either the intrinsic value of nature or on anthropocentric motivation. Anthropocentrics support conservation because the well-being of all mankind depends on the preservation of natural resources. Although, when asked, people express a strong degree of environmental concern, they find it difficult to act on their intention to conserve when faced with higher prices or the need to forego convenience and comfort as a result of their efforts. The findings of the present study, (i.e., the positive effect of environmental identity on collective guilt through its interaction with human responsibility belief and on following environmental behavioral intention) imply that intervention strategies aimed at promoting environmental identity can be more effective in inspiring deeds that will protect the natural environment compared to the effect of simple informational strategies that focus on increasing awareness of environmental problems or enhancing environmental concerns and attitudes. If people consider themselves to be part of nature, then harmful actions towards the natural environment should be treated the same as harmful actions towards humans. This

expansion of the scope of moral application to include the natural environment will secure a sustainable pattern of behavior towards environmental protection.

Second, when Study 2 tested the interaction effect of human responsibility belief and environmental identity on collective guilt, the results demonstrated the possibility that the belief of human responsibility negatively influences collective guilt among low environmental identifiers (see Figure 7). In other words, if the interaction effect were tested using a more extreme manipulation of human responsibility for environmental degradation, the result could be a significant negative effect of human responsibility belief on collective guilt among low environmental identifiers. Although this possibility must be examined through further study, the significance of this negative effect would provide important implications in terms of the success of information-driven environmental intervention programs.

The current study clearly demonstrated that its participants predominantly believed that humans are responsible for global warming and a variety of media messages and political discussions promote the idea of human responsibility for concurrent environmental problems as well. However, assigning blame for environmental damage in this way may induce a backfiring effect in which low environmental identifiers respond to this accusation with defensive psychological processes, which effectively reduce their initial level of collective guilt. To conclude, the results of this research suggest that the current information programs, which promote human responsibility for environmental problems, would be more effective if they placed an equal amount of focus on promoting the concept of environmental identity.

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APPENDIX

Appendix A: Moral Disengagement Mechanisms

Moral Justification	Moral, social, and economic justifications are used to sanctify injurious products and practices, and to challenge regulations. Viewing harmful activities as serving worthy ends not only eliminates any self-censure for performing them, but can even beget pride for doing them well.
Euphemistic Language	Sanitizing and convoluted language is used to make injurious products and practices personally and socially acceptable. Moral self-sanctions can be reduced by cloaking activities in innocuous language.
Advantageous Comparison	The injurious activity or product is compared or contrasted to other activities or products that make it appear benign, of little consequence, or of lesser negative effect.
Displacement of Responsibility	Individuals absolve themselves of personal responsibility for the harm caused by products and practices by viewing their activities as ordered by others, and by creating systems of deniability that keep themselves intentionally uninformed. Challenges to public policies, regulations, and scientific findings are shifted to consultants, external scientists, and created organizations that serve as proxies for the industries in the public arena.
Diffusion of Responsibility	Personal accountability for one's contribution to harmful activities is reduced by group decision making and group action so no one really feels personally responsible, and by subdividing the various facets of the enterprise across different subsystems that seem blameless in detached isolation. Under widely diffused practices, no one feels personally accountable for the harm done.
Distorting Consequences	Minimizing, denying, or distorting consequences: The harm resulting from the injurious action or products is minimized, distorted, or denied. Evidence of harm is discredited. As a result, there is little reason for self-censure to be activated.
Dehumanization	Disparaging, denigrating critics, and victims: Self-censure for cruel conduct can be disengaged or blunted by attributing disparaging qualities to victims. Scientists documenting injurious effects and those calling for regulation of the industries are disparaged and invested with sinister motives.
Attribution of Blame	Those who suffer the harmful effects of the products and practices are blamed for bringing the harm on themselves by their behavior, psychosocial deficiencies, and biological vulnerabilities. Other factors

	such as environmental conditions, genetic factors, and other diseases are blamed for the harmful effects.

Source: Coding Manuals for Moral Disengagement (Bandura, 2006)

Appendix B: Manipulation of Responsibility

STUDY 1: Responsibility Manipulation – Human Factors Condition

Excerpt of Research Paper titled "Global Warming: Who is Responsible?"
Source: Bernard Olson, *Scientific American*, April 29, 2011, 23(3), pp. 13-19.

Global warming is the process wherein the average temperature of the Earth's surface air increases. It has been an ongoing topic of conversation and a political hot-button issue for years due to its massive adverse effect, expected and current, on humankind. The planet is warming, from the North Pole to the South Pole, and everywhere in between. Signs are appearing all over, and some of them are shocking. The heat is not only melting glaciers and sea ice, but is also shifting precipitation patterns and setting animals on the move. According to the Intergovernmental Panel on Climate Change (IPCC), leading international body for the assessment of climate change established by the United Nations Environment Programme, the effects of global warming include, but are not limited to, ice melting, sea levels rising, unseasonal hurricanes and storms, floods and droughts, extinction of animal and plant species, less fresh water, and an increase in new diseases in third-world countries. For instance, in Canada, global warming poses an immediate threat to polar bears in the Hudson Bay with longer ice-free periods. The early break-up of sea ice limits the polar bears' hunting season, which leads to weight loss. If current trend of global warming continues, polar bears will be extinct by 2050.

The cause of global warming is largely due to human-related factors. Though there are some natural causes for this rise in temperature, they are insignificant when compared to those caused by man-made environmental pollution. A large part of this pollution is due to the burning of fossil fuels. When fossil fuels are burned, they emit carbon dioxide, ozone, nitrous oxide, and methane—greenhouse gases that trap heat within the atmosphere of the Earth and contribute to global warming. Over 80 percent of such heat-trapping gases are released into the atmosphere from driving cars, generating electricity from coal-fired power plants, and heating our homes and offices. According to new worldwide data on the last 300 years of human activities and the earth's temperature, the Intergovernmental Panel on Climate Change recently concluded with over 95% confidence that human activities due to increased consumerism in economically developed nations are primarily responsible for global warming. The IPCC found almost no evidence that natural causes had a role to play in it.

STUDY 2: Responsibility Manipulation – Human Factors Condition

Excerpt of Research Paper titled "Global Warming: Who is Responsible?"
Source: Bernard Olson, *Scientific American*, April 29, 2011, 23(3), pp. 13-19.

Global warming is the process wherein the average temperature of the Earth's surface air increases. It has been an ongoing topic of conversation and a political hot-button issue for years due to its massive adverse effect, expected and current, on humankind. The planet is warming, from the North Pole to the South Pole, and everywhere in between. Signs are appearing all over, and some of them are shocking. The heat is not only melting glaciers and sea ice, but is also shifting precipitation patterns and setting animals on the move. According to the Intergovernmental Panel on Climate Change (IPCC), leading international body for the assessment of climate change established by the United Nations Environment Programme, the effects of global warming include, but are not limited to, ice melting, sea levels rising, unseasonal hurricanes and storms, floods and droughts, extinction of animal and plant species, less fresh water, and an increase in new diseases in third-world countries. For instance, in Canada, global warming poses an immediate threat to polar bears in the Hudson Bay with longer ice-free periods. The early break-up of sea ice limits the polar bears' hunting season, which leads to weight loss. If current trend of global warming continues, polar bears will be extinct by 2050.

Scientific evidence clearly shows global warming is caused largely by human activities. Although there are few natural causes for the rise in global temperature, they are insignificant when compared to those caused by man-made environmental pollution. A large part of this pollution is due to the burning of fossil fuels. When fossil fuels are burned, they emit carbon dioxide, ozone, nitrous oxide, and methane—greenhouse gases that trap heat within the atmosphere of the Earth and contribute to global warming. Geologists have found that over 90 percent of such heat-trapping gases are released into the atmosphere from driving cars, generating electricity from coal-fired power plants, and heating our homes and buildings. According to new worldwide data on the last 300 years of human activities and the earth's temperature, the Intergovernmental Panel on Climate Change recently concluded with over 95% confidence that human activities due to increased consumerism in economically developed nations are primarily responsible for global warming. Although some believe natural phenomena are the cause of global warming, the IPCC found almost no evidence for it. Most scientific data point to manmade causes instead.

STUDY 1: Responsibility Manipulation – Natural Factors Condition

Excerpt of Research Paper titled "Global Warming: Who is Responsible?"
Source: Bernard Olson, *Scientific American*, April 29, 2011, 23(3), pp. 13-19.

Global warming is the process wherein the average temperature of the Earth's surface air increases. It has been an ongoing topic of conversation and a political hot-

button issue for years due to its massive adverse effect, expected and current, on humankind. The planet is warming, from the North Pole to the South Pole, and everywhere in between. Signs are appearing all over, and some of them are shocking. The heat is not only melting glaciers and sea ice, but is also shifting precipitation patterns and setting animals on the move. According to the Intergovernmental Panel on Climate Change (IPCC), leading international body for the assessment of climate change established by the United Nations Environment Programme, the effects of global warming include, but are not limited to, ice melting, sea levels rising, unseasonal hurricanes and storms, floods and droughts, extinction of animal and plant species, less fresh water, and an increase in new diseases in third-world countries. For instance, in Canada, global warming poses an immediate threat to polar bears in the Hudson Bay with longer ice-free periods. The early break-up of sea ice limits the polar bears' hunting season, which leads to weight loss. If current trend of global warming continues, polar bears will be extinct by 2050.

The cause of global warming is largely due to natural factors. Though there are some man-made causes for this rise in temperature, they are insignificant when compared to the environmental pollution caused by nature itself. A large part of this pollution is due to the natural burning of fossil fuels. When fossil fuels are burned, they emit carbon dioxide, ozone, nitrous oxide, and methane—greenhouse gases that trap heat within the atmosphere of the Earth and contribute to global warming. Over 80 percent of such heat-trapping gases are generated in the atmosphere from solar radiation, volcanic eruptions, natural wildfires, and solar flares. According to new worldwide data on the last 300 years of natural phenomena and the earth's temperature, the Intergovernmental Panel on Climate Change recently concluded with over 95% confidence that cyclical natural changes in the planet and the still-evolving solar system in general are primarily responsible for global warming. The IPCC found almost no evidence that manmade causes had a role to play in it.

STUDY 2: Responsibility Manipulation – Natural Factors Condition

Excerpt of Research Paper titled "Global Warming: Who is Responsible?"
Source: Bernard Olson, *Scientific American*, April 29, 2011, 23(3), pp. 13-19.

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Scientific evidence clearly shows global warming is caused largely by natural phenomena. Although there are few manmade causes for the rise in global temperature, they are insignificant when compared to the environmental pollution caused by nature itself. A large part of this pollution is due to the natural burning of fossil fuels. When fossil fuels are burned, they emit carbon dioxide, ozone, nitrous oxide, and methane—greenhouse gases that trap heat within the atmosphere of the Earth and contribute to global warming. Geologists have found that over 90 percent of such heat-trapping gases are generated in the atmosphere from solar radiation, volcanic eruptions, natural wildfires, and solar flares. According to new worldwide data on the last 300 years of natural phenomena and the earth's temperature, the Intergovernmental Panel on Climate Change recently concluded with over 95% confidence that cyclical natural changes in the planet and the still-evolving solar system in general are primarily responsible for global warming. Although some believe human activities are the cause of global warming, the IPCC found almost no evidence to support that belief. Most scientific data point to natural phenomena instead.

Appendix C: Moderating Effect Significance Test by Johnson-Neyman Technique

1. Study 1 (Collective Guilt)

Environmental Identity	Conditional Effect	se	t	p	LLCI	ULCI
-2.9265	0.9395	0.43	2.1851	0.0309	0.0879	1.7911
-2.672	0.8724	0.3971	2.1969	0.03	0.0859	1.6589
-2.4175	0.8052	0.3646	2.2082	0.0292	0.083	1.5274
-2.163	0.7381	0.3327	2.2182	0.0285	0.079	1.3971
-1.9085	0.6709	0.3015	2.225	0.028	0.0737	1.2681
-1.654	0.6037	0.2713	2.2256	0.028	0.0664	1.1411
-1.3995	0.5366	0.2423	2.2142	0.0288	0.0566	1.0166
-1.145	0.4694	0.2152	2.1809	0.0312	0.0431	0.8958
-0.8905	0.4023	0.1908	2.1086	0.0371	0.0244	0.7802
-0.6505	0.339	0.1711	1.9806	0.05	0	0.6779
-0.636	0.3351	0.1701	1.9704	0.0512	-0.0017	0.672
-0.3815	0.268	0.1547	1.7325	0.0858	-0.0384	0.5743
-0.127	0.2008	0.1462	1.3733	0.1723	-0.0888	0.4905
0.1275	0.1337	0.146	0.9157	0.3617	-0.1554	0.4228
0.382	0.0665	0.1539	0.4321	0.6665	-0.2384	0.3714
0.6365	-0.0006	0.169	-0.0038	0.997	-0.3353	0.334
0.891	-0.0678	0.1894	-0.358	0.721	-0.4429	0.3073
1.1455	-0.1349	0.2137	-0.6316	0.5289	-0.5581	0.2882
1.4	-0.2021	0.2406	-0.84	0.4027	-0.6787	0.2745
1.6545	-0.2693	0.2695	-0.9993	0.3197	-0.8029	0.2644
1.909	-0.3364	0.2996	-1.1228	0.2639	-0.9299	0.257
2.1635	-0.4036	0.3308	-1.22	0.2249	-1.0587	0.2516

2. Study 1 (Moral Distress)

Environmental Identity	Effect	se	t	p	LLCI	ULCI
-2.9265	-0.1514	0.4233	-0.3577	0.7212	-0.9899	0.687
-2.672	-0.1137	0.391	-0.2909	0.7716	-0.8881	0.6606
-2.4175	-0.0761	0.359	-0.2119	0.8326	-0.7871	0.635
-2.163	-0.0384	0.3276	-0.1171	0.907	-0.6872	0.6105
-1.9085	-0.0007	0.2969	-0.0023	0.9982	-0.5887	0.5873
-1.654	0.037	0.2671	0.1385	0.8901	-0.492	0.566
-1.3995	0.0747	0.2386	0.313	0.7548	-0.3979	0.5473
-1.145	0.1124	0.2119	0.5303	0.5969	-0.3074	0.5321

-0.8905	0.1501	0.1878	0.7989	0.426	-0.222	0.5221
-0.636	0.1878	0.1675	1.1212	0.2645	-0.1439	0.5194
-0.3815	0.2254	0.1523	1.4804	0.1415	-0.0762	0.5271
-0.127	0.2631	0.144	1.8276	0.0702	-0.022	0.5483
0.0061	0.2828	0.1428	1.9806	0.05	0	0.5657
0.1275	0.3008	0.1437	2.0931	0.0385	0.0162	0.5855
0.382	0.3385	0.1516	2.2335	0.0274	0.0383	0.6387
0.6365	0.3762	0.1664	2.2614	0.0256	0.0467	0.7057
0.891	0.4139	0.1865	2.2197	0.0284	0.0446	0.7832
1.1455	0.4516	0.2104	2.1467	0.0339	0.0349	0.8682
1.4	0.4893	0.2369	2.0653	0.0411	0.0201	0.9585
1.6545	0.5269	0.2653	1.9863	0.0494	0.0015	1.0524
1.6735	0.5298	0.2675	1.9806	0.05	0	1.0595
1.909	0.5646	0.295	1.914	0.0581	-0.0197	1.1489
2.1635	0.6023	0.3257	1.8494	0.0669	-0.0427	1.2474

3. Study 2 (Collective Guilt)

Environmental Identity	Conditional Effect	se	t	p	LLCI	ULCI
-3.7087	-1.1797	0.595	-1.9826	0.0487	-2.3527	-0.0066
-3.6343	-1.1511	0.5838	-1.9716	0.05	-2.3022	0
-3.4087	-1.0645	0.5501	-1.9351	0.0544	-2.149	0.0201
-3.1087	-0.9493	0.5055	-1.878	0.0618	-1.9459	0.0473
-2.8087	-0.8341	0.4612	-1.8083	0.072	-1.7435	0.0753
-2.5087	-0.7189	0.4175	-1.7217	0.0866	-1.5421	0.1043
-2.2087	-0.6037	0.3745	-1.612	0.1085	-1.3421	0.1347
-1.9087	-0.4885	0.3324	-1.4694	0.1432	-1.1439	0.1669
-1.6087	-0.3733	0.2917	-1.2796	0.2021	-0.9485	0.2019
-1.3087	-0.2581	0.2531	-1.0199	0.309	-0.7571	0.2409
-1.0087	-0.1429	0.2175	-0.657	0.5119	-0.5718	0.286
-0.7087	-0.0277	0.1869	-0.1483	0.8822	-0.3962	0.3408
-0.4087	0.0875	0.1639	0.5336	0.5942	-0.2357	0.4107
-0.1087	0.2027	0.1522	1.3317	0.1844	-0.0974	0.5027
0.1496	0.3018	0.1531	1.9716	0.05	0	0.6037
0.1913	0.3179	0.1542	2.0611	0.0406	0.0138	0.6219
0.4913	0.433	0.1695	2.5542	0.0114	0.0988	0.7673
0.7913	0.5482	0.195	2.8109	0.0054	0.1637	0.9328
1.0913	0.6634	0.2273	2.9184	0.0039	0.2152	1.1116
1.3913	0.7786	0.2639	2.9503	0.0035	0.2583	1.299
1.6913	0.8938	0.3033	2.9475	0.0036	0.2959	1.4917

1.9913	1.009	0.3444	2.9298	0.0038	0.33	1.688
2.2913	1.1242	0.3868	2.9066	0.0041	0.3616	1.8868

4. Study 2 (Moral Disengagement)

Environmental Identity	Effect	se	t	p	LLCI	ULCI
-3.7087	0.4267	0.1803	2.3665	0.0189	0.0712	0.7823
-3.4087	0.3955	0.1668	2.3708	0.0187	0.0666	0.7245
-3.1087	0.3643	0.1535	2.3738	0.0185	0.0617	0.6669
-2.8087	0.3331	0.1403	2.3744	0.0185	0.0565	0.6097
-2.5087	0.3019	0.1273	2.371	0.0187	0.0509	0.5529
-2.2087	0.2707	0.1147	2.3607	0.0192	0.0446	0.4967
-1.9087	0.2394	0.1024	2.3383	0.0203	0.0375	0.4413
-1.6087	0.2082	0.0907	2.295	0.0227	0.0293	0.3871
-1.3087	0.177	0.0799	2.2156	0.0278	0.0195	0.3345
-1.0087	0.1458	0.0703	2.0746	0.0393	0.0072	0.2843
-0.8611	0.1304	0.0662	1.9716	0.05	0	0.2608
-0.7087	0.1146	0.0624	1.8348	0.068	-0.0085	0.2377
-0.4087	0.0833	0.0571	1.4587	0.1462	-0.0293	0.196
-0.1087	0.0521	0.0551	0.9461	0.3452	-0.0565	0.1608
0.1913	0.0209	0.0567	0.3689	0.7126	-0.0908	0.1326
0.4913	-0.0103	0.0616	-0.1674	0.8672	-0.1317	0.1111
0.7913	-0.0415	0.0691	-0.6008	0.5487	-0.1778	0.0948
1.0913	-0.0727	0.0786	-0.9261	0.3555	-0.2276	0.0821
1.3913	-0.104	0.0893	-1.1648	0.2454	-0.2799	0.072
1.6913	-0.1352	0.1008	-1.3406	0.1815	-0.334	0.0636
1.9913	-0.1664	0.113	-1.4723	0.1425	-0.3892	0.0564
2.2913	-0.1976	0.1256	-1.5729	0.1173	-0.4453	0.0501

Appendix D: Study Questionnaire

We thank you for your participation. This study consists of three unrelated mini-studies.

1) In mini-study 1, we ask you some general questions about your views and preferences.
2) In mini-study 2, we test your ability to perform a particular task.
3) In mini-study 3, we ask you to read an excerpt from a research article and answer some general questions after that.
There are no right or wrong answers to any of the questions. We are only interested in knowing how you feel or think. We do not ask for any personal questions by which you could be identified. Therefore, please answer as honestly as you can. Thanks again for your participation.

Mini-Study 1:
In this section, you are asked to share your opinions concerning the causes for the effects of global warming.
In your opinion, to what extent do you think that each of the following is responsible for the effects of global warming?

Human Activities (such as the burning of fossil fuels and the consumption of electricity)	❍	❍	❍	❍	❍	❍	❍
Natural Phenomena (such as increases in solar and volcanic activity)	❍	❍	❍	❍	❍	❍	❍

In your opinion, to what extent do you think that each of the following is at fault for the effects of global warming?

Human Activities (such as the burning of fossil fuels and the consumption of electricity)	❍	❍	❍	❍	❍	❍	❍
Natural Phenomena (such as increases in solar and volcanic activity)	❍	❍	❍	❍	❍	❍	❍

In your opinion, to what extent do you think that each of the following is to blame for the effects of global warming?

Human Activities (such as the burning of fossil fuels and the consumption of electricity)	❍	❍	❍	❍	❍	❍	❍
Natural Phenomena (such as increases in solar and volcanic activity)	❍	❍	❍	❍	❍	❍	❍

Please indicate to what extent each of the following statements is representative of you as a person.

I spend a lot of time in natural settings (e.g., woods, mountains, desert, lakes, ocean).

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

I think of myself as a part of nature, not separate from it.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

If I had enough time or money, I would certainly devote some of it to working to protect the environment.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

When I am upset or stressed, I can feel better by spending some time outdoors "communicating with nature".

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

I feel that I have a lot in common with other species.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

Behaving responsibly toward the earth -- living a sustainable lifestyle -- is part of my moral code.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

Learning about the natural world should be an important part of every child's upbringing.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

I feel that I receive spiritual sustenance from experiences with nature.

- ❍ Not at all true of me
- ❍
- ❍
- ❍ Neither true nor untrue
- ❍
- ❍
- ❍ Completely true of me

Mini-Study 2

This task tests to see how quickly you are able to identify something missing in a commonly encountered object. Following are some common English proverbs. In each of those, type in the missing word in the box provided right below it. If you don't know the missing word, simply type X for that proverb.

Birds of the same _____ flock together.

Make _____ while the sun shines.

A friend in _____ is a friend indeed.

A penny _____ is a penny earned.

A _____ stone gathers no moss.

Every _____ has his day.

It is no use _____ over spilled milk.

Look before you _____.

Don't bite the _____ that feeds you.

Mini-Study 3

- Human Responsibility Manipulation Condition

Followed is an excerpt from a recent research paper that appeared in the Scientific American. The very famous researcher who authored it has been studying the causes and effects of global warming for several decades. Please read the excerpt carefully and you will be asked some questions about it. You will be unable to return to the article to answer the questions.

Excerpt of Research Paper titled "Global Warming: Who is Responsible?"
Source: Bernard Olson, Scientific American, April 29, 2011, 23(3), pp. 13-19.
Global warming is the process wherein the average temperature of the Earth's surface air increases. It has been an ongoing topic of conversation and a political hot-button issue for years due to its massive adverse effect, expected and current, on humankind. The planet is warming, from the North Pole to the South Pole, and everywhere in between. Signs are appearing all over, and some of them are shocking. The

heat is not only melting glaciers and sea ice, but is also shifting precipitation patterns and setting animals on the move. According to the Intergovernmental Panel on Climate Change (IPCC), leading international body for the assessment of climate change established by the United Nations Environment Programme, the effects of global warming include, but are not limited to, ice melting, sea levels rising, unseasonal hurricanes and storms, floods and droughts, extinction of animal and plant species, less fresh water, and an increase in new diseases in third-world countries. For instance, in Canada, global warming poses an immediate threat to polar bears in the Hudson Bay with longer ice-free periods. The early break-up of sea ice limits the polar bears' hunting season, which leads to weight loss. If current trend of global warming continues, polar bears will be extinct by 2050.

Scientific evidence clearly shows global warming is caused largely by human activities. Although there are few natural causes for the rise in global temperature, they are insignificant when compared to those caused by man-made environmental pollution. A large part of this pollution is due to the burning of fossil fuels. When fossil fuels are burned, they emit carbon dioxide, ozone, nitrous oxide, and methane—greenhouse gases that trap heat within the atmosphere of the Earth and contribute to global warming. Geologists have found that over 90 percent of such heat-trapping gases are released into the atmosphere from driving cars, generating electricity from coal-fired power plants, and heating our homes and buildings. According to new worldwide data on the last 300 years of human activities and the earth's temperature, the Intergovernmental Panel on Climate Change recently concluded with over 95% confidence that human activities due to increased consumerism in economically developed nations are primarily responsible for global warming. Although some believe natural phenomena are the cause of global warming, the IPCC found almost no evidence for it. Most scientific data point to manmade causes instead.

- Natural Responsibility Manipulation Condition

Followed is an excerpt from a recent research paper that appeared in the Scientific American. The very famous researcher who authored it has been studying the causes and effects of global warming for several decades. Please read the excerpt carefully and you will be asked some questions about it. You will be unable to return to the article to answer the questions.

Excerpt of Research Paper titled "Global Warming: Who is Responsible?" Source: Bernard Olson, Scientific American, April 29, 2011, 23(3), pp. 13-19. Global warming is the process wherein the average temperature of the Earth's surface air increases. It has been an ongoing topic of conversation and a political hot-button issue for years due to its massive adverse effect, expected and current, on humankind. The planet is warming, from the North Pole to the South Pole, and everywhere in between. Signs are appearing

all over, and some of them are shocking. The heat is not only melting glaciers and sea ice, but is also shifting precipitation patterns and setting animals on the move. According to the Intergovernmental Panel on Climate Change (IPCC), leading international body for the assessment of climate change established by the United Nations Environment Programme, the effects of global warming include, but are not limited to, ice melting, sea levels rising, unseasonal hurricanes and storms, floods and droughts, extinction of animal and plant species, less fresh water, and an increase in new diseases in third-world countries. For instance, in Canada, global warming poses an immediate threat to polar bears in the Hudson Bay with longer ice-free periods. The early break-up of sea ice limits the polar bears' hunting season, which leads to weight loss. If current trend of global warming continues, polar bears will be extinct by 2050.

Scientific evidence clearly shows global warming is caused largely by natural phenomena. Although there are few manmade causes for the rise in global temperature, they are insignificant when compared to the environmental pollution caused by nature itself. A large part of this pollution is due to the natural burning of fossil fuels. When fossil fuels are burned, they emit carbon dioxide, ozone, nitrous oxide, and methane—greenhouse gases that trap heat within the atmosphere of the Earth and contribute to global warming. Geologists have found that over 90 percent of such heat-trapping gases are generated in the atmosphere from solar radiation, volcanic eruptions, natural wildfires, and solar flares. According to new worldwide data on the last 300 years of natural phenomena and the earth's temperature, the Intergovernmental Panel on Climate Change recently concluded with over 95% confidence that cyclical natural changes in the planet and the still-evolving solar system in general are primarily responsible for global warming. Although some believe human activities are the cause of global warming, the IPCC found almost no evidence to support that belief. Most scientific data point to natural phenomena instead.

AFTER reading the research excerpt, to what extent do you think that each of the following is responsible for the effects of global warming?

Human Activities (such as the burning of fossil fuels and the consumption of electricity)	❍	❍	❍	❍	❍	❍	❍
Natural Phenomena (such as increases in solar and volcanic activity)	❍	❍	❍	❍	❍	❍	❍

AFTER reading the research excerpt, to what extent do you think that each of the following is at fault for the effects of global warming?

Human Activities (such as the burning of fossil fuels and the consumption of electricity)	❍	❍	❍	❍	❍	❍	❍
Natural Phenomena (such as increases in solar and volcanic activity)	❍	❍	❍	❍	❍	❍	❍

AFTER reading the research excerpt, to what extent do you think that each of the following is to blame for the effects of global warming?

Human Activities (such as the burning of fossil fuels and the consumption of electricity)	❍	❍	❍	❍	❍	❍	❍
Natural Phenomena (such as increases in solar and volcanic activity)	❍	❍	❍	❍	❍	❍	❍

Which of the following journals does the paper excerpt cite as its information source?

❍ Nature
❍ Journal of Climate
❍ Scientific American
❍ Journal of Geophysical Research
❍ Global Environmental Change
❍ I don't remember

According to the paper excerpt, by what year are polar bears expected to be extinct if current levels of global warming continue?

❍ 2020
❍ 2050
❍ 2080
❍ 2100
❍ Don't remember

To what extent do you feel each of the following with regard to the effects of global warming on the environment?

Guilty	❍	❍	❍	❍	❍	❍	❍
Regretful	❍	❍	❍	❍	❍	❍	❍
Remorseful	❍	❍	❍	❍	❍	❍	❍
Distressed	❍	❍	❍	❍	❍	❍	❍
Upset	❍	❍	❍	❍	❍	❍	❍
Alarmed	❍	❍	❍	❍	❍	❍	❍
Troubled	❍	❍	❍	❍	❍	❍	❍

Please indicate the extent to which you agree or disagree with the following statements. There are no right or wrong answers, as we are asking only for your opinion.

I feel guilty about the negative things we human beings have done to the environment.

❍ Strongly Disagree
❍
❍
❍
❍
❍
❍ Strongly Agree

I feel regret for human beings' harmful actions toward the environment.

❍ Strongly Disagree
❍
❍
❍
❍
❍
❍ Strongly Agree

I believe I should repair the damage we human beings have caused to the environment.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

I regret the bad outcomes in the environment that have been brought about by human beings.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

I am disturbed by the negative effect our human behavior has had on the environment.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

I am upset about the harmful impact our human behavior has had on the environment.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

I feel sorry about what we human beings have done to the environment.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Please indicate the extent to which you agree or disagree with the following statements. There are no right or wrong answers. This is just to know your opinion.

It is alright to ignore environmental considerations if such considerations are in conflict with economic gain.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

It is alright to hurt wildlife or other forms of environmental constituents if they risk human well-being.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

It is alright to perform environmentally unfriendly acts if otherwise I would be seen as a timid and feeble character.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

It is alright to object to bills or policies promoting environmental protection if such bills or policies put our country or provinces at a disadvantage in comparison with competing countries or provinces.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Throwing trash out a car window is just a way of fun and refreshment.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Deforestation for new town development signals growth and prosperity in the area.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Utilizing natural resources is one way to enjoy the privileges endowed by the Creator.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

It is not a bad thing to ignore the environment once in a while.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Doing minor environmental harm is not a big deal when you consider that many others are not concerned about the environment at all.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Not turning off lights when not in use is not a big deal when you compare it to environmentally damaging practices of industries such as automobile and chemical firms.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

It is OK to burn used oil in an open yard as dumping the used oil in a field is worse.

❍ Strongly Disagree
❍
❍
❍
❍
❍
❍ Strongly Agree

Compared to the other illegal things people do, personal environmentally-unfriendly behaviors are not very serious.

❍ Strongly Disagree
❍
❍
❍
❍
❍
❍ Strongly Agree

If people are living under economically disadvantaged places, they cannot be blamed for burning fields for cultivation.

❍ Strongly Disagree
❍
❍
❍
❍
❍
❍ Strongly Agree

If people are not educated about environmental protection, they should not be blamed for environment-unfriendly behaviors.

❍ Strongly Disagree
❍
❍
❍
❍
❍
❍ Strongly Agree

People cannot be blamed for environment-unfriendly behaviors when other members of their social group do the same behaviors.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

People cannot be blamed for environment-unfriendly behaviors if their social group pressured them to do it.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

An individual person should not be blamed for the current environmental problems because such problems need to be accounted for by a holistic view of humankind's responsibility.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

People should not be blamed for passive participation in environment protection, given the fact that some people perform acts which are very damaging to the environment.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

It is unfair to blame an ordinary citizen for environmental disruptions because such disruptions are more rooted in social and structural conditions to which each citizen has to conform.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

A considerable portion of media and political discussions about environmental degradation has been exaggerated and distorted.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Human interferences against natural environment are sometimes needed to improve its capability to adapt to deteriorating conditions.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Human contribution, if any, towards environmental degradation is very limited, contrary to common belief.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Although humankind performs a number of acts which are environmentally damaging and disbalancing, Mother Nature has her own capability to return to normalcy.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

The environment can be sacrificed if necessary because it is not humankind.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

People can be harsh with nature at times, if necessary, as nature lacks feelings.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Natural disasters in an untapped territory need to be blamed on nature itself rather than humankind.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Most extinct or depleted environmental constituents are intrinsically inferior to their surviving counterparts which have successfully adapted to changing conditions.

- ❍ Strongly Disagree
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Strongly Agree

Please indicate your response to the different environmental behaviors as stated in the following questions.

In future, how likely are you to carpool rather than drive alone, if you had a choice?

- ❍ Definitely will not
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Definitely will

In future, how likely are you to walk or ride a bike rather than drive a car, if you had a choice?

- ❍ Definitely will not
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Definitely will

In future, how likely are you to insulate and weatherize your home, if you could afford it?

- ❍ Definitely will not
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Definitely will

In future, how likely are you to consider the emission-levels of a car when you are shopping for one?

- ❍ Definitely will not
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Definitely will

In future, how likely are you to turn off lights or appliances when not in use?

- ❍ Definitely will not
- ❍
- ❍
- ❍
- ❍
- ❍
- ❍ Definitely will

In future, how likely are you to throw recyclables into a garbage can?

❍ Definitely will not
❍
❍
❍
❍
❍
❍ Definitely will

In future, how likely are you to set the thermostat lower in winter even it makes you feel a little cold?

❍ Definitely will not
❍
❍
❍
❍
❍
❍ Definitely will

In future, how likely are you to plant a tree for the sake of "greening" the environment?

❍ Definitely will not
❍
❍
❍
❍
❍
❍ Definitely will

Thank you for your participation. The aim of this research is to understand human moral processes in response to knowing humans' contribution to degrading the natural environment, particularly global warming. You were given a research excerpt from the journal "Scientific American". The excerpt was completely fictitious. The excerpts were prepared by the researcher of this study. The excerpt was to tell you that cause of global warming was human or natural, depending on the experimental condition you were randomly assigned to. We hope that this explanation is clear. If it is not, please let the experimenter or the researcher know it. We hope you have gained some understanding of the nature of academic consumer behavior research from this explanation. We thank you for your help and ask you to seek further information or clarifications at any point of time. You may do so by emailing the researcher.

Appendix E: Scale to Measure Moral Disengagement

Bandura (1996) Items	*Customized Items*
1. Moral Justification 1. It is alright to fight to protect your friends. 9. It is alright to beat someone who bad mouths your family. 17. It is alright to fight when your group's honor is threatened 25. It is alright to lie to keep your friends out of trouble.	MD1. It is alright to ignore environmental considerations if such considerations are in conflict with economic gain. MD2. It is alright to hurt wildlife or other forms of environmental constituents if they risk human well-being. MD3. It is alright to perform Environmentally non-complying acts if such acts position me as a timid and a feeble character. MD4. It is alright to object to bills or policies promoting environmental protection if such bills or policies put our country or states into a disadvantage in comparison with competing countries or states.
2. Euphemistic Language 2. Slapping and shoving someone is just a way of joking. 10. To hit obnoxious classmates is just giving them "a lesson." 18. Taking someone's bicycle without their permission is just "borrowing it." 26. It is not a bad thing to "get high" once in a while.	MD5. Throwing trash out a car window is just a way of fun and refreshment MD6. Deforestation for new town development signals growth and prosperity in the area. MD7. Utilizing natural resources is one way to enjoy the privileges endowed by the Creator MD8. It is not a bad thing to be free of environmental concerns once in a while.
3. Advantageous Comparison 3. Damaging some property is no big deal when you consider that others are beating people up. 11. Stealing some money is not too serious	MD9.Doing minor environmental harm is not a big deal when you consider that many others are not concerned about the environment at all. MD10. Not turning off lights which you are not using is not a big deal when you consider environmentally damaging

compared to those who steal a lot of money. 19. It is okay to insult a classmate because beating him/her is worse. 27. Compared to the illegal things people do, taking some things from a store without paying for them is not very serious.	practices committed by smokestack industries such as auto and chemical firms. MD11. It is ok to burn used oil in an open yard as dumping the used oil in a field is worse. MD12. Compared to the other illegal things people do, personal eco-unfriendly behaviors are not very serious.
4. Displacement of Responsibility 5. If kids are living under bad conditions they cannot be blamed for behaving aggressively. 13. If kids are not disciplined they should not be blamed for misbehaving. 21. Kids cannot be blamed for using bad words when all their friends do it. 29. Kids cannot be blamed for misbehaving if their friends pressured them to do it.	MD13. If people are living under economically disadvantaged places they cannot be blamed for burning fields for cultivation. MD14. If people are not educated about environmental protection they should not be blamed for environmental misbehaving. MD15. People cannot be blamed for environmental misbehaving when other members of their social group do the same misbehaving. MD16. People cannot be blamed for environmental misbehaving if their social group pressured them to do it.
5. Diffusion of Responsibility 4. A kid in a gang should not be blamed for the trouble the gang causes. 12. A kid who only suggests breaking rules should not be blamed if other kids go ahead and do it. 20. If a group decides together to do something harmful it is unfair to blame any kid in the group for it. 28. It is unfair to blame a child who had only a small part in the harm caused by a group.	MD17. An individual person should not be blamed for the current environmental problems because such problems need to be accounted for by a holistic view of humankind responsibility. MD18. People should not be blamed for participating passively in environment protection given the fact that some people perform acts which are very damaging to the environment. MD19. It is unfair to blame an ordinary citizen for environmental disruptions because such disruptions are more rooted in social and structural conditions to which each citizen needs to adapt.

6. Distorting Consequences 14. Children do not mind being teased because it shows interest in them. 6. It is okay to tell small lies because they don't really do any harm. 22. Teasing someone does not really hurt them. 30. Insults among children do not hurt anyone.	MD20. Considerable portion of media and political discussions about environmental degradation has been exaggerated and distorted MD21. Human interferences against natural environment are sometimes needed to improve its capability to adapt to deteriorating conditions. MD22. Human contribution, if any, towards environmental degradation is very limited as opposed to general understandings. MD23. Although humankind performs a number of acts which are environmentally damaging and disbalancing, Mother Nature has its own capability to return to normalcy, thereby trivializing such human interference.
7. Dehumanization 7. Some people deserve to be treated like animals. 15. It is okay to treat badly somebody who behaved like a "worm." 23. Someone who is obnoxious does not deserve to be treated like a human being. 31. Some people have to be treated roughly because they lack feelings that can be hurt.	MD24. Environmental system can be sacrificed if necessary because it is not humankind. MD25. People can at times be harsh with nature if necessary as nature lacks feelings.
8. Attribution of Blame 8. If kids fight and misbehave in school it is their teacher's fault. 16. If people are careless where they leave their things it is their own fault if they get stolen. 24. Kids who get mistreated usually do	MD26. Natural disasters in an untapped territory can be blamed on nature itself rather than humankind. MD27. Most of extinct or depleted environmental constituents are intrinsically inferior to their surviving counterparts which have adapted to and overcome all conditions and hurdles respectively.

things that deserve it. 32. Children are not at fault for misbehaving if their parents force them too much.	

Appendix F: Validity Test for Moral Disengagement Scale

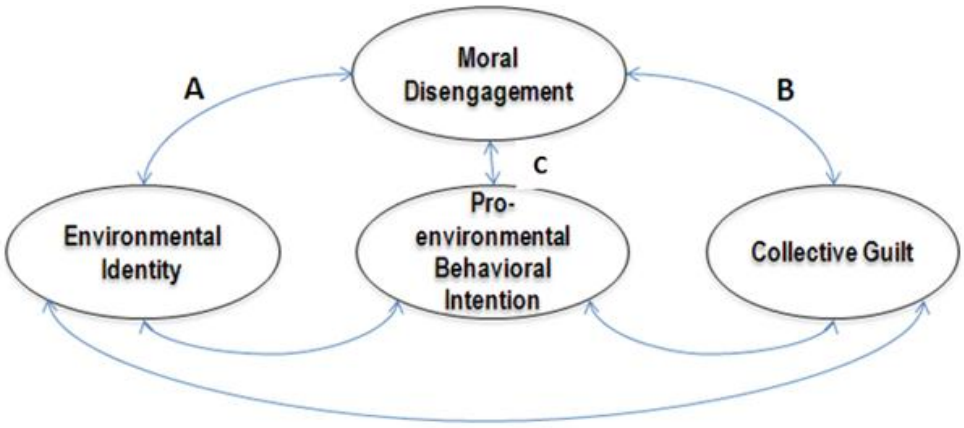
1. Convergent Validity Test

Sub Factors	Statistics	
Moral Justification	Excluded	
Euphemistic Language	Coeff	0.7485
	Std Err	0.0616
	t value	12.1406
Advantageous Comparison	Coeff	0.8561
	Std Err	0.0631
	t value	13.5603
Displacement of Responsibility	Coeff	0.8891
	Std Err	0.069
	t value	12.8894
Diffusion of Responsibility	Coeff	0.8456
	Std Err	0.0706
	t value	11.9778
Distorting Consequences	Coeff	0.8292
	Std Err	0.072
	t value	11.5226
Dehumanization	Coeff	0.7586
	Std Err	0.0773
	t value	9.8184
Attribution of Blame	Coeff	0.8459
	Std Err	0.0775
	t value	10.9208

2. Discriminant Validity Test

	Chi Square difference	*df* difference	Significance
If moral disengagement and environmental identity are perfectly covariated (referred by "A" in figure)	310	1	$p < 0.001$ **
If moral disengagement and collective guilt are perfectly covariated (referred by "B" in figure)	291	1	$p < 0.001$
If Moral disengagement and pro-environmental behavior are perfectly covariated (referred by "C" in figure)	17	1	$p < 0.001$

** Criterion Chi-square: 10.83


Moral Disengagement
A
B
C
Environmental Identity
Pro-environmental Behavioral Intention
Collective Guilt