

Feeling Good and Doing Good for the Environment: The Use of Emotional Appeals in Pro-environmental Public Service Announcements

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Abstract: Research in political psychology suggests that politicians successfully manipulate emotions through campaign advertisements. While work in environmental psychology emphasizes emotional connection to the environment, scholars have yet to examine the potential of emotional appeals in non-campaign messages. I am interested in the use of emotional appeals in pro-environmental public service announcements. I set out to test the effect of emotional appeals in an environmental public service announcement script. Using a survey experiment I demonstrate that emotions significantly influence the environmental attitudes of participants. My findings offer support for the application of affective intelligence theory to environmental communication.

Keywords: emotions; affective intelligence; public service announcement; environmental communication; risk appraisal; place-based theory

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What's Pollution got to do with a "Crying Indian"?

In 1970 a public service announcement known as the "Crying Indian" aired as part of an anti-litter campaign by the non-profit environmental group, Keep America Beautiful. This powerful commercial featured a Native American dressed in traditional garb canoeing through a polluted and litter-filled urban landscape. It concludes with this narration: "Some people have a deep abiding respect for the natural beauty that was once this country (dramatic pause), and some people don't (person throws garbage out of car window at Native American's feet). People start pollution; people can stop it (pans to Native American's face where a single tear trickles down his cheek)."¹ This ad was one in a series of ads that are credited with starting the United States' fledgling environmental movement. The "Crying Indian" has remained one of the most iconic commercials of its time, and arguably the most influential environmental public service announcement in American history (Dwyer 1999). I argue that what differentiates the "Crying Indian" advertisement from less memorable public service announcements is the emotional impact of the message.

A focus upon the psychology of politics is not a novel approach. Emotion, once dismissed as irrational, has been reevaluated in light of neuro-psychological findings which establish affect as an integral component of information processing (Damasio 1994). Based on these advancements in affective literature, emotion has increasingly made appearances in political science scholarship. For example, scholars in the campaign advertising literature point to the use of emotional appeals in increasing message effectiveness (Brader 2006), while others focus on the influence of affect in political decision-making and attitude formation (Marcus,

¹ Transcribed from wmv found on Keep America Beautiful website, http://www.kab.org/site/PageServer?pagename=kab_history

Mackuen, Neuman 2000; Lodge and Taber 2005). As evidence for the affect effect mounts, I hope to extend its application to non-campaign arenas.

Drawing on evidence for emotion in political psychology, I examine the effect of affect in environmental PSAs. I argue that including an emotional element in environmental PSAs significantly influences pro-environmental attitudes. Drawing upon the work of Brader (2005) and Marcus and colleagues (2000), I set out to test the effect of emotional appeals in an environmental public service announcement (PSA) script. Using a survey experiment I demonstrate that emotions significantly influence the environmental attitudes of participants. The findings set forth in this paper offer support for affective intelligence theory in environmental communication.

A Multi-Disciplinary Approach to Crafting Environmental Messages

Environmental degradation, such as depletion of the ozone layer, presents a risk to the security of individuals. Therefore, from a policy-makers perspective, understanding what affects the ways constituents think about environmental risk is instructive, especially in the creation of effective PSAs (Cantrill 1993). More specifically, does emotion influence pro-environmental attitudes and behavior and how might this inform the construction of pro-environmental PSAs? In examining this question, I draw from several seemingly disparate literatures: environmental psychology and affective intelligence theory.

Environmental Psychology

Environmental degradation has received heightened media attention due to catastrophic environmental disasters such as Chernobyl, the Exxon-Valdez oil spill, depletion of the ozone layer, and climate change. Environmental degradation is one of most psychologically profound hardships endured by a population due to its damaging effects on personal psyche, health, and

the collective well-being (Tomaka, Blascovich, Kelsey and Leitten 1993; Van Haaften, Zhenrong and Van de Vijver 2004; Anderton, Anderson, Oakes and Fraser 1994). While the emotional intensity associated with environmental degradation is well-documented (McDaniels, Axelrod and Slovic 1995; Grob 1995), it is unclear how distinct emotions affect environmental attitudes and behavior. In fact Vining and Ebreo (2002) noted that the role of emotion was largely absent from most studies of pro-environmental behavior. There are a few exceptions, however, such as the work of Carrus and colleagues (2008) which examines the role of anticipated negative emotions in predicting behaviors such as recycling and the use of public transit. Also, there is extensive socio-psychological work on the effects of values on environmental attitudes (Stern et al. 1995). As part of this research agenda, more scholars are fleshing out the relationship between emotion and values, for example the relationship between empathy and valuing the environment (Schulz 2000). These works aside, the environmental psychology literature is largely silent on how emotion can be used to promote pro-environmental behavior.

When faced with a threat, recent research has found an important and dynamic role for emotion in the appraisal of risk (Bohm 2000; Bohm, Nerb, McDaniels and Spada 2001; Stallen and Thomas 1985; Wiedmann 1993). McDaniels et al. (1995) find that environmental degradation commonly leads to feelings of anger, fear, and outrage. These scholars examine reactions to a wide variety of environmental risk from poor air quality in the working environment to devastation of wooded areas to displacement of peoples due to natural catastrophe (Heimstra and McFarling 1974; Altman and Wohlwill 1983). Additionally, negative affect has been found to increase the likelihood of risk assessment (Johnson and Tversky 1983) and enhance the efficiency of an assessment (Slovic 1999), whereas the opposite is true for

positive affect.² Also, fear has been found to promote helping behaviors (Bohm 2003; Bohm and Pfister 2000). In a game theory setting, Bowles and Gintis (2002) find that emotions are the basis for sustained prosocial behavior, particularly when cooperation is needed in public goods games. This would suggest that it is reasonable to examine the effects of emotion on other prosocial arenas, for example, the environment.

An attachment to place, such as a hometown, has also been examined in the study of environmental psychology. Place-based theory, though broad in scope, has articulated important relationships between individuals and their environments (Manzo 2005; Altman and Low 1992). These relationships are difficult to empirically assess, and thus often discussed in ontological terms. For example, when individuals discuss their idea of *home* it is often in connection with relationships, emotional associations such as comfort and ease, and other sensations which are not easily tested (Manzo 2005). Despite conceptual and operational difficulties, an important resounding conclusion from this literature is that individuals have intense emotional connections to the place they call *home*. I suggest that these existing affective connections suggest the examination of emotional appeals in environmental messages is warranted.

A Case for Affect: Affective Intelligence Theory

After centuries of heralding unimpassioned rationality as the most important virtue in political decision-making, political scientists have taken a renewed interest in the role of emotion (Bueno de Mesquita and McDermott 2004; McDermott 2004; Marcus, Mackuen and Neuman 2000; Marcus, Mackuen, Neuman and Crigler 2007; Marcus 2002; Marcus 2003). This resurgence borrows from several areas of psychology including: psychoanalysis (Laswell 1960), information processing (Isabell and Otatti 2002; Lupia and Menning 2007; Redlawsk, Lau and

² It is important to note that in the majority of these studies affect is measured generally as positive or negative, partially because the quality of the assessment was the primary concern in these studies.

Civitenni 2007), affective neuroscience (Marcus and Mackuen 2003; Brader 2006; Marcus, Mackuen and Neuman 2000), cognitive appraisal (Sanders 1987), and evolutionary psychology (Wright 1994).

Work in political science has established emotions as a fundamental psychophysiological antecedent to political decision-making. I use affective intelligence theory as set forth by Marcus, Neuman and Mackuen's (2000), as the theoretical basis for this work. Marcus and Mackuen's (1993) early work finds that during political campaigns, the anxiety experienced by the electorate encourages political learning, whereas enthusiasm solidifies support and encourages involvement. In subsequent research Marcus et al. (2000, 2007), argue that affect is part of an omnipresent arousal system which shapes and constrains political judgment. Specifically, they argue that there are two primary emotional systems in the brain which monitor an individual's surroundings so as to apportion attention and neural activity appropriately. First, the surveillance system appraises environmental cues differentiating between threat or novelty and responding with emotions along an anxious-calm continuum. Second, the disposition system assesses success or failure of existing and ongoing pursuits and draws from an enthusiasm-sadness continuum in response. For example, Marcus (2000) argues that anxiety in the electorate is beneficial because it temporarily disables habits (heuristics such as partisanship), thus clearing a space for reasoning and learning and motivating a search for information. Enthusiasm, however, reinforces these habits and motivates increased commitment to existing attitudes.

Other research supports these findings (Brader 2006). Similarly to Marcus and colleagues, Brader finds that enthusiasm appeals in campaign advertisements act to buoy partisan habits, while anxiety promoted a search for information. All of the authors cited above focus on two distinct emotions: anxiety and enthusiasm. Currently, many scholars in environmental

psychology measure emotion in terms of positive or negative affect. While distinct emotions such as enthusiasm and anxiety can be positively or negatively related to attitudinal measures, psychometric work shows that negative and positive emotions do not array along the same dimension (Watson et al. 1988). In other words, negative emotions such as anger and anxiety have distinct predictors and effects. Building on these findings, I focus on these enthusiasm and anxiety rather than positive and negative emotions in my test of affective appeals in pro-environmental PSAs.

Based on evidence from the affective intelligence theory and buoyed by findings from environmental psychology, I set forth several predictions. First I expect that emotional appeals in environmental PSA scripts will significantly influence reported environmental attitudes. As Marcus and colleagues (2000; Brader 2006) find that enthusiasm reinvigorates commitments and reinforces prior beliefs, I expect that enthusiasm appeals in the PSA script should significantly affect participant's reported pro-environmental attitudes in a positive way.³ Enthusiasm should invoke positive responses to environmental queries for two reasons: it reduces any uncertainty regarding environmental efforts, and it reinforces the effectiveness of existing environmental efforts. Anxiety, on the other hand, serves to alert individuals to threats in their environments and thus motivates a reconsideration of prior beliefs in light of current stimuli. For this reason I expect anxiety appeals in the PSA script should significantly affect participant's reported pro-environmental attitudes in a negative way. As enthusiasm increases positivity towards pro-environmental attitudes by reducing the uncertainty associated with those efforts, anxiety should increase negativity towards these same attitudes by increasing the uncertainty associated. Here, I am arguing that emotion governs the amount of uncertainty related to the environment and this

³ One may ask does this only work for participants with existing environmental attitudes? The answer is no. Enthusiasm should elicit a positive response from participants regardless of the subject matter and their prior attitudes.

interaction shifts a participant's general environmental outlook in a predictable positive or negative direction.

Data and Methods

Similar to Marcus and colleagues (2000), I focus on enthusiasm and anxiety appeals.⁴ I created pro-environmental PSA scripts meant to invoke these emotions based loosely on campaign scripts created by Brader (2006). The treatment is a script of a potential "commercial" that discusses environmental damage in the United States (see Appendix B and C). Again following Brader's (2006) design, the enthusiasm script utilized a positive tone and frame which implied the status of the environment was good, and getting better while the anxiety script utilized a negative tone and frame which implied the opposite. Regardless of tone and frame, the basic content remained the same for each commercial. I focus on verbal cues for this experiment, but others have used music and visual cues additionally (Brader 2006). Following the lead of others studying political affect, rather than attempting the impossible (e.g. an unimpassioned condition) the control condition includes no script.

A total of 222 participants were recruited from a university student population via classroom announcements and flyers. Students were offered extra credit in various 100-level social science courses (courses included topics on political science, criminal justice, and sociology) for their participation. As these large 100-level sections serve as a general studies requirements for students at Washington State University a more diverse student sample beyond social science majors is ensured. Additionally, scholars have found course-credit incentives to

⁴ I select enthusiasm and anxiety appeals for two primary reasons. First, both anxiety and enthusiasm are characteristic of the surveillance and disposition system, respectively, as set forth in affective intelligence theory (Marcus et al. 2000). As such, the influence of enthusiasm and anxiety appeals has been the focus of much empirical work within political psychology. Second, enthusiasm and anxiety appeals are two of the most common emotional appeals in campaign advertisements (Brader 2006). Thus, focusing on these two emotional appeals offers firm theoretical and empirical grounding for my extension of the theory to PSAs.

be an insignificant influence on student performance in an experimental setting (Tompsonski et al. 1993).

I utilize a posttest-only randomized experimental survey design as I am interested in differences between the two treatment groups and the control group. The survey was administered to two waves of students in a three-hour time block during the spring of 2008. Participants were randomly assigned to an experimental condition upon arrival, asked to thoroughly read one of two emotional PSA scripts (or no script in the control condition), and then respond to 12 questions on their environmental attitudes. Students were asked to answer questions immediately following their thorough reading of the script so there was no delay between administration of the treatment and measurement of attitudes. The questions were drawn from the widely used measure of environmental attitudes, the New Environmental Paradigm or NEP (Dunlap and Van Liere 1978). Extensive analyses have verified the reliability and validity of the scale (Roberts and Bacon 1997), which is thought to represent a general pro-environmental orientation in addition to a related comprehensive belief system (Dunlap and Van Liere 1978; Pierce, Dalton and Zaitsev 1999; Stern, Dietz and Guagnano 1995).⁵ Respondents also answered basic demographic information. Additionally, based on Roberts and Bacon's (1997) argument that combining the 12-items into a single score results in information loss, I also test the effects of the emotional appeals on the four factors the authors suggest make up the NEP (see Table A).

The sample was reasonably split between males and females (m=124, f=98) and 58 percent of participants fell in the 18-20 years of age range, with 36 percent in the 21-23 years of age range. Only 6 percent of the sample were 24 years or older. The majority of participants

⁵ Participants were asked to indicate "*which choice best represents your own attitude,*" by answering one of the following choices: strongly disagree, disagree, neither disagree or agree, agree, and strongly agree.

were undergraduate students (97 percent), with a small minority of graduate student participants (3 percent). The three conditions include control, anxiety, and enthusiasm, and participants were unequally distributed among the conditions with 76, 53, and 94 in each group respectively. To avoid complications related to unbalanced data, I use an independent samples t-test to discern significant mean differences between the emotional conditions and the control condition. As the equal variances assumption is often violated with unbalanced data, the Bartlett's chi square test for unequal variances was conducted and as expected, the null hypothesis of equal variance is rejected (Hildebrand et al. 2005: 363). In light of this violation the unequal variance t-test, which uses individual variances in the approximation of t and Satterthwaite's degrees of freedom, is utilized (Hildebrand et al. 2005; Satterthwaite 1946).⁶ The unequal variance t-test estimates mean differences in the responses of participants in the treatment conditions (anxiety or enthusiasm) and control condition. The two treatment conditions, anxiety and enthusiasm, act as the independent variables. The dependent variables of interest are items 1-12 of the NEP, the overall score on the NEP scale, and the four factors underlying the NEP scale as designated by Roberts and Bacon (1997).

Results

Do emotional appeals in environmental PSA scripts significantly vary reported environmental attitudes? The unequal variance t-test estimates presented in the third and fourth columns of table A and table B suggest the reported pro-environmental attitudes do in fact vary from the control in the enthusiasm and anxiety conditions, although the significance of these differences are somewhat mixed. The positive and negative signs suggest the direction of the t-statistic while the asterisks demonstrate level of significance (*p < .10, **p < .05, ***p < .01). The effects of enthusiasm and anxiety on the NEP scale are in the predicted direction, suggesting

⁶ The unequal variance t-test was estimated using Stata/SE 10.0 ttest function and unequal option.

that, as expected, participants in the fear condition were on average more negative, thus against pro-environmental stances and participants in the enthusiasm condition were on average more positive in their responses and more pro-environmental overall when compared to the control condition. The estimates are beyond levels of significance (for enthusiasm $t=1.5989$, $p<0.1140$; for anxiety $t=-1.4055$, $p<0.1613$), however, so I cannot reject the null hypothesis of no difference in mean levels of response between the enthusiasm and anxiety conditions.

Table A about here

If I parcel out the effects of emotional appeals on the four factors suggested by Roberts and Bacon (1997), I again see estimates in the predicted directions: the enthusiasm condition relates positively to the factors while the anxiety condition is negative in direction. For the enthusiasm condition, the estimates for factor 3 and factor 4 are positive and significant which indicates that participants exposed to the enthusiasm PSA script were on average more likely to support limiting growth and adaptation to the natural environment rather than the alternative (for factor 3 $t=1.6805$, $p<0.0970$; for factor 4 $t=1.7389$, $p<0.0862$). For factor 3 and factor 4, we can therefore reject the null hypothesis of no difference in mean levels of response for participants in the enthusiasm condition. Factor 4 is the only factor which reaches significance for the anxiety condition, and the estimate is large and negative ($t=-1.9839$, $p<0.0485$). This suggests that participants in the anxiety condition were on average less likely to support adaptation to the natural environment than participants in the control, and instead, favored modification of the natural environment to suit humankind. This finding is in line with expectations that anxiety should elicit uncertainty about existing environmental efforts. This

uncertainty, in turn, triggers thoughtful appraisals and a reconsideration of beliefs, resulting in an overall more negative stance towards NEP items.

Table B about here

If I further parcel out the effects of enthusiasm and anxiety on the individual items included in the NEP, we again see most estimates in predicted directions and a mixed bag of significant findings. For the enthusiasm condition, there are only two significant items, item 2 and item 3. For item 2 participants in the enthusiasm condition affirmed a concern for the delicate balance of nature, while for item 3 (which is reverse coded) they denied humankind's right to modify the environment. The null hypothesis of no difference in mean levels of response for participants in the enthusiasm condition, for item 2 ($t=2.0391$, $p< 0.0446$) and item 3 ($t=2.2662$, $p< 0.0261$) is rejected.

Anxiety has a significant impact on people's responses to four items. Items 3 ($t=-1.7097$, $p< 0.0889$) and 4 ($t=-2.1621$, $p< 0.0317$) suggest that participants in the anxiety condition agree that humankind has the right to rule over nature and modify nature (reverse coded). Items 7 ($t=-1.9848$, $p< 0.0484$) and 12 ($t=-1.7917$, $p< 0.0746$) demonstrate the outright disagreement participants in the anxiety condition feel towards claims that growth should be limited to protect the environment and mankind is abusing the environment. For item 3, 4, 7 and 12 the null hypothesis of no difference in mean levels of response for participants in the anxiety condition is rejected.

Discussion

The evidence presented above offers support for including emotional appeals in pro-environmental PSAs as a means to significantly influence viewer attitudes. Most interestingly, I find a strong positive effect for the use of enthusiasm appeals in pro-environmental PSAs. The results suggest that, across the board, enthusiasm reinforces an individual's positivity towards efforts to protect the environment and increases their overall pro-environmentalism.

Policymakers crafting pro-environmental PSAs have an ally in enthusiasm appeals while anxiety appeals prove counterproductive. Additionally, pro-environmental PSAs which attempt to invoke any negative emotion, such as sadness, must be sure not to accidentally trigger fear lest they risk an anti-environment backlash.

I set out to test the effect of emotional appeals in an environmental public service announcement script and find that participants exposed to emotional treatments demonstrate significantly different attitudes towards the environment. I also find that anxiety and enthusiasm appeals have different impact on reported pro-environmental attitudes. Anxiety has a significant and negative effect on participants' views towards the environment. These effects are borne out in participants' support for modifying the environment and opposition to limiting industrial growth. Enthusiasm, on the other hand, has a significant and positive effect on participants' pro-environmental views. Participants in this condition indicate support for modifying the industrial system to protect the environment and an overall proclivity towards adaptation rather than modification of the environment. As hypothesized, the enthusiasm appeal reinforces prior beliefs and leads participants to report an overall positive environmental orientation. Anxiety, on the other hand, leads participants to reconsider their environmental attitudes, and thus report a more dour environmental outlook. These findings add to the existing literature on the influence of emotional appeals in campaign advertisements. As Marcus and colleagues (2000) and Brader

(2006) find that enthusiasm reinforces prior beliefs while anxiety triggers thoughtful reflection on prior beliefs in the realm of campaign politics, I find that the same expectations can be extrapolated to the use of enthusiasm and anxiety in environmental PSAs. This has greater implications for the use of emotional appeals in non-campaign communications.

More importantly, as the widely discrepant effects of enthusiasm and anxiety appeals on environmental attitudes demonstrate, emotional appeals cannot be used without discretion. Though emotion may be a potent tool for policymakers seeking to craft an effective message, environmental or otherwise, a PSA that invokes the wrong emotion may have unanticipated, even dire consequences. In fact, a PSA which invokes anxiety induces anti-environmental attitudes. Used correctly, a well crafted emotional advertisement may remind viewers why it is important to conserve energy and may buoy their existing pro-environment predispositions. However, it is clear from the findings set forth above that the type of emotion invoked matters significantly. Enthusiasm ads may increase the effectiveness of pro-environmental PSAs, but anxiety ads have a dramatically different effect. For the creators of the “Crying Indian” PSA, which utilized an anxiety appeal as a means to positively influence pro-environmental attitudes, the unintended effects are great. Not only do the findings set forth in this paper cast doubt on the ad’s ability to positively influence pro-environmental attitudes because of its inclusion of an anxiety appeal, but the ad may have had the reverse effect. So while the “Crying Indian” ad is often cited as the most memorable environmental public service announcement, I would argue that the ad’s resonance is despite the ad’s unintentional negative effect on pro-environmental attitudes not because of it.

Also, though I speak only to PSAs in this paper, one can speculate about the application of these findings to other mediums. For example, what about the emotions appealed to in Al

Gore's popular documentary on the risks associated with climate change, *An Inconvenient Truth?* His often-dramatic visuals on the devastating and urgent global effects of climate change surely cause anxiety among audience members. If, as my findings suggest, anxiety cues an overall negative outlook towards the environment, then the documentary may actually have adversative effect on the pro-environmental attitudes of its audience. In other words, even pro-environmental filmmakers with the best intentions may do more harm than good if emotions are invoked improperly. The results set forth here suggest that presenting environmental risk in a context of risk or fear could have devastating results. However, more work needs to be done to determine to what extent these effects apply outside of the PSA.

An experimental design utilizing a larger, non-student participant pool and balanced treatment conditions can better illustrate the distinct impact of emotional appeals on pro-environmental attitudes and increase generalizability. As is common in socio-psychological works I rely on an undergraduate student sample and my findings are thus subject to the "college sophomore" problem. Though university students are a willing and accessible population for experimental work, they have been found to differ from the population in several respects including in their willingness to comply with authority, less-crystallized attitudes, stronger cognitive skills, and less-developed sense of self (Sears 1986). For this reason, the findings set forth in this paper should be interpreted with caution. Testing my framework on a representative sample would be a more robust test of the application of affective intelligence theory to emotional appeals in PSAs. I expect that when tested on an older, more representative sample one might find more resistance to the treatment condition. However, it may also be possible that as adults are more likely to be providers for their family they are also more likely to have a deeper emotional connection to the environment. Thus, PSAs which utilize emotional appeals

may have more influence on the attitudes of an older sample. Whatever the outcome, we stand to gain much understanding on this topic from extensions of this work on a representative sample.

Also, the addition of action tendency measures, which indicate the likelihood an individual will act in a pro-environmental way based on her cognitive representations of environmental risk (Bohm 200), would be instructive and aid in our understanding of the relationship between environmental attitudes and action (Cantril 1993). Neuro-psychological work has determined that emotion is the first step to intentional action (Damasio 1994) and the data set forth in this paper support a role for emotion in the structure of environmental attitudes. However, a follow-up which extends this framework to either action tendencies or observed action would be a significant advancement (Cantril 1993).

Additionally, future work should expand the research design to include an examination of the effects of anger and sadness. Also, moving beyond a script format to include verbal, audio, and visual cues in the treatment conditions would better replicate exposure. Regardless, the findings set forth in this paper suggest that there is much yet to be explored in the effects of emotion on attitudes. Moreover, the evidence demonstrates there is room to apply the findings of affective intelligence theory to communications in previously unexamined political arenas such as environmental policy.

Table A New Environmental Paradigm Scale and Factor Scores, Sign and Significance of t-statistic

Variable	Description	Enthusiasm Appeal	Anxiety Appeal
NEP Scale	High score on the New Environmental Paradigm indicates a pro-environmental orientation or comprehensive environmental belief system. Accompanied by pro-environmental beliefs and attitudes on a wide range of issues (Dunlap and Van Liere 1978; Pierce, Dalton and Zaitsev 1999; Stern, Dietz and Guagnano 1995).	+	-
Factor1	Emphasizes balance and harmony with nature. Accompanied by a sense that if humankind does not adhere to a natural balance then there are dire consequences. Some say represents new age spiritualism (Roberts and Bacon 1997). Includes items 2, 5, 8, and 12.	+	-
Factor2	More religious in its relation to nature than other factors. Includes items 4, and 6.	+	-
Factor3	Technocratic in nature, these items reflect a concern for limiting growth and an awareness of how industrial systems can be modified to maintain status quo. Individuals with these sentiments might be more aware of the benefits of energy conservation. Includes items 1, 7, 9, and 11.	+*	-
Factor4	Individuals who hold these attitudes demonstrate a preference for adaption to nature rather than modification of nature. Similar to the first factor in its emphasis on balance but lacks reference to consequences. Includes items 3, and 10.	+*	-*
<p>Entries represent the sign and significance of t-statistics from an independent samples t-test. A positive t-statistic suggests agreement with an item unless that item is reverse coded. *p < .10, **p < .05, ***p < .01 (two-tailed).</p>			

Table B New Environmental Paradigm Items, Sign and Significance of t-statistic

Item	Prompt	Enthusiasm Appeal	Anxiety Appeal
B1	We are approaching the limit of the number of people the earth can support.	+	-
B2	The balance of nature is very delicate and easily upset.	+**	-
B3	Humans have the right to modify the natural environment (reverse coded).	+**	-**
B4	Humankind was created to rule over the rest of nature (reverse coded).	+	-**
B5	When humans interfere with nature it often produces disastrous consequences.	+	-
B6	Plants and animals exist primarily to be used by humans (reverse coded).	-	+
B7	To maintain a healthy economy we will have to develop a "steady state" economy where industrial growth is controlled.	+	-**
B8	Humans must live in harmony with nature in order to survive.	-	+
B9	The earth is like a spaceship with only limited room and resources.	+	-
B10	Humans need not adapt to the natural environment because they can remake it to suit their needs (reverse coded).	+	-
B11	There are limits to growth beyond which our industrialized society cannot expand.	+	+
B12	Mankind is severely abusing the environment.	+	-*

Entries represent the sign and significance of t-statistics from an independent samples t-test. A positive t-statistic suggests agreement with an item unless that item is reverse coded. *p < .10, **p < .05, ***p < .01 (two-tailed).

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Appendix A: Averages and Standard Errors for Dependent Variables by Treatment

	Anxiety	Enthusiasm	Control
NEP Scale	3.581541 (.0517219)	3.399371 (.089637)	3.528509 (.0691347)
Factor 1	3.672043 (.0723183)	3.54717 (.1021487)	3.661184 (.0902851)
Factor 2	3.548387 (.0954996)	3.396226 (.1477691)	3.427632 (.1114907)
Factor 3	3.572581 (.054268)	3.382075 (.0991171)	3.555921 (.0755968)
Factor 4	3.451613 (.0741417)	3.141509 (.1287552)	3.309211 (.0936432)
B1	3.44086 (.1019473)	3.207547 (.1532391)	3.355263 (.1252421)
B2	3.677419 (.1071991)	3.415094 (.1486123)	3.855263 (.1134838)
B3	3.215054 (.110091)	2.773585 (.1539078)	3.105263 (.1132904)
B4	3.688172 (.1091624)	3.339623 (.1845707)	3.368421 (.1309106)
B5	3.387097 (.1070584)	3.226415 (.1253196)	3.315789 (.1216993)
B6	3.408602 (.1166749)	3.45283 (.1537297)	3.486842 (.1249469)
B7	3.731183 (.0781683)	3.377358 (.1552806)	3.565789 (.1174817)
B8	3.774194 (.1093235)	3.886792 (.1194459)	3.934211 (.1342105)
B9	3.645161 (.1055332)	3.415094 (.1557648)	3.697368 (.1324794)
B10	3.688172 (.1025373)	3.509434 (.1562037)	3.513158 (.1317805)
B11	3.473118 (.0937398)	3.528302 (.1192738)	3.605263 (.1044265)
B12	3.849462 (.1036346)	3.660377 (.1424016)	3.539474 (.1419671)
Entries represent the mean of each dependent variable by treatment condition. Entries in parentheses are standard errors. Note B3, B4, B6, and B10 are reverse coded.			

Appendix B: Enthusiasm Script

There's good news for your neighborhood. The future looks bright for a generation of young people.

Everyone is pitching in to help the environment, and as a result pollution has decreased overall.

Businesses are banding together to offer green products, and your community is taking action to protect the home-town you love.

Businesses and governments abroad may ignore the harmful consequences of their actions, but here in the United States we want to protect the country which provides for us.

For the spacious skies, the amber waves of grain, the purple mountain majesties, and the fruited plain.

We're all working hard to be green, to protect the red, white and blue.

Appendix C: Anxiety Script

It's happening right now in your neighborhood. Generations of young people are in danger.

Pollution and environmental damage are threatening to destroy the future of our children, and the way of life we have become accustomed to as Americans.

Businesses and Corporations across the country are producing massive amounts of waste, contributing to poor air and water quality, and refusing to take responsibility for the harmful effects on the environment.

The government has become a partner in these harmful actions by refusing to enforce environmental policy which demands substantial results

Here in the United States leaders are not concerned with protecting the environment or protecting the resources which sustain this great nation.

What will we do when there are no longer spacious skies, amber waves of grain, or purple mountain majesties, above the fruited plain?

We must work to be green, to protect the red, white and blue.