Replication of The Moral Roots of Environmental Attitudes (Study 3) by Feinberg, M. & Willer, R
(24(1), 56–62 , *Psychological Science*)

Gregg Sparkman
Greggrs@stanford.edu

Introduction

Study 3 examined the effects of framing environmental concerns in either purity or harm and care moral foundations and found that differences in pro-environmental attitudes between liberals and conservatives were minimized when the moral foundations matched the political ideology (conservatives in the purity condition were similar to liberals). This was done by giving online questionnaires that asked for demographics (including political ideology) and then provided environmental appeals, information and images relating to moral foundations where subjects were randomized between a control, purity, or harm/care conditions. Finally, participants were asked about their current emotional state and pro-environmental attitudes.

Methods

Power Analysis

In the original study, a multiple regression analysis found an interaction between appeal condition (harm/care vrs purity/sanctity) and political ideology in predicting pro-environmental attitudes, where purity/sanctity manipulation induced similar levels of pro-environmental attitudes in conservative and liberal participants, while the harm/care manipulation induced greater pro-environmental attitudes in liberals and lower levels in conservatives, $\beta = −0.29$, $p < .001$. Sample size is 308. The omnibus F for the full analysis is 26.56 and the Rsquared is .306 (f squared is 0.441). A power analysis suggests that the model will be significant with 95% power with 44 participants, 90% with 37 participants, and 80% with 29 participants.

Planned Sample

Planned sample size: two samples of 44, recruited from Mturk with a US IP address filter and over 95% worker approval rate filter. One sample is to be ran in the same fashion as the original study. The second is to be ran with changes to the study design, including putting the demographics section last (further discussed in section on differences from original study).

Original Study Sample: 82 male, 220 female, and recruited from US cities craigslist ads.

Materials

Demographic questionnaire, including gender and "a single-item measure of political ideology ranging from 1 (*extremely liberal*) to 7 (*extremely conservative*)"

Appeal condition modeled after a newspaper op-ed, includes 3 conditions (pictured below): "These messages utilized words typical of their respective moral domains (Graham et al., 2009). The harm/care message described the harm and destruction humans are causing to the environment and emphasized how important it is for people to care about and protect the environment. Participants in the purity/sanctity condition read about how polluted and contaminated the environment has become and how important it is for people to clean and purify the environment. Additionally, three small pictures were presented with the persuasive messages. The purity/sanctity pictures showed a cloud of pollution looming over a city, a person drinking contaminated water, and a forest covered in garbage. The harm/care pictures showed a destroyed forest of tree stumps, a barren coral reef, and cracked land suffering from drought. Importantly, both messages ended positively, providing information regarding what people can do to improve the environment (Feinberg & Willer, 2011). Participants in the neutral condition read an apolitical message on the history of neckties." (see figure 1, 2, and 3)

Figure 1. *Purity/Sanctity Condition*

Figure 2. *Harm/Care Condition*

Figure 3. *Neutral (Control) Condition*

Why Do Men Wear Ties?

As with most things, the answer can be found in history. Neckties date back hundreds of years, coming into existence as the direct result of a war. In 1660, in celebration of its hard-fought victory over the Ottoman Empire, a crack regiment from Croatia (then part of the Austro-Hungarian Empire) visited Paris. The soldiers were presented as heroes to Louis XIV, a monarch well known for his tendency toward personal adornment. The officers of this regiment were wearing brightly colored handkerchiefs fashioned of silk around their necks. These neck cloths - which probably descended from the Roman fascalia worn by orators to warm the vocal chords - struck the fancy of the king, and he soon made them an insignia of royalty as he created a regiment of Royal Cravattes. Vanity reigns supreme! The word "cravat," is derived from the word "Croat."

It wasn't long before this new style crossed the channel to England. Soon, no gentleman would have considered himself well-dressed without sporting some sort of cloth around his neck - the more decorative, the better. At times, cravats were worn so high that a man could not move his head without turning his whole body. There were even reports of cravats worn so thick that they stopped sword thrusts. The various styles knew no bounds, as cravats of tasseled strings, plaid scarves, tufts and bows of ribbon, lace and embroidered linen all had their staunch adherents.

How can we account for the continued popularity of neckties? For years, fashion historians and sociologists predicted their demise - the one element of a man's attire with no obvious function. Perhaps they are merely part of an inherited tradition. As long as world and business leaders continue to wear ties, the young executives will follow suit and ties will remain a key to the boardroom.

Self-report of emotions, includes self-report of disgust.

Assessment of environmental attitudes, includes: "3-item measure of proenvironmental attitudes (e.g., "It is important to protect the environment"...), a 5-item measure of support for proenvironmental legislation (e.g., "In general, I would support government legislation aimed at protecting the environment"...), and a 3-item measure of belief in global warming (e.g., "I believe that humans are causing global warming"...)."

Attention Check (developed and only used in the present study): Full text below.

Yearly House Hold Income

Many people are uncertain of their exact household income and do not accurately estimate it correctly. Part of this confusion arrises from knowing whether or not to include the income before or after taxes, and if one should include the income of those they live with. Researchers are often most curious about the income before taxes and including the incomes of those directly related to you, including a spouse. The purpose of this question is to see if you are reading instructions carefully. To demonstrate this, please leave this question blank and do not put any answer below and simply continue on to the next page. Thank you.

- Between $0 and $30,000

- Between $30,000 and $60,000
- Between $60,000 and $90,000
- Between $90,000 and $120,000
- Between $120,000 and $250,000
- Over $250,000

Procedure

      Participants completed the demographic questionnaire, then were randomly assigned by a computer program to either the harm/care, purity/sanctity, or neutral-message condition. After reading the message, participants filled out the self-report of emotions. Finally participants completed the assessment of proenvironmental attitudes.

Analysis Plan

Analysis will include:
1) Creating average scores from composites of environmental attitudes, policy, and beliefe in global warming questions (as done in the original study) to create the dependent variables.

2) T-test of disgust levels comparing purity/sanctity condition and harm/care and neutral conditions.

3) Multiple regression testing interaction between appeal condition and political ideology predicting reports of disgust.

4) Multiple regression testing interaction between appeal condition and political ideology in predicting pro-environmental attitudes (all three measures).

Differences from Original Study

      Recruitment of participants was done on Mturk rather than craigslist. Given this source, an attention check was added to the study. The original study included an exclusion criteria for a prohibitively short amount of time spent reading the op-ed (manipulation). While the authors could not recall the exact time used, the present study uses 10 seconds as a cut off. The rationale for this decision is that the page long passage could not be completely read in 10 seconds, and those who would skip it entirely probably would not stay on the page for 10 seconds before continuing.

      Additionally, a separate sample was ran through a nearly identical study design, with the exception that the demographic information was asked last (as opposed to first as the original

study was conducted).

Actual Sample

In total, 90 participants were collected from Amazon's Mechanical Turk. Of these 22 failed the attention check, and, of those that remained, 6 failed to stay on the manipulation page (to read the op-ed) for longer than 10 seconds.

After these exclusions, 68 participants remained, 33 male. This sample is therefore more male heavy than the original (roughly 49% compared to roughly 27%). Politically, participants reported a mean of 3.31 and a SD of 1.71 on the political ideology question which was fairly similar to the original study's population (mean = 3.06, SD = 1.32).

Differences from pre-data collection methods plan

Given the large number of participants who failed the attention check (roughly 24%) and those cut from failing to stay on the manipulation page longer than 10 seconds (roughly 9%), the two samples from the similar study design have been merged for all future analyses to maintain enough statistical power.

Results

Data preparation

The dependent variables were created. Specifically, averages were created from composites on environmental attitudes questions, environmental policy questions, and questions regarding belief in global warming (as done in the original study). These variables are used as the outcome measures for the following analysis.

Mean centered versions of independent variables that will be used to test interaction terms were created for reported political ideology and levels of disgust.

Confirmatory analysis

Participants did not report more disgust in the purity/sanctity condition (M = 3.36) than did participants in the harm/care condition (M = 3.68), t(40) = 0.60, p = .55. But the purity/sanctity condition participants did have a larger report of disgust than the neutral condition (M = 0.24), t(39) = 7.45, p < .001.

When comparing participants in the purity and harm conditions, no interaction effect was found between Ideology X Condition in predicting disgust, b = -.077, $t(38)$ = -0.23, p = .82, R^2 = .040 $F(3, 37)$ = .51, p = .678.

When comparing participants in the purity and harm conditions, a near marginal interaction effect was found between Ideology X Condition in predicting pro-environmental attitudes, b = -.216, $t(38)$ = -1.57, p = .125, and the model explained a significant amount of variance, R^2 = .221 $F(3, 36)$ = 4.68, p = .007. When comparing participants in the purity and harm conditions, a significant interaction effect was found between Ideology X Condition in

predicting favoring pro-environmental policies, $b = -.330$, $t(39) = -2.25$, $p = .031$, and the model explained a significant amount of variance, $R^2 = .413$ $F(3, 37) = 8.69$, $p < .001$. The same result was found for beliefs in global warming $b = -.328$, $t(39) = -2.00$, $p = .053$, and the model explained a significant amount of variance, $R^2 = .403$ $F(3, 37) = 8.31$, $p < .001$.

However, comparing this data graphically to the data data from the original study reveals that these trends are actually in the opposite predicted direction, where conservatives are more like liberals in the harm/care condition. Below, Figure 4 shows this contrast.

Figure 4. *Comparison of Orignal Study Interactions and Present Study Interactions*
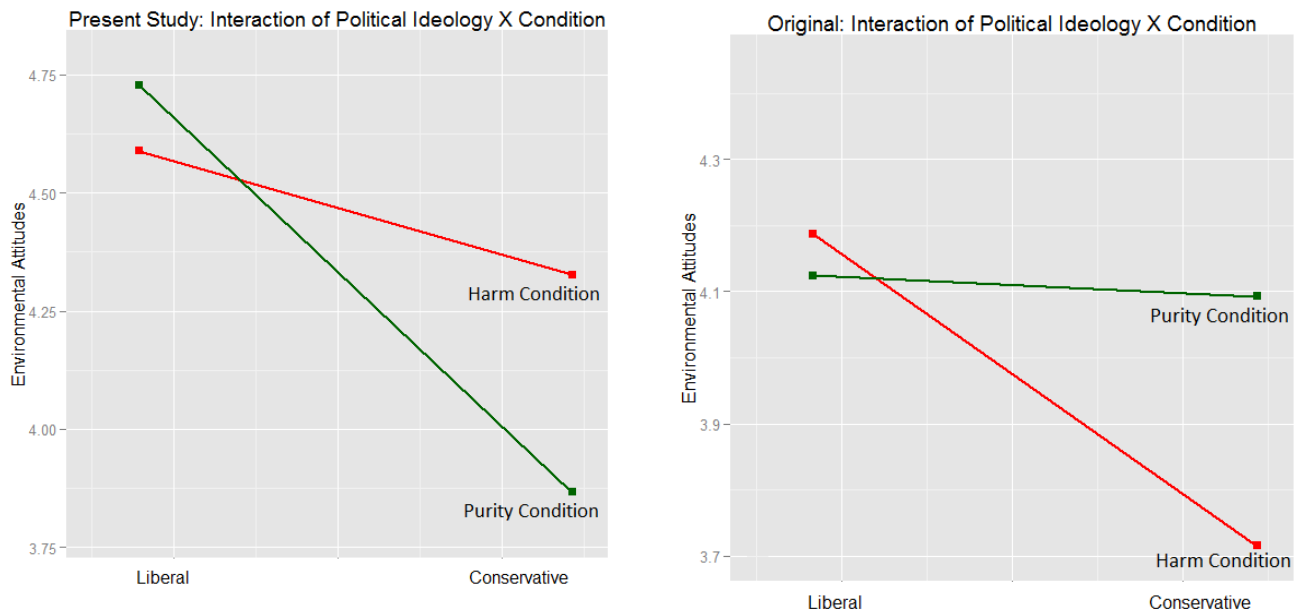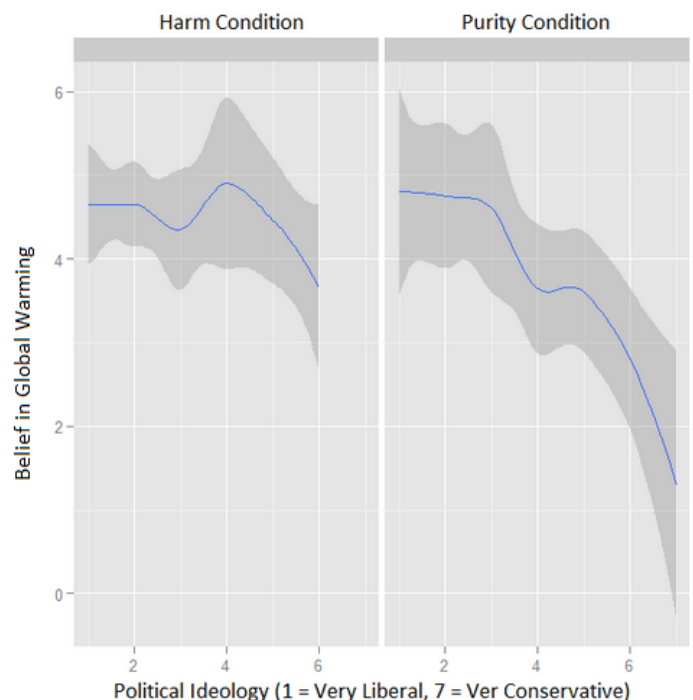

Similarly, visualising data from the pro-environmental policy and belief in global warming dependent variables suggests the same trends (Figure 5 and Figure 6, respectfully).

Figure 5 *Political X Condition on Policy Support*
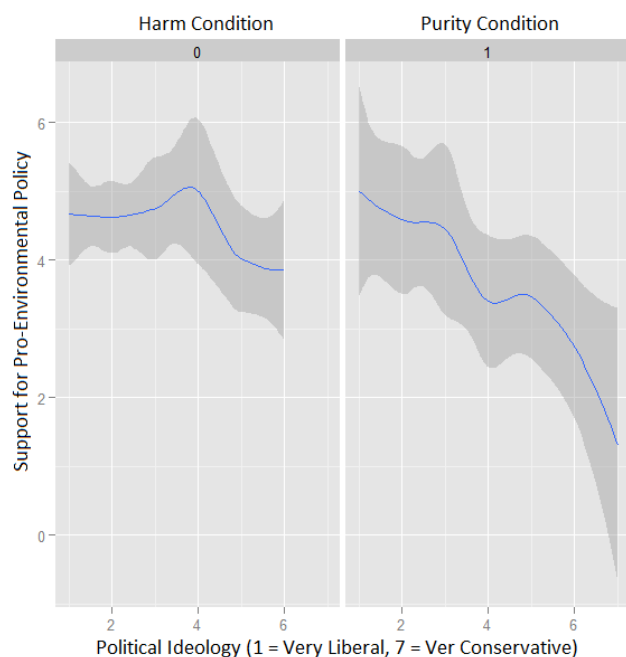
Figure 6 *Political X Condition on Belief in Global Warming*

Exploratory analyses

Given the puzzling results, extra effort was given in reviewing the handling of data to ensure that participant condition was accurately maintained. Explorative analysis was done on disgust, given that it was found to mediate the interactions in the original study. Given that there was no interaction of ideology and condition on disgust in the present study, main effects were explored. In the purity and harm condition, disgust did not predict support for environmental attitudes, $b = .08$, $t(38) = -1.06$, $p = .298$.

Considering the gender differences in demographics from the current and original study, analyses on women alone were also conducted to explore the possibility that they drove the original finding. When comparing women in the purity and harm conditions, no interaction effect was found between Ideology X Condition in predicting favoring pro-environmental attitudes, $b = -.20$, $p = .37$. The same result was found for support for pro-environmental policies and beliefs in global warming, $b = -.300$, $p = .238$, and $b = -.347$, $p = .190$, respectively. However, given the small sample size and similar trends, we might anticipate that women would have shown the same effects as the total sample.

Discussion

Summary of Replication Attempt

The replication failed to find a difference between reported levels of participants disgust in the harm and purity conditions. However a interaction was found between political ideology and moral condition in the opposite direction as the original finding. In the present study, it appears that both liberals and conservatives were responsive to the harm focused pro-environmental op-ed, while liberals alone were responsive to the purity focused op-ed.

One possible explanation for this discrepancy is that participants in the harm condition reported a higher level of disgust than those in the original study, while reporting a similar level of disgust in the purity condition. Therefore, if disgust is a significant factor in favoring environmental attitudes and policy, we might expect the outcomes observed in the present study.

Gender differences also existed between the original and present study, where nearly half the proportion of women were in the present study as the original. This suggests that women may have been largely responsible for the findings in the original study; however, in the present study women followed the same trend as the total sample, making this unlikely.

Another area of concern is the large proportion of participants that failed that attention check, or skipped through the manipulation section of the study. While these participants were removed from all analysis, it is possible that participants in general were not as engaged with the task as those in the original study. In part, this may be due to differing amounts of payment for the study: the present study only payed $0.50, while the original study presumably payed more given that participants were not recruited from Mturk. It is also possible that participants on Mturk differ in some significant way from those recruited from craigslist in the original study.

Commentary

Many basic questions still exist considering the outcomes of this study. First, why did the sample in the harm condition experience so much disgust? Before other conclusions can be made, this must be understood as it may affect all subsequent results (if as the original studies authors suggest is motivating the pro-environmental attitudes reported).

As outlined above, this failure to replicate may be due to factors relating to how the data was collected, and continued research on sampling methods may be able to shed light on this and other replication attempts.