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# The Role of Behavioral Factors in Climate Change Donations

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**Abstract:** Environmental non-profit organizations play a crucial role in fighting climate change. Most of them rely on donations from small donors whose donation decisions tend to be affected by personal factors. We examine the effects of behavioral factors on donations to climate change charities through a survey conducted among a group of participants with relatively homogenous demographic characteristics such as family wealth and educational background. We find that a potential donor's donation amount is strongly affected by his or her perception of the effectiveness of environmental charities in fighting climate change. Among participants who pay more attention when filling out the survey, the persuasion tactic featuring factual information related to climate change appears to be most effective. Lastly, participants who feel good about having given to climate change charities are associated with larger donations, highlighting the effect of the psychological benefits of giving. Our study contributes to the behavioral economics literature by focusing on donors' perspectives when examining the drivers behind charitable giving to climate change mitigation charities. Our findings suggest that climate charities should account for the effects of behavioral factors that best influence potential donors to improve fundraising success.

**Keywords:** *Behavioral Factors, Donations, Climate Change, Climate Charity, Methods of Persuasion*

## 1. Introduction

Climate change, driven by human industrial activities, poses an existential threat to life on Earth and calls for immediate mitigation measures. However, many of the efforts and measures for fighting climate change come with a hefty price tag and require financing from various sources. According to the International Energy Agency, only 30 percent of necessary finance directed towards climate change comes from the public sector, with the remaining 70 percent having to come from the private sector.[1] This reality highlights the urgent need for successful climate change-related fundraising through non-governmental organizations.

In contrast to typical charitable causes examined in prior studies on philanthropy, such as medical research, poverty reduction, or disaster relief, climate change is a relatively controversial issue that is often associated with highly polarized views among individuals across the political spectrum. As a result, institutional funding for climate change research and advocacy is somewhat limited. It is, therefore, important to have a good understanding of the various behavioral factors that tend to have a greater influence on small donors, if climate change charities aim to cultivate loyal donors and maximize donations.

In this study, we examine the effects of behavioral factors on climate change-related charitable contributions by analyzing the results from a climate change mitigation donation survey. Specifically, our survey is designed to gauge the effects of donor perceptions, persuasion modes, and the psychological benefits of giving. We focus on these factors because donors to climate charities are often small donors who have diverse views about both climate change and climate change mitigation efforts. They are thus more susceptible to the influences of personal factors.

Our climate change mitigation donation survey was conducted via Qualtrics among 100 students and staff members who were participating in a summer research program at the University of California, Santa Barbara

[1] See https://foreignpolicy.com/2024/06/03/climate-finance-small-island-states-taxes-adaptation/#:~:text=According %20to%20the%20International%20Energy,coming%20from%20the%20private%20sector and https://www.iea.org/reports/reducing-the-cost-of-capital.

in 2024. Participants were told that ten of them would be randomly selected to receive award money and would donate some or all of it, according to their donation decisions as indicated on their survey, to a charity dedicated to fighting climate change, *Clean Air Task Force* (CATF), one of the most prominent climate change charities in the U.S. in 2003 and 2004.[2]

During the survey, participants were first asked a question eliciting their view on the effectiveness of charitable giving on climate change mitigation. Participants are instructed to answer the question using a five-point Likert scale, ranging from 'Strongly Disagree' to 'Strongly Agree.' Next, to examine the effect of persuasion on charitable donations, 71 participants were randomly selected to be shown an article related to climate change appealing to logos, pathos, or ethos, while the rest of them were not shown any articles. Among the 71 participants shown a persuasion article, 24 of them were shown an article appealing to the ethos that primarily focused on major endorsements and statements from well-known, science-related organizations like NASA. 21 participants were shown an article appealing to logos that primarily featured statistics on the threat of climate change and the accomplishments of the charity. Finally, 26 participants were shown a pathos article that used strong words like 'tragedy' and 'heartbreaking' to appeal to the audience's emotions. The three articles followed the same three-paragraph format and were carefully designed to control for the effect of length and structure. To ensure that participants read the articles carefully, we made the articles a reasonable length and imposed a 20-second delay on the 'next' button leading to the next step. In addition, we had a bolded message at the top of the article reminding participants to read the article carefully.

All participants were then asked how much award money they would like to donate to a climate change charity and were told that ten randomly selected participants' donation decisions would be implemented. After participants completed their surveys, they were asked a set of five post-donation questions, which included questions concerning their feelings about their donations and demographic information of survey respondents.

To understand the effects of behavioral factors on donations to climate change charities, we perform three sets of analyses. First, we examine the effect of participants' prior attitudes towards charitable donations to environmental causes. Specifically, we regress individual participants' donation amounts on their ratings of the effectiveness of climate charities in combatting climate change. To control for participants' demographic information, we include a dummy variable indicating the participant's gender (Veldhuizen et. al, 2009). Since a significant portion of the survey participants are from California, a "blue" state that has been a strong advocate for environmentally friendly policies and regulations, we also control for a dummy variable indicating whether the participant is from California or not.

Our analyses indicate that participants' pre-existing views on the efficacy of climate change mitigation efforts by charitable organizations strongly influence their donation decisions. Specifically, participants tended to donate more money if they believed that donating to climate charities was an effective way to combat climate change. This finding corroborates previous findings on the efficacy of donations in helping solve the underlying issues. Thus, to maximize the donations received, charities combating climate change must maintain a positive image; the best way they can do this, as suggested in our findings, is by using donor donations effectively.

Second, we find that although persuasion is an effective way to increase donations, consistent with Wu et al., (2022) and Lindauer et al., (2020), persuasion matters only if participants are adequately stimulated by reading the articles carefully. This result is likely driven by the fact that the majority of our survey respondents are high school students who tend to have short attention spans. Among the three modes of persuasion, the logos article (appealing to logic, with statistics) is the most effective one. This finding deviates from Masnovi (2013) who shows that pathos was reported as the most effective persuasion mode by 79% of the respondents while logos was reported as most effective by only 19% of participants. The significant effect of logos is consistent with the fact that our survey respondents are from a select group of high-achieving high school students who tend to be more sensitive to numbers and statistics. Overall, our findings concerning the effectiveness of persuasion on

[2] According to Vox, *Clean Air Task Force* is considered as the No. 1 high-impact, cost-effective, and evidence-based organization dedicated to fighting climate change. See https://www.vox.com/future-perfect/2019/12/2/20976180/climate-change-best-charities-effective-philanthropy.

people's willingness to donate suggest that catering to potential donors' demographic characteristics could significantly increase charitable contributions.

Lastly, our analyses provide suggestive evidence that participants who feel good about having given to climate change charities turn out to be those who choose to donate more money, highlighting the effect of psychological benefits of donation. Moreover, regardless of their donation amount, participants who were shown the pathos article felt significantly better about their donations. This finding is intuitive, as the pathos article painted a particularly depressing picture of the future of climate change, most likely eliciting feelings of compassion and empathy from the participants and thus making them feel better and more rewarded about their donations. The significant role of psychological benefits suggests that charities should customize fundraising materials for their mood effects. In addition, they could potentially increase donation amounts by eliciting rewarding feelings among potential donors through means such as a heartwarming message or a physical reward.

One limitation of our study is that the majority of our survey participants are financially stable pre-college students. They have also met the admission standards for the summer program organized by UC Santa Barbara and are likely well-educated about the issue of climate change. On the other hand, since our survey was conducted among this relatively homogenous group of people with similar family backgrounds, our research design effectively controls for the effect of wealth on donation—one of the leading factors that determines charitable contributions. This allows us to conduct statistical analyses focusing on the influences of behavioral factors. In addition, since most of the participants were likely well informed about the issue of climate change underlying the persuasion articles before reading them, we can focus on the effects of persuasion modes associated with the articles, as opposed to those of their actual contents.

Although prior studies (see, e.g., Parsons, 2007 and Trussell & Parsons, 2007) have studied the effects of the perceived efficacy of charitable activities on donation amount, to the extent that climate change has been a controversial issue, climate change charities represent a more powerful setting where individual donors' perceptions become essential. Furthermore, while perception could be influenced by factors such as income, educational background, and financial wellness, our survey is conducted among a group of respondents with relatively homogenous demographic characteristics. Our findings are therefore less susceptible to the effects of confounding factors. Our analyses on persuasion modes are closely related to Masnovi (2013) who researches the relative effectiveness of logos, ethos, and pathos when applied to donations to a children's cancer organization. However, the findings of Masnovi (2013) are more subject to alternative explanations as their experiment did not control for the topic, length, or message of the logos, ethos, and pathos stimulants. In addition, the survey only sampled 44 people and did not provide any incentives for respondents to give honest answers.

In summary, using climate change-related donation decisions as the laboratory, we find that donations are strongly influenced by behavioral factors including potential donors' perception of the effectiveness of charities in promoting the underlying cause, specific persuasion methods employed when soliciting donations, and the psychological benefits of donating. Since climate change charities often must target small donors who are more susceptible to the influences of behavioral factors, our study provides insights into the effects of various behavioral factors and has distinct implications for environmental organizations aiming to combat climate change with resources funded by charitable contributions. Particularly, these organizations can improve the effectiveness of donation appeals by strategically targeting different donor groups with different mixes of rational and emotional persuasion tactics according to their educational backgrounds and knowledge of the underlying charitable cause. In addition, charitable organizations should strive to maintain a positive public image and demonstrate the real effects of their work to promote donor perception about climate change charity.

Section 2 provides a review of related literature. Section 3 discusses our survey design and empirical methodology. Section 4 discusses our analyses of the effects of perceived efficacy, persuasion methods, and psychological benefits. Lastly, Section 5 provides concluding remarks.

## 2. Literature Review

The psychology behind charitable donations has been extensively studied (Bekkers and Wiepking, 2011; Zagefka & James, 2015; Dietz, Shwom, & Whitley, 2020; Kovolskyi et al., 2020). Specifically, behavioral factors such as the perceived efficacy of a donation, solicitation methods, and the psychological benefits of donating are often identified as among the most important forces driving charitable giving in philanthropic studies, economics, and psychology, respectively. First, prior research indicates that when people believe that their contribution to charity will not be used effectively to make a difference to the cause that they are supporting, they are less likely to give to the charity. For example, several studies have tested the effects of providing donors with information about the effectiveness of their contributions and the organizational efficiency of the receiving charity and found positive effects on philanthropy (Warren & Walker, 1991; Parsons, 2007; and Trussell & Parsons, 2007). In addition, there is evidence that perceived efficacy influences an individual's donation behavior more than factors such as scope and awareness of the underlying issues (Snipes & Oswald, 2010).

Research in charities has also studied solicitation/persuasion methods. Specifically, prior studies have developed a framework to analyze Aristotle's three modes of persuasion: ethos, logos, and pathos (Alkhirbash, 2016). Ethos refers to an appeal to the credibility and character of the speaker. Logos refers to an appeal to the reason and logic contained within the message itself. Pathos refers to an appeal to the emotions of the audience. By evoking emotions like pity or anger, the audience adopts a different 'state of mind' that encourages them to agree with the speaker. While all three modes positively affect charity donations, several studies report that individuals believe that they respond best to pathos (Masnovi, 2013; Auger, 2014; Wu et al., 2022). Specifically, both negative and positive emotions are highly effective in encouraging charitable contributions (see, e.g., Goenka and Osselaer, 2019; Moran and Bagchi, 2019; Septianto and Tjiptono, 2019; Paxton et al., 2020; Yousef et al, 2022). On the other hand, Lindauer et al., (2020) find that well-designed philosophical arguments, a form of logos, are as effective as emotional appeals in boosting charitable donations.

Compared to the perceived efficacy of charitable contributions and persuasion methods, a more direct psychological factor influencing donation is the "joy of giving." Many studies find that charitable donations not only produce social benefits but also generate psychological benefits for donors by producing a positive mood, satisfying their desire to conform to certain social norms, or alleviating guilt about morally unjust behavior. Evidence from neuropsychological studies suggests that charitable contributions "elicit neural activity in areas linked to reward processing" (Harbaugh, Mayr, & Burghart, 2007). Consistent with this neuropsychological evidence, Kim and Childs (2021) show that consumers reveal greater donation intentions toward other-benefit appeals than self-benefit appeals in the context of clothing donations.

Although prior studies have considered behavioral factors as one of the forces driving charitable giving, we believe it is important to revisit some of the existing findings in the context of climate change donations. First, given that climate change has been a rather controversial issue, prior attitudes towards climate change and the perceived efficacy of climate charities stand of particular importance in this context. Furthermore, unlike causes related to poverty or disaster relief, which many potential donors might have never been exposed to, climate change has impacted everyone's life in a relatively direct fashion, whether it be the more frequent tropical storms or the rising temperatures. What this means is that potential donors of climate change charities might not be sensitive to previous persuasion methods that appeal to compassion or altruism, as their personal experience might have already shaped their views on climate change.

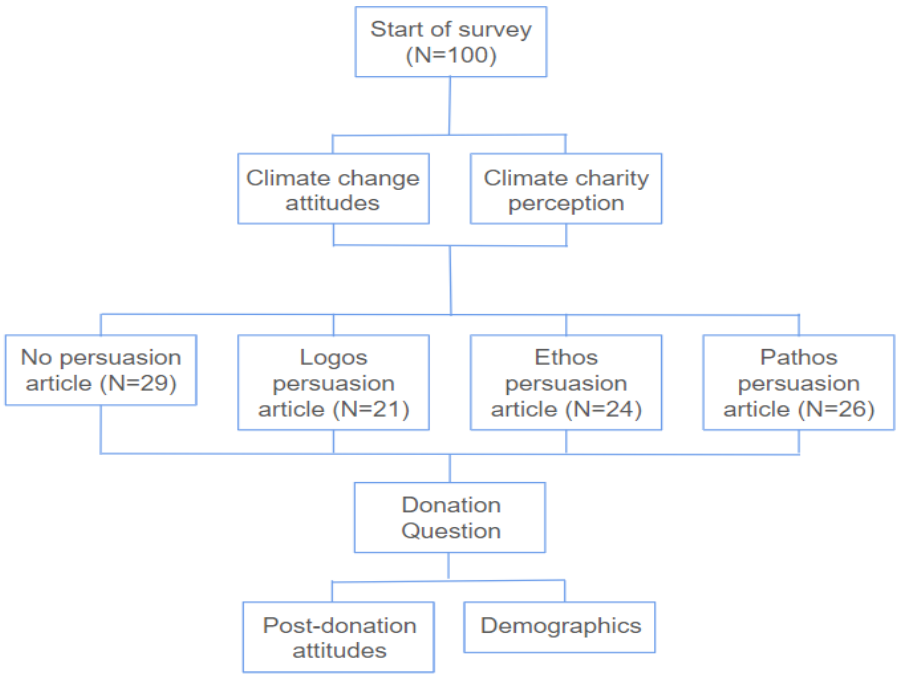
## 3. Experimental Design

The main objective of our experiment is to gauge how various behavioral factors, including perception towards climate charity, persuasion method, and the psychological benefit of giving, influence the amount people donate to climate change charities. This experiment was conducted by surveying one hundred participants in a summer research program organized by the University of California at Santa Barbara during the summer of 2024. Out of the 100 survey participants, 98 are students in the summer programs and two are on-campus staff.

Given the budget constraint, participants of the survey were informed beforehand that 10 of them would be randomly selected to win $20 out of the total award money of $200. That is, a lottery system was employed to ensure that each participant had a 10% chance to win $20. During the survey, participants were asked how they would split the $20 between themselves and the *Clean Air Task Force*, a charity dedicated to fighting climate change. Afterward, the donation decisions of 10 lottery-winning participants as specified in their survey responses were carried out in real life (i.e. the money respondents chose to donate was donated to the charity, and the rest was left for them to spend). This research design provides a real monetary incentive and motivates truthful responses to survey questions.

**Figure 1: Flow chart of the survey**

Participants were first asked a set of four questions eliciting their attitudes towards climate change. A portion of the participants were then presented with persuasion articles featuring logos, ethos, and pathos persuasion modes, respectively. All participants, whether presented with persuasion articles or not, were then asked to decide how much money they were willing to donate to a charity, Clean Air Task Force. Following their donation decisions, participants were asked how much they felt about their donations along with demographic information.




As shown in Figure 1, our survey is divided into three sections: (i) questions concerning existing attitudes towards donations to climate charities and perceptions about the efficacy of climate charities; (ii) persuasion articles presented to seventy-one randomly selected participants, aiming to elicit donations through logos, pathos, and ethos; and (iii) post-donation questions about respondents' feelings on their donations and demographic characteristics. The survey was made on Qualtrics and shared through its generated link and QR code. The survey was distributed to the one hundred participants through mass email.

First, to gauge participants' attitudes towards climate change mitigation efforts, they were asked three questions that assess whether they support combating climate change and whether they have donated to climate charities in the past.[3] Answers to these questions were collected to ensure that whether a participant

[3] Specifically, participants were asked the following questions: I support policies and regulations that can reduce carbon emissions, even if it results in higher taxation from me; I make an effort to buy products that are environmentally friendly or sustainably produced; I actively participate in activities that aim to protect the environment; I have donated to environmental or climate-related causes in the past.

was presented with a persuasion article was not a function of their prior attitudes toward climate change mitigation.

Second, participants were asked whether they agreed with a statement concerning their perceptions of the efficacy of climate charity: "I think that donating to environmental causes is an effective way to combat climate change," using a five-point Likert scale, ranging from 'Strongly Disagree' to 'Strongly Agree.' Third, the one hundred participants were divided into four groups as depicted in Figure 1: one group of 29 participants was not shown any climate change-related articles and three groups were each presented with one of the three types of persuasion articles aiming to persuade participants via logos, ethos, and pathos, respectively. When assigning participants to different groups, we control their attitude toward fighting climate change so that we can focus on the effect of persuasion. For participants presented with persuasion articles, each article appeared on the screen for at least 20 seconds before the participants were provided the option to move to the next step to ensure that they had read the article carefully.

Since all donations went to *Clean Air Task Force*, a charity dedicated to fighting climate change, the three articles were written using factual information concerning climate change from the official websites of *Clean Air Task Force* and NASA. They were intended to persuade readers that (1) climate change is a serious problem, (2) the *Clean Air Task Force* is effective in fighting climate change, and (3) the donation of the reader will be valuable to the *Clean Air Task Force* in fighting climate change. The three articles are similar in terms of content and length, with the only difference being the rhetorical techniques, i.e., logos, pathos, and ethos, respectively, utilized to present the information.

Fourth, whether presented with persuasion articles or not, all survey participants were then asked to split the twenty-dollar reward they might receive from participating in this study between themselves and the charity, *Clean Air Task Force*. After submitting the donation amount, all participants were asked a post-donation question on how good they felt about themselves for the amount they donated. In addition, they were asked to provide answers to demographic questions including their residence location and gender.

Table 1 provides summary statistics for the survey. As shown in Table 1, there exists significant dispersion in respondents' donation amounts. The median donation amount is $10 while the interquartile range is $12.50. Interestingly, only a small portion of the survey respondents, ex-ante, believe that donating to a climate charity would be an effective way to combat climate change. 72% of survey respondents are female while 68% come from California.

**Table 1: Summary Statistics**
This table presents summary statistics of key variables. Donation Amount is the respondents' indicated donation amount in $. Perception is a discrete variable indicating a participant's perception of a charity's effectiveness. It follows a 5-point Likert scale, ranging from -2 to 2. *Persuasion* is equal to 1 if a respondent is shown a persuasion article and 0 otherwise. *Logos* is equal to 1 if a respondent is shown a persuasion article appealing to logos, and 0 otherwise. *Ethos* is equal to 1 if a respondent is shown a persuasion article appealing to ethos, and 0 otherwise. *Pathos* is equal to 1 if a respondent is shown a persuasion article appealing to pathos, and 0 otherwise. *FeelGood* is a discrete variable indicating how good a participant feels about their donation. It follows a 10-point Likert scale, ranging from 1 to 10. *Gender* is equal to 1 for female respondents, and 0 otherwise. *CA Residents* is equal to 1 for respondents who are residents of California, and 0 otherwise.

| | Mean | Stdev | P25 | Median | P75 |
|---|---|---|---|---|---|
| **Donation Amount** | 11.71 | 6.17 | 7.50 | 10.00 | 20.00 |
| **Perception** | 0.36 | 0.92 | 0.00 | 0.00 | 1.00 |
| **Persuasion** | 0.71 | 0.46 | 0.00 | 1.00 | 1.00 |
| **Logos** | 0.21 | 0.41 | 0.00 | 0.00 | 0.00 |
| **Ethos** | 0.24 | 0.43 | 0.00 | 0.00 | 0.00 |
| **Pathos** | 0.26 | 0.44 | 0.00 | 0.00 | 1.00 |

| | | | | | |
|---|---|---|---|---|---|
| **FeelGood** | 6.72 | 2.21 | 5.00 | 7.00 | 8.00 |
| **Gender** | 0.72 | 0.49 | 0.00 | 1.00 | 1.00 |
| **CA Residents** | 0.68 | 0.47 | 0.00 | 1.00 | 1.00 |

## 4. Empirical Findings

***The effects of perception on climate charity***

According to Bekkers and Wiepking (2011), perceived efficacy refers to the perception of donors that their contribution makes a difference. Positive perceptions reflect donors' confidence in charitable organizations' abilities to advocate the underlying cause and are expected to increase the likelihood of charitable contributions. We therefore examine survey responses to the question "I think that donating to environmental causes is an effective way to combat climate change" as it is most relevant to respondents' perception of the efficacy of climate charities.

Specifically, we run a regression of the dollar amount of a donation on the discreet variable, *Perception*, corresponding to survey responses to the question concerning their belief about the effectiveness of climate charitable activities in combating climate change. For ease of interpretation, we rescale participants' survey responses to -2 to 2 with 2 (-2) corresponding to 'Strongly Agree' ('Strongly Disagree'). To control for the effects of gender and residency on donation amount, we include two dummy variables, *Gender* and *CA Residents*, in the regression. *Gender* is equal to one if a respondent is a female, and 0 if otherwise. *CA Residents* is equal to one if a respondent is from California, and 0 if otherwise.

**Table 2: The Effect of Perception of Climate Charity**

This table regresses the dollar amount of donations on variables capturing respondents' perceptions about the efficacy of climate charity. *Perception* is a discrete variable corresponding to survey responses to the question concerning the respondent's belief about the effectiveness of climate charitable activities in combating climate change. It follows a 5-point Likert scale ranging from -2 to 2 with 2 (-2) corresponding to 'Strongly Agree' ('Strongly Disagree'). *Perception +* takes the value of 1 if the survey response is "Agree" or "Strongly Agree," and 0 otherwise. *Persuasion* is equal to 1 if a respondent is shown a persuasion article and 0 otherwise. *Gender* is equal to 1 for female respondents, and 0 otherwise. *CA Residents* is equal to 1 for respondents who are residents of California, and 0 otherwise. The number of observations and R-Square are reported at the bottom of the table. ***, ** and * indicate significance at 1%, 5%, and 10% levels, respectively.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| **Perception** | 1.2074* | | 1.2224* | |
| | (1.77) | | (1.78) | |
| **Perception +** | | 3.4432*** | | 3.4535*** |
| | | (2.86) | | (2.86) |
| **Persuasion** | | | 0.7470 | 0.7093 |
| | | | (0.54) | (0.53) |
| **Gender** | 0.4463 | 0.6865 | 0.5128 | 0.7526 |
| | (0.35) | (0.56) | (0.40) | (0.61) |
| **CA Residents** | -0.1702 | -0.3811 | -0.2643 | -0.4729 |
| | (-0.13) | (-0.30) | (-0.20) | (-0.36) |
| **Intercept** | 11.0650*** | 9.8515*** | 10.5450*** | 9.3580*** |
| | (7.88) | (6.73) | (6.18) | (5.37) |
| **N** | 100 | 100 | 100 | 100 |
| **R-square** | 0.0052 | 0.0536 | -0.0022 | 0.0464 |

Column 1 of Table 2 shows the result of this analysis. Consistent with our expectation, more positive perceptions about the effectiveness of climate charity in fighting climate change are associated with larger donations. Specifically, a one-notch increase in respondents' perception of climate charities in general leads to an increase of $1.20 in donation amount, which is economically significant considering the median donation amount of $10. In column 2, we replace perceived efficacy measured in a five-point Likert scale with a dummy variable indicating positive perceptions (i.e., "Agree" or "Strongly Agree"), *Perception +*. The result indicates an even stronger effect of perception in terms of both economic and statistical significance. In columns 3 and 4 of Table 2, we further control for the effect of being presented with a persuasion article. The coefficients of *Perception* and *Perception +* remain qualitative and quantitatively the same. This result validates our approach of randomizing the treatment of persuasion articles so that whether a participant is shown with a persuasion article or not is not correlated with their prior attitude towards climate charities.

***The effect of persuasion methods***

Since our survey participants have relatively homogeneous backgrounds in terms of age, education, and family wealth, we are endowed with a sample of participants that is suitable for studying the effects of behavioral factors such as persuasion methods. Dellavigna & Gentzkow (2010) define persuasion in economics as a message provided by one person intended to change the behavior of another, without using monetary incentives or outright coercion, i.e., manipulation. We therefore examine whether persuasion can influence donations to climate charities. If so, we further examine whether certain particular modes of persuasion are more effective than others, in the context of donations related to combating climate change.

Ex-ante, it is unclear whether prior findings on the effect of persuasion modes necessarily apply to climate change-related donations. One unique aspect of climate change is that it has always been a highly controversial issue. While some people are convinced by scientific evidence on the long-term effect of climate change, others brand the issue as a hoax that aims to promote certain industries. Therefore, persuasion tactics appealing to the emotions of the audience that are highly effective for soliciting donations related to medical research or animal welfare may not work well for climate charities. On the other hand, the effects of climate change are often more tangible to most people as many have more or less experienced extreme weather conditions or have heard related stories from friends or relatives. It is possible that persuasion backed with certain concrete facts would help the audience see the connection between their personal experience and climate change. We thus also try to contrast the effects of different persuasion methods on donations to climate charities.

Specifically, we present survey participants with articles that are designed to capture Aristotle's three modes of persuasion: ethos, pathos, and logos, respectively. Ethos refers to an appeal to the credibility and character of the speaker, who can use good morals and goodwill to persuade the audience to confidently accept his ideas as true. Pathos refers to an appeal to the emotions of the audience. By evoking emotions like pity or anger, the audience adopts a different 'state of mind' that encourages them to agree with the speaker. Logos refers to an appeal to the reason and logic contained within the message itself. By using concrete and rigorous reasoning, one can formulate a logical 'proof' of their argument, which therefore should convince the audience of the validity of the speaker's position. Alkhirbash (2016) describes these three modes of persuasion as indispensable to formulating a strong argument.

In Table 3, we analyze the effects of persuasion on donation amount. Similar to Table 2, we again control for the effects of gender differences and residency. *Persuasion* is a dummy variable indicating participants presented with any one of the three articles. The result indicates that although the coefficient of *Persuasion* is positive, it is not statistically significant. Prior studies find that the effect of appeals for donation improves with the attention of potential audiences. For example, Bennett and Kottasz (2000) survey study finds that donations in response to relief appeals aired on TV positively related to the amount of time potential donors spend watching TV. Given that most survey respondents are high school students with relatively short attention spans, it is important to account for the effect of attention. We therefore further zoom in on the subgroup of survey respondents who appeared to spend more time filling out the survey. In column 2, we interact *Persuasion* with a dummy variable, *Attention*, which indicates high attention level as proxied by above-median survey time (median time is 212 seconds). As expected, the effect of the interaction term is significantly positive at a 5% significance level. More interesting, it's highly economically significant as well. Specifically, relative to those respondents who were not presented with any persuasion article or spent little time on the survey, those

who read a persuasion article and spent a longer time going through the survey, on average, tended to donate by $6 more.

**Table 3: The Effect of Persuasion**
This table regresses the dollar amount of donations on the dummy variable indicating viewing of a persuasion article and its interaction term with a dummy variable indicating high attention. *Persuasion* is equal to 1 if a respondent is shown a persuasion article and 0 otherwise. *Attention* is equal to 1 if a respondent's survey time is above the sample median, and 0 otherwise. *Gender* is equal to 1 for female respondents, and 0 otherwise. *CA Residents* is equal to 1 for respondents who are residents of California, and 0 otherwise. The number of observations and R-Square are reported at the bottom of the table. ***, ** and * indicate significance at 1%, 5%, and 10% levels, respectively.

| | (1) | (2) |
|---|---|---|
| **Persuasion** | 0.6472 | -1.8903 |
| | (0.46) | (-1.04) |
| **Persuasion*Attention** | | 6.1276** |
| | | (2.04) |
| **Attention** | | -3.6510 |
| | | (-1.41) |
| **Gender** | 0.7695 | 0.1956 |
| | (0.60) | (0.15) |
| **CA Residents** | -0.4596 | -0.4125 |
| | (-0.34) | (-0.31) |
| **Intercept** | 11.0040*** | 12.4390*** |
| | (6.45) | (6.79) |
| **N** | 100 | 100 |
| **R-square** | -0.0249 | 0.0020 |

In Table 4, we separately examine the effect of each persuasion mode by splitting the *Persuasion* dummy into dummy variables indicating ethos, logos, and pathos persuasion tactics, respectively. Consistent with the result in column 1 of Table 2, neither of the three persuasion methods has a significant effect on donation amount across all respondents who were shown a persuasion article. In column 2 of the table, we separately interact *Ethos*, *Logos,* and *Pathos* with *Attention*. Compared to the results in column 2 of Table 3, the interaction term between *Logos* and *Attention* is most pronounced in terms of statistical and economic significance. This finding is in stark contrast to those of prior studies comparing the three modes of persuasion in other contexts (see, e.g. Wu et al., 2022 and Masnovi, 2013). Although many of these studies have provided supporting evidence for the general effect of persuasion on donation, they often point out pathos as the most effective persuasion method. As discussed (Passyn & Sujan, 2006), pathos evokes empathy and compassion, creating an intention to act. Emotions such as guilt, regret, and challenge trigger a sense of personal accountability, transforming intention into action. Besides differences in the underlying charitable causes, one potentially important reason behind our different findings is likely to be differences in respondent demographics. Since our survey respondents are mostly well-performing high school students meeting the admission criteria of the highly competitive UC Santa Barbara summer research program, they are likely to be more sensitive to factual, statistical information that helps them understand the severity of climate changes and their detrimental long-term effects. On the other hand, information appealing to their emotions could be less effective as they are likely to be already well aware of the issue of climate change. This new insight from our study suggests that the effectiveness of different persuasion methods is likely to depend on the characteristics of the audience.

**Table 4: The Effects of Different Persuasion Modes**
This table examines the effect of different persuasion modes on donation amounts. *Logos* is equal to 1 if a respondent is shown a persuasion article appealing to logos, and 0 otherwise. *Ethos* is equal to 1 if a respondent is shown a persuasion article appealing to ethos, and 0 otherwise. *Pathos* is equal to 1 if a respondent is shown a persuasion article appealing to pathos, and 0 otherwise. *Attention* is equal to 1 if a respondent's survey time is above the sample median, and 0 otherwise. *Gender* is equal to 1 for female respondents, and 0 otherwise. *CA Residents* is equal to 1 for respondents who are residents of California, and 0 otherwise. The number of observations and R-Square are reported at the bottom of the table. ***, ** and * indicate significance at 1%, 5%, and 10% levels, respectively.

| | (1) | (2) |
|---|---|---|
| **Logos*Attention** | | 8.1046** |
| | | (2.03) |
| **Ethos*Attention** | | 5.5525 |
| | | (1.53) |
| **Pathos*Attention** | | 4.6417 |
| | | (1.26) |
| **Logos** | 1.3167 | -2.9692 |
| | (0.72) | (-1.01) |
| **Ethos** | -0.8748 | -2.8859 |
| | (-0.51) | (-1.28) |
| **Pathos** | 1.5683 | -0.0758 |
| | (0.92) | (-0.03) |
| **Attention** | | -3.6394 |
| | | (-1.40) |
| **Gender** | 0.8156 | 0.3754 |
| | (0.64) | (0.28) |
| **CA Residents** | -0.5814 | -0.4164 |
| | (-0.43) | (-0.30) |
| **Intercept** | 11.0390*** | 12.2950*** |
| | (6.48) | (6.62) |
| **N** | 100 | 100 |
| **R-square** | -0.0225 | -0.0138 |

***The effects and determinants of positive feelings***
In the last part of the paper, we take advantage of our post-donation survey to study the effects and determinants of positive feelings towards one's climate change donation. We first examine whether there exists any association between donation amount and positive feelings about one's donation as revealed from the post-donation survey question, "On a scale of 0-10, how good do you feel about yourself for the amount you chose to donate?"

Prior studies find that a good mood in general may motivate giving. For example, Wunderink (2000) shows that donors self-report "feeling good" as a motive for donating to charities. Strahilevitz and Myers (1998) find that people are more likely to choose a charity donation over a discount when buying pleasurable things (e.g., ice cream) rather than purely functional (e.g., a refrigerator). We hypothesize that those participants who feel good about their donation ex-post tend to have a positive self-assessment of their action and are likely to have donated more. We, therefore, regress the dollar donation amount on the discrete variable *FeelGood*, which

captures respondents' answers to the post-donation question on a scale of 0-10. We again control for the effects of gender and residency of the respondents.

As expected, the result presented in column 1 of Table 5 shows that those respondents who feel good about their donations tend to be the ones who have donated larger amounts. This finding remains robust after we further control for the effects of respondents' perceptions on the efficacy of climate charity and the treatment of persuasion articles. On the other hand, we caution that the result in Table 5 does not necessarily indicate a causal effect of *FeelGood* on donation. It is possible that donations simply produce positive psychological experiences for the donors as giving may make them feel that they are behaving according to certain social norms and are socially agreeable.

**Table 5: The Effect of Feeling Good on Dollar Amount**
This table regresses the dollar amount of donations on the extent to which respondents feel good about their donation amount. *FeelGood* is a discrete variable indicating how good a participant feels about their donation. It follows a 10-point Likert scale, ranging from 1 to 10. *Perception* is a discrete variable corresponding to survey responses to the question concerning the respondent's belief about the effectiveness of climate charitable activities in combating climate change. It follows a 5-point Likert scale ranging from -2 to 2 with 2 (-2) corresponding to 'Strongly Agree' ('Strongly Disagree'). *Persuasion* is equal to 1 if a respondent is shown a persuasion article and 0 otherwise. *Gender* is equal to 1 for female respondents, and 0 otherwise. *CA Residents* is equal to 1 for respondents who are residents of California, and 0 otherwise. The number of observations and R-Square are reported at the bottom of the table. ***, ** and * indicate significance at 1%, 5%, and 10% levels, respectively.

| | (1) | (2) | (3) |
|---|---|---|---|
| **FeelGood** | 1.3143*** | 1.3124*** | 1.3077*** |
| | (5.00) | (5.07) | (5.02) |
| **Perception** | | 1.1958* | 1.2021* |
| | | (1.97) | (1.96) |
| **Persuasion** | | | 0.3152 |
| | | | (0.26) |
| **Gender** | 1.9696* | 1.7076 | 1.7312 |
| | (1.70) | (1.48) | (1.49) |
| **CA Residents** | 0.4675 | 0.6700 | 0.6273 |
| | (0.39) | (0.56) | (0.52) |
| **Intercept** | 1.1370 | 0.7704 | 0.5875 |
| | (0.47) | (0.75) | (0.81) |
| **N** | 100 | 100 | 100 |
| **R-square** | 0.1850 | 0.2090 | 0.2010 |

Lastly, we examine whether the three persuasion articles indeed serve the purpose of persuasion by making respondents feel good about their donation decisions, regardless of the specific donation amounts. We regress *FeelGood* on *Persuasion*, along with *Gender* and *CA Residents* in column 1 of Table 6. In column 2, we adopt a similar specification but replace *Persuasion* with *Ethos*, *Logos,* and *Pathos*. Interestingly, among all three types of persuasion articles, only the pathos article significantly affects whether respondents feel good about their donation decisions. As discussed in (Passyn and Sujan, 2006), pathos refers to an appeal to the emotions of the audience. By evoking emotions like pity or anger, the audience adopts a different 'state of mind' that encourages them to agree with the speaker and act accordingly. It is thus intuitive to find that our survey respondents feel good about their donations after viewing the pathos article. Table 6 also indicates that female respondents tend to feel good about their donations.

**Table 6: Factors Affecting Respondents' Satisfaction with Their Donation**
This table examines factors that determine how much respondents feel good about their donations. *FeelGood* is a discrete variable indicating how good a participant feels about their donation. It follows a 10-point Likert scale, ranging from 1 to 10. *Logos* is equal to 1 if a respondent is shown a persuasion article appealing to logos, and 0 otherwise. *Ethos* is equal to 1 if a respondent is shown a persuasion article appealing to ethos, and 0 otherwise. *Pathos* is equal to 1 if a respondent is shown a persuasion article appealing to pathos, and 0 otherwise. *Gender* is equal to 1 for female respondents, and 0 otherwise. *CA Residents* is equal to 1 for respondents who are residents of California, and 0 otherwise. The number of observations and R-Square are reported at the bottom of the table. ***, ** and * indicate significance at 1%, 5%, and 10% levels, respectively.

| | (1) | (2) |
|---|---|---|
| **Persuasion** | 0.3289 | |
| | (0.68) | |
| **Logos** | | 0.1239 |
| | | (0.20) |
| **Ethos** | | -0.3396 |
| | | (-0.58) |
| **Pathos** | | 1.1118* |
| | | (1.93) |
| **Gender** | -0.9284** | -0.9225** |
| | (-2.10) | (-2.13) |
| **CA Residents** | -0.6842 | -0.6802 |
| | (-1.46) | (-1.48) |
| **Intercept** | 7.6202*** | 7.6132*** |
| | (12.93) | (13.18) |
| **N** | 100 | 100 |
| **R-square** | 0.0428 | 0.0826 |

Our finding on the relation between *FeelGood* and donations suggests that climate charities could invoke measures that make people feel good about donations to elicit larger donation amounts. For example, small measures aiming to improve the mood of the audience such as upbeat music, public praising, encouraging statements, or personal phone calls from staff members could potentially lead to larger donations.

## 5. Conclusion

In this study, we examine the effects of behavioral factors on donations to climate charities. Unlike causes such as medical research or natural disaster relief, climate change mitigation relies heavily on charitable contributions due to the lack of long-term institutional funding sources. Since charitable contributions are purely voluntary, they tend to heavily depend on personal factors such as experience, wealth, belief, and psychological impacts. In particular, given that climate change is a relatively controversial issue, behavioral factors are likely to play an important role.

By surveying a group of participants with relatively homogeneous demographic characteristics, we examine how participants' perceptions about the effectiveness of climate charity, different persuasion modes, and the psychological benefit of giving affect their donations to climate charities. Our analyses discover that respondents' positive perceptions of climate change mitigation efforts significantly affect their donation amount. In addition, unlike prior studies that find pathos (i.e., appealing to one's emotions) to be the most effective persuasion mode, we find that among our group of survey respondents with relatively homogeneous demographic characteristics, logos that features factual information related to climate change turns out to be

the most effective persuasion mode when respondents pay more attention to the stimulants. Lastly, we find that respondents who feel good about their donations tend to be associated with larger donation amounts.

Although prior studies have examined various driving forces behind people's donations to charities and compared the effectiveness of different persuasion modes, our study highlights the role of behavior factors given that climate change is a relatively controversial issue and donations towards climate change mitigation thus depend critically on small donors whose donations are more affected by personal factors. Our study thus not only contributes to the behavioral economics literature but also adds to the burgeoning stream of literature examining factors influencing donor behaviors. Our findings on donor perception, persuasion tactics, and the psychological benefits of giving have important implications for climate change mitigation efforts that rely crucially on charitable contributions. By revealing the factors that best influence potential climate charity donors, we better inform the strategic design of effective fundraising messages utilized by climate charities.

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