



Published in final edited form as:

J Behav Exp Econ. 2019 October ; 82: . doi:10.1016/j.socec.2019.101462.

Empathic concern for children and the gender-donations gap

Jordan van Rijn^{a,c,*}, Esteban J. Quiñones^b, Bradford L. Barham^a

^aDepartment of Agricultural & Applied Economics, University of Wisconsin, Madison, United States

^bResearcher, International Division, Mathematica Policy Research, United States

^cThe Credit Union National Association, United States

Abstract

This study uses a dictator game with a charitable organization as the donation recipient to test whether empathic concern explains persistent gender differences in charitable giving. We first explore whether we can evoke empathic concern by varying the content of a real-world charitable appeal video that highlights children's stories of struggle with access to clean water. Then we examine whether the evoked feelings help explain gender differences in donations. Despite no gender differences in donation behavior in a baseline control group, we find that females donate 63% more than males in treatments that include the personal stories from children. These treatment videos increase self-reported feelings of empathic concern towards children among both males and females relative to the control; however, the empathic concern that results from the treatment videos increases average donations among females but not males. Causal mediation methods show that empathic concern explains 17% of the observed gender differences in giving. While the treatments evoke other emotions in addition to empathic concern, none of them explain observed gender differences in donations. Our study sheds light on the role of children's personal stories and empathic concern for children in explaining gender-donation gaps.

Keywords

Charitable behavior; Dictator games; Gender; Empathy; Inequality aversion; Guilt Appeal; Not-for-profit marketing; International development

1. Introduction

In both observational studies and incentivized experiments, women demonstrate more altruistic and socially oriented behavior relative to men (Andreoni & Vesterlund, 2001; Eckel & Grossman, 1998, 2008a; Engel, 2011; Visser & Roelofs, 2011; Willer, Wimer & Owens, 2015). Determining when and under what conditions such differences exist is crucial to modeling human behavior such as bargaining, household decision-making, and charitable giving. The latter area is particularly critical in the context of the U.S., where 70% of total

*Corresponding author. vanrijn@wisc.edu (J. van Rijn).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.socec.2019.101462.

U.S. private giving comes from individuals. In 2017 private giving by individuals totaled \$282 billion, over five times the budget for foreign aid and the highest total amount of any country in the world (Giving USA, 2017). In fact, even when adjusting for population size, the U.S. is commonly ranked among the top five most generous countries in the world (Charities Aid Foundation, 2017). However, non-profit organizations face the challenge of stimulating pro-social behavior and eliciting donations amidst an increasingly competitive landscape (Aldashev & Verdier, 2010).

Children are a common element of charitable appeals, especially among requests for donations to alleviate poverty and support international development projects. Yet, the role of children in evoking emotions that stimulate pro-social behavior is not well understood. How does the presence of children shape the feelings of potential donors? Do they evoke feelings of empathy that subsequently trigger donations? Given well-known gender differences in empathy—especially with respect to children—might empathic concern explain some of the gender-donations gap found in the literature? We explore these questions in an experiment that exogenously varies the extent to which a charitable appeal video centers on children’s stories. In particular, we randomize the degree to which a real-world charitable appeal video for a clean water project in rural Zambia features children by increasingly emphasizing and highlighting the children’s personal stories of hardship in a series of treatments.

Extant research provides substantial evidence that feelings of empathy are likely to evoke more charitable donations among females than among males (Dovidio, Piliavin, Schroeder & Penner, 2017; Willer et al., 2015). While empathy can be defined as “the ability to understand and share in the internal states of others,” it is a complex, multidimensional phenomenon. In the psychology literature, it includes a number of functional processes, such as emotion recognition, emotional contagion, and emotion priming,¹ as well as the ability to react to the internal states of others, and to distinguish between one’s own and others’ internal states (Christov-Moore et al., 2014). At least since Davis (1980), studies have found that women have higher levels of empathy relative to men (Gault & Sabini, 2000; Lennon & Eisenberg, 1987; Macaskill, Maltby & Day, 2002; Rueckert & Naybar, 2008; Schieman & Van Gundy, 2000; Toussaint & Webb, 2005). However, several recent studies argue that reported differences in empathy may arise from females’ greater willingness to report emotions on surveys, due to differences in social norms and expectations (Baez et al., 2017; Michalska, Kinzler & Decety, 2013).

Nonetheless, a recent review of the evidence from ethology, social psychology, economics, and neuroscience offers cross-disciplinary evidence of fundamental gender differences among various measures of empathy, with parallels in development and evolution (Christov-Moore et al., 2014). From birth, psychologists observe sex differences in social behaviors (Alexander & Wilcox, 2012), including potential precursors of empathic predisposition (McClure, 2000). Female neonates, compared to males, are more likely to cry and cry longer when hearing another infant cry (Hoffman, 1977; Sagi & Hoffman, 1976; Simner, 1971) and are more likely to orient to faces (Connellan, Baron-Cohen, Wheelwright, Batki &

¹For recent reviews, see Decety & Jackson, 2006; Singer, 2006; Walter, 2012.

Ahluwalia, 2000) and voices (Osofsky & O'Connell, 1977). As adults, females are faster and more accurate than males in recognizing facial expressions (e.g., Babchuk, Hames & Thompson, 1985; Hampson, van Anders & Mullin, 2006; Thayer & Johnson, 2000), and exhibit greater facial mimicry when viewing expressions (Dimberg & Lundquist, 1990; Lundqvist, 1995; Sonnby–Borgström, 2002). Females also appear faster (Alaerts, Nackaerts, Meyns, Swinnen & Wenderoth, 2011) and more accurate at recognizing bodily emotions (Sokolov, Krüger, Enck, Krägeloh-Mann & Pavlova, 2011), such as identifying actions as happier, sadder, angrier or no different from a preceding neutral action. Female adults also report experiencing emotion contagion more often than males in their daily lives (Kevrekidis, Skapinakis, Damigos & Mavreas, 2008). Finally, females exhibit more caring prosocial moral judgment (Jaffee & Hyde, 2000) and more sophisticated forms of pro-social moral reasoning (Eisenberg, Hofer, Sulik & Liew, 2014).

Davis (1983) developed the most commonly used measure of empathy—the Interpersonal Reactivity Index (IRI)—which has been used in over 800 studies. According to Davis (1983), emotional empathy consists of two emotional components. *Empathic concern* refers to feelings of sympathy and compassion for distressed others and is other-rather than self-oriented (Davis, 1994). It involves an almost automatic emotional process instigated by the immediate need of the other who is present—the ‘here-and-now’ bias (Bekkers & Ottoni-Wilhelm, 2016; Hoffman, 2008). *Personal distress*, on the other hand, is another emotional response that an observer may experience, though in the form of self-oriented feelings of personal anxiety, discomfort, and unease in tense interpersonal settings in response to unfortunate others (Verhaert & van den Poel, 2011). Batson (2011) reviews the relevant literature and concludes that empathic concern is the most important type of empathy in motivating prosocial behavior. Indeed, several studies report that empathic concern motivates prosocial behavior while personal distress is more predictive of avoidant behavioral patterns (Batson, Fultz & Schoenrade, 1987; Eisenberg & Eggum, 2009). For instance, in a recent experiment, researchers studied willingness to increase financial gain (up to £200) at the expense of applying a series of harmful electric shocks to other participants. Using the IRI to measure feelings of empathy, the authors find that empathic concern and not personal distress—motivates costly altruism (FeldmanHall, Dalglish, Evans & Mobbs, 2015).

Einolf (2008) uses the 2002 General Social Survey to study the relationship between empathic concern as measured by the IRI, and fourteen different prosocial behaviors. He finds that only in informal, spontaneous helping decisions directed towards non-relatives—such as giving money to a homeless person on the street, or allowing a stranger to cut ahead of you in line—was there a statistically significant relationship. Verhaert et al. (2011) use the IRI to examine the relationship between empathy in a real fundraising setting with a European charity and find that empathic concern positively affects the donation decision, but personal distress does not. Finally, Edele, Dziobek and Keller (2013) use a dictator game with 35 university students to determine whether empathy and disposition of justice sensitivity influence altruistic sharing. The authors find that empathic concern as measured by the IRI emerged as the strongest predictor for altruistic sharing.

A number of studies shed light on the role of empathic concern in explaining gender differences in prosocial behavior. For instance, Bekkers (2004) shows that a higher likelihood of giving by women is mediated fully by personality characteristics, including social value orientation, the ability to take another person's perspective, and empathic concern. Furthermore, Wiepking and Maas (2009) show that women donate lower amounts to charitable organizations only after accounting for empathic concern and social resources. More recently, Willer et al. (2015) conduct a survey-embedded experiment on a nationally representative sample of Americans. Respondents were surveyed for their chronic levels (or "stock") of empathic concern before being presented with one of several different messages regarding poverty and poverty relief organizations. The authors find that men report less hypothetical willingness to give money or volunteer time to a poverty relief organization, gaps that were mediated by men's lower reported feelings of empathic concern toward others. The authors were also able to eliminate this gender gap by increasing male donations via an "aligned self-interest" framing of poverty as an issue that influences *all* Americans; however, the increased male donations came at the expense of female pro-social motivations, as women reported lower hypothetical willingness to volunteer time for poverty relief in response to the framing. Finally, Kamas and Preston (2017) conduct a survey of personal views on various economic policy actions and use the IRI to measure empathy among 182 U.S. college students. The authors find that gender differences in policy views can be fully explained by differences in empathy; however, only the inclusion of empathic concern causes the gender effect on the policy score to become statistically insignificant.

We advance these previous studies by using incentivized experiments as opposed to hypothetical donations or volunteer time to measure charitable behavior. We also build on other research that assesses gender differences in existing *levels* of empathy by measuring both levels and *changes* in empathy in response to emotional charitable appeal videos. This allows us to determine whether gender differences in charitable giving are shaped by existing differences in general, persistent feelings of empathy, or whether the gender differences arise in response to emotional charitable appeals. In particular, our experiment focuses on the specific aspects of a charitable appeal that might evoke empathy (or other feelings), and then tests whether those feelings are associated with donation behavior. We also build on previous studies by focusing on the potential role of children in creating gender differences in both empathic concern and subsequent donation behavior. We focus on empathy towards children, as opposed to adults, because charitable appeals typically feature children in need. While this ensures the real-world policy relevance of this study, it also limits our ability to draw general conclusions about empathy or to differentiate between empathy towards children and adults.

We assess four charitable appeal treatments featuring villages in Zambia that successively expand the role of children in a real-world charitable appeal from simply being part of the imagery to sharing personal stories of hardship in their own words. We first edit the charitable appeal into a baseline control (or information counterfactual) video by removing personal stories of children and emotional music and imagery, and only include narration that focuses on providing information and statistics, such as how a lack of clean water affects children's well-being. We compare donations and self-reported emotions in the baseline control with three treatment videos. The first adds narration that emphasizes the

theme of inequality as faced by poor rural Zambian families and children with respect to lack of access to clean water. This treatment builds on findings in the pro-social behavior literature that emphasize the potential role of inequality aversion in shaping donation behavior, especially among females (Andreoni & Vesterlund, 2001; Eckel & Grossman, 1998). The second treatment includes children looking into the camera and sharing their personal stories of suffering in their own voice. A final treatment uses the actual real-world charitable appeal video and includes all of the elements of a traditional “guilt appeal”, including the aforementioned children’s stories as well as a climax with a white, male aid worker facilitating access to clean water, crescendoing music, and smiling children. The succession of the four videos involved in this experiment, which is constructed based on the existing literature and intuition, is designed to evoke intensifying feelings of empathic concern. Participants were randomly assigned to one of the four experimental groups, which allows us to compare donations and emotions between the groups, and identify which elements of the exogenously assigned charitable video evoke the most emotion and highest average donation.

Our main findings are as follows: First, no statistically significant gender differences occur in donations when participants experience an information-based control video or a treatment that highlights inequalities but not the children’s stories. Second, females donate significantly more than males in the two treatments that include personal stories from children; this effect is both large in statistical significance and magnitude, with females donating 63% more than males in these treatments. Third, the two treatments with personal stories of children increase empathic concern among both male and female participants, but only females act on it. Fourth, analyses using causal mediation (Hicks and Tingley, 2012) methods reveal that a substantive portion of the increase in female donations is attributable to feelings of empathic concern in response to children’s personal stories. As a sensitivity check, and to rule out alternative mechanisms, we also test 17 other explanatory variables commonly found in the literature—including inequality aversion, feelings of manipulation, guilt, volunteer time, inspiration and religiosity—and find that none of them help to explain the observed gender differences in donations. Fifth, we find no significant differences in donations between any of the respective treatments among males, suggesting that emotional guilt-appeal videos featuring children do little to stimulate donations among men relative to videos that mainly share information. Although males do experience more empathic concern when viewing charitable appeals featuring children, this concern neither increases nor decreases male donations, which differs from the findings of van Rijn, Barham and Sundaram-Stukel (2017).

Taken as a whole, this pattern of results indicates that when females experience empathy in response to the children’s stories they increase their donations relative to a control that does not include children’s stories; whereas, when males experience empathy they do not increase donations. Similar to other studies in the literature, we find no statistically significant gender differences in the probability of giving across any of the treatments. This suggests that emotional charitable appeals affect potential donors on the intensive margin but not the extensive margin.

The rest of our paper proceeds as follows: Section 2 describes our experimental design and reviews our main hypotheses. Section 3 shares the empirical results regarding donation behavior as a result of the treatments. Section 4 reviews the empirical results regarding the extent to which empathic concern was evoked in the treatments. Section 5 presents the econometric results used to explore whether empathic concern evoked by the treatments mediates gender differences in donation behavior. Finally, Section 6 summarizes our main results and considers implications of our findings.

2. Experimental design & hypotheses

This experiment uses a dictator game with a charitable organization as the recipient, similar to Eckel, Grossman and Johnston (2005), Etang, Fielding and Knowles (2012), and Fong and Luttmer (2011), among others. Dictator games are commonly used in experiments to measure charitable behavior. The “dictator” receives an allocation of funds or other assets and chooses how to distribute the allocation between him- or herself and a passive “recipient”. While traditional economic theory predicts that dictators should keep the entire allocation and share nothing with the recipient, hundreds of dictator games have demonstrated that dictators in fact donate, on average, 28.4% of their allocations (Engel, 2011). In our case, the “dictator” is a student at the University of Wisconsin-Madison (UW-Madison) and the “recipient” is a charitable organization. Across the treatments described below, the average donation ranges between 15% and 32% of the total endowment.

This experiment builds directly on van Rijn et al. (2017), who use a dictator game to test the relative effectiveness of similarity and guilt-based charitable appeal videos. Although not specifically designed to test for gender differences in donation behavior, that study uncovered average male donations in an information-only control that were over 60% higher than females, while these results were completely reversed in the guilt-appeal treatment where females donated over twice as much as males. The present study was designed to probe this substantial gender difference in donation behavior in the context of a charitable guilt appeal video with an emphasis on systematically exploring the role of empathic concern for children.

The experiment was designed primarily to increasingly evoke empathic concern across four experimental treatments, which are described in detail below. Subjects received \$15 for participation in the study that could subsequently be used as a donation to a charitable organization featured in the respective treatment. All donations were destined for World Vision—a large non-profit organization managing development projects in over 90 countries around the world, including 20 countries throughout Africa—and intended for water projects in Zambia. The destination and use of funds were identical across the treatments in order to control for reputation of the organization, costs and benefits, and efficacy, all of which are key determinants of giving (Bekkers & Wiepking, 2010). Furthermore, to control for potential previous exposure to World Vision, participants were asked about their prior familiarity with the organization and its work. No statistically significant differences were found in familiarity across the treatment groups for either males or females.²

²See Appendix for details.

We worked with the Behavioral Research Insights through Experiments (BRITE) Lab who recruited participants for the experiment from a broad pool of UW-Madison students. The BRITE Lab informed potential recruits that they would receive \$15 for participating in a 30-minute experiment, and that the funds were provided in the context of earned income in exchange for participation in the study. Framing the funds as “earned income” more closely mimics a real-world situation as previous research shows that experimental participants are less generous with earned money than with windfall gains (Cherry & Shogren, 2008; Cherry, Frykblom & Shogren, 2002). Participants receiving funds also helped with internal validity, as the received income—as opposed to stated income—has an actual value and opportunity cost, and is therefore less susceptible to observer or self-serving biases.

Upon entering the lab, students were randomly assigned to one of the four treatments. Based on a power calculation and sample sizes in similar experiments, the goal was 75 males and 75 females in each experimental group, for a total of 600 participants. The total sample of 573 participants ended up with slightly more females than males, including 77 – 78 females and 64 – 66 males in each treatment group. These sample sizes are similar to or larger than comparable experiments in the literature.³ Among the participants, the majority (86.1%) were undergraduates, with a mean age of 21 years. All treatment videos displayed similar imagery and were edited from a single World Vision charitable appeal video that includes all of the elements we consider to define a “guilt appeal”. These include story-telling (Merchant, Ford & Sargeant, 2010); a focus on differences (Brañas-Garza, 2006); presentation of an explicit need (Aguiar, Brañas-Garza & Miller, 2008; Brañas-Garza, 2006; Pelligra & Stanca, 2013); and, the stimulation of negative emotions that can be alleviated with a donation (Basil, Ridgway & Basil, 2008; Merchant et al., 2010).

Since it is a critical component of the experiment, we briefly describe the original World Vision video and include a link to it.⁴ The video opens with dramatic music and a young Zambian girl walking to fetch water for her family. She shares her dreams of going to school and becoming a doctor, after which a narrator speaks: “Every day more than 1600 children under the age of five die from diarrhea caused by unsafe drinking water.” Another child then appears and talks about how he misses school because he needs to fetch water—which is very dirty—and how Zambians suffer from skin and stomach diseases. Then a third child on crutches and with only one leg appears explaining how he lost his leg in an accident fetching water, and a fourth that shows the sores on her head and says: “Our lives would change so much if we had clean water.”

The viewer immediately understands that these children do not have the opportunity to go to school and follow their dreams, and suffer from maladies that are uncommon in most developed countries. Eventually, a white male World Vision employee appears holding a young Zambian by the hand and the narration continues: “World Vision has launched the most ambitious water program of its kind and is now reaching a new person with clean water every 30 s.” It invites the viewer to “join World Vision as they strive to change the lives of

³For example, Brañas-Garza (2006), Brañas-Garza (2007), Etang et al. (2012), and van Rijn et al. (2017).

⁴World Vision water: Meet Violet and the other children of the Zambia Project: <https://www.youtube.com/watch?v=bg1iLMnKD-4>. Links to the rest of the videos are available upon request.

children forever.” The music then lightens, becomes more uplifting, and crescendos as the viewer sees children smiling, dancing and running, and clean water shooting skywards from the ground following the completion of a new village well. The story provides a well-defined problem and need, an emphasis on the poor state of the Zambian children, and a clear path for the viewer to donate, help provide clean drinking water, and relieve potential feelings of guilt or shame.

Since it was not a focus of the study, the van Rijn et al. (2017) experiment—which featured the same World Vision charitable appeal video—did not isolate specific elements of the video to explore potential causes of the large gender effect they found. Instead, their study used three distinct videos and, therefore, the researchers were unable to control for a variety of potential factors that might influence donations, such as the age and gender of the protagonists in the video, music, narration, video quality, and the perceived potential impact of a donation. In order to control for those factors here, we use the same World Vision video in all four treatments; however, we selectively edit the narration and music in an attempt to increasingly evoke empathic concern.

To control for potential narrator effects, we also use a female narrator with an Anglophone accent (as opposed to Francophone or otherwise) for all of the edited narrations, as in the original World Vision video. The images are almost identical across the four treatments, but we add and remove some imagery to refine the treatments and smooth overall production quality. For example, when we do not use the children’s personal stories in the narration, we also remove the video of them talking directly to the camera (but still include other images of the children). Furthermore, except in the treatment that shows the original video, we remove the images of clean water shooting from a new well and the children rejoicing in the company of World Vision employees. However, all four videos rely on clear visual images of the recipients receiving clean water, and consequently all incorporate the positive identifiable victims effect documented in Genevsky, Västfjäll, Slovic and Knutson (2013). All four videos also use the same background music; however, they differ in the extent to which they include the musical crescendo that accompanies the smiling children and highlights the potential impact of a donation. In other words, only the final treatment that includes the entire World Vision video includes the music with its crescendo, while the other three include the same music but before the crescendo. Finally, the videos are of approximately the same length—about three minutes—varying by less than 30 s from each other in duration.⁵

Below is a brief description of each treatment:

- **Information Control:** Participants view the World Vision video but the narration only provides information and statistics. The music is emotion-neutral and excludes the crescendo. Stories of individual children as well as the climax of clean water shooting from the well are replaced by images of the communities

⁵In fact, the difference is much lower between the Information Control, Inequality Treatment, and Child-Story Treatment videos, which range from 3 minutes and 15 seconds to 3 minutes and 19 seconds and 3 minutes and 26 seconds (respectively). The largest difference across videos come from the Guilt-Appeal Treatment, which is 3 minutes and 45 seconds long due to the inclusion of the receipt of clean water, crescendoing music, and the rejoicing children.

and narrated content on the value of clean water. This video is edited to provide a less emotional presentation that simply provides information, but includes similar imagery and background music as the other treatments.

- **Inequality Treatment:** Participants view the Information Control video, but now the narration emphasizes inequalities between potential donors in the United States and Zambian children as potential donation recipients. Again, the music is emotion-neutral (i.e., excludes the crescendo), and images and stories of children and the climax of water shooting from the new well are not included.
- **Child-Story Treatment:** Participants view the World Vision video which now includes the images and audio of the children sharing their personal stories of struggle due to a lack of access to clean water. However, it does not include the climax with the pictures of World Vision organizers, crescendo of music, and images of clean water spraying from the well and children rejoicing.
- **Guilt-Appeal Treatment:** Participants view the original World Vision charitable appeal video which is similar to the Child-Story treatment but also includes the shooting geyser of clean water, crescendoing music, and the rejoicing children (i.e., the “climax”).

The Inequality Treatment tests whether focusing the narration on inequalities between Western donors and Zambian children evokes feelings of empathic concern, and whether it leads to gender differences in giving relative to the Information Control. The intuition for why participants exposed to the Inequality treatment may experience more empathic concern than those exposed to the Information Control is based on the emphasis of differences between Zambian children and the viewer. This focus on differences, which goes above and beyond the presentation of an explicit need in the Information Control, may also increase feelings of empathy associated with distinguishing between one’s own and others’ states of well-being and opportunity. In the Child-Story Treatment, we compare the effect of children’s personal stories relative to focusing on the provision of information (Information Control) or on inequality (Inequality Treatment). Participants exposed to the Child-Story treatment may experience higher levels of empathy due to emotional priming, recognition and contagion that are embedded in the personal stories of the children.

Finally, the Guilt-Appeal treatment adds to the Child-Story treatment by including the final “climax” of the appeal and a jubilant scene where villagers celebrate access to clean water. It explores whether it is in fact the full traditional guilt-appeal that most evokes feelings of empathic concern and/or generates donations, relative to the children’s personal stories, narration focused on inequality, or mere provision of statistical information. Participants exposed to the Guilt-Appeal may experience higher levels of empathic concern due to the stimulation of negative emotions that can be alleviated with a donation that is explicitly demonstrated to address the aforementioned need and bring joy to communities in need, in addition to the exposure to children’s personal stories of the children or other elements included in the previous videos.

Across the treatments, we attempt to isolate the specific components of a charitable appeal that evoke empathic concern, and potentially lead to significant differences in gender giving.

However, the Inequality treatment stands out as being distinct from the Child-Story and Guilt-Appeal treatments because it emphasizes inequality aversion and does not include any scenes where children speak directly to the audience. On the other hand, the Child-Story and Guilt-Appeal treatments are similar in their emphasis on the use of child stories to elicit empathic concern.

Following the charitable appeal video, and the donation request, participants completed a survey that included questions used to measure feelings of empathic concern they might have experienced when watching the video. Specifically, participants were asked to what extent they agreed with a variety of statements.⁶ The six statements used were similar to those used in the IRI but were edited or reframed to focus on reactions to the video. Each statement utilized an index ranging from -2 to +2 to indicate the degree of empathic concern felt in response to each treatment video. Some of these statements were created by the researchers as the IRI does not specifically measure emotions such as inequality aversion or manipulation (van Rijn et al., 2017). A similar approach was used to measure inequality aversion and feelings of manipulation. As in van Rijn et al. (2017), we also use self-reported survey responses to measure the aforementioned emotions and a range of other emotions that the literature also emphasizes as important determinants of donation behavior, such as guilt, happiness and inspiration. Additional survey questions measured volunteer time, religiosity, perceptions of video quality, previous familiarity with World Vision, donations outside of the lab, time spent abroad, and the extent to which participants follow international news. Finally, participants were asked five basic questions about the videos they had watched in order to allow control variables to be constructed for participants that may have rushed through the experiment without actually watching or paying attention to the video.

We offer four hypotheses based on the above literature review, which are explained further below. The “Behavioral Hypothesis” is our main prediction on donation behavior across the experimental groups and between genders. The “Design Hypotheses” examine whether the treatments evoked the theorized emotions, and whether the experienced emotions differ by gender in the expected direction. Finally, the “Motivations Hypothesis” link emotions with donation behavior, and tests whether the emotions experienced explain observed gender differences in donations.

Behavioral Hypothesis:

- BH1.** Female participants will donate more on average than males in the Inequality, Child-Story and Guilt-Appeal treatments, with the greatest difference occurring in the Guilt-Appeal Treatment.

Design Hypotheses:

- DH1.** Females will feel more empathic concern relative to males in all treatments.

⁶See Appendix.

DH2. Males and females will feel more empathic concern in the Inequality, Child-Story and Guilt-Appeal treatments relative to the Information Control, but the increase will be greater for females.

Motivations Hypothesis:

MH1. Feelings of empathic concern that result from the treatments will increase donations among females but not males.

Our justification for the individual hypotheses follow: **BHI** is based on van Rijn et al. (2017) and other studies that find males to be less moved by emotional charitable appeals. While many studies show that females donate more than males on average, van Rijn et al. (2017) find that under a neutral, information-based charitable appeal there are no statistically significant gender differences in average giving. Other recent dictator game experiments similarly find no statistically significant gender differences in giving when the donation request lacks a strong emotional appeal (e.g., Cadsby, Servátka & Song, 2010). The three (non-control) treatments of this experiment include significantly more potential to generate emotional responses, especially for women. This is based on an array of biological, psychological, and social differences that were summarized in the introductory literature review. Thus, while we expect no gender differences in giving in the baseline Information Control, we do expect significant gender differences in the other treatments, especially the latter two that feature children's stories of the suffering due to a lack of accessible, clean water.

DHI and **DH2** are based on prior research that shows that females tend to feel more empathic concern and inequality aversion relative to males (e.g., Andreoni & Vesterlund, 2001; Eckel & Grossman, 1998; van Rijn et al., 2017), and that using children's stories to evoke empathic concern will be effective—especially for females—for an array of reasons best summarized in Christov-Moore et al. (2014). Finally, **MHI** represents the main contribution of our study and explicitly links the emotional pathway (“mechanism”) generated by the respective treatment with donation behavior. It builds explicitly on previous research that explores how gender differences in empathy and empathic concern affect donation behavior (e.g., Willer et al., 2015). To be explicitly clear, the aforementioned hypotheses and the structure of our experiment are based on major findings in the extant literature and our intuition with respect to the design of effective donation schemes in the context of gender differentiated charitable giving.

In keeping with the structure of the experiment, our hypotheses primarily test for gender differences in emotional responses and donation behavior associated with randomized exposure to the Inequality, Child-Story and the Guilt-Appeal treatments relative to the Information-Only control. However, similarity in the content of the Child-Story and Guilt-Appeal treatments (i.e., the exact same children's stories of suffering) provides an *ex ante* justification to assess the aforementioned hypotheses with a pooled sample that combines the observations in the Child-Story and Guilt-Appeal treatments, and compare them to the Information-Only control. Pooling these treatments allows us to tease out whether emotional responses and donation behavior are driven by the children's stories alone, or the children's stories in combination with the jubilant climax. It also offers improved statistical power

given the increase in sample size. In the interests of brevity, we restrict use of the pooled Child-Story + Guilt-Appeal sample to our regression analyses, where degrees of freedom are more constrained.

3. Behavioral outcomes

As shown in Table 1 females donate more than males in all four experimental groups, but simple t-tests of means reveal no statistically significant differences between male and female donations in the Information Control or the Inequality Treatment. Females do, however, donate significantly more than men in both Child-Story and Guilt-Appeal treatments. These differences are both large in statistical significance (95 percent level) and magnitude: females donate 63% more than males in the Child-Story and Guilt-Appeal Treatments. Although this gap is smaller than in the van Rijn et al. (2017) study, it demonstrates a large and statistically significant gender difference in giving based on children stories and a guilt-appeal context. It also validates the experimental design in generating a gender-donations gap in two of the three treatments, without evoking a similar gender gap in the Information Control. Finally, the results also highlight the fact that the gender differences in giving appear once the children's personal stories enter in the Child-Story Treatment, and not at other moments, such as when highlighting inequalities (Inequality Treatment) or only after including the "climax" (Guilt-Appeal Treatment).

When we compare donations between experimental groups *within* males and females (Tables 2 and 3, respectively), for males we find no statistically significant differences in donations between any of the experimental groups. We do find significant differences for females between groups, as they donate significantly more in the Child-Story and Guilt-Appeal treatments relative to the Information Control and Inequality treatments. These differences are statistically significant at the 95% confidence level and large in magnitude, representing increases of 70% and 92% in the Child-Story and Guilt-Appeal treatments, respectively, relative to the baseline Information Control. Therefore, the Child-Story and Guilt-Appeal treatments have a positive and statistically significant effect on female donations, but the Inequality treatment does not. Moreover, we note no significant differences in female donations between the Child-Story and Guilt-Appeal treatment.

Because our experiment is randomized,⁷ we are confident that the simple t-tests of means are identifying significant gender differences in charitable giving. Nonetheless, we also perform standard linear regressions separately by gender to isolate the effects of the experiment for males and females. In these regressions, we control for potential confounding factors including parent's education, previous familiarity with World Vision, place of birth (foreign or U.S. born), and the extent to which participants regularly follow international news. We also include dummy variables for whether a participant is non-white and non-heterosexual. Finally, we include expected student loan debt upon graduation and time spent outside the U.S., since we find statistically significant gender differences in these variables.⁸

⁷See Appendix for randomization check. In addition to t-tests of equality of means between treatments, we also perform Kruskal–Wallis tests for differences across treatments and across genders. The results are generally consistent with the t-tests—only 2 of 20 tests have p-values that are statistically significant—and are omitted for concision but available upon request.

The main regression results are shown both with and without the control variables in Table 4 (regressions (1) to (4)). Our outcome of interest is donation amount, which ranges from \$0 to \$15. These regressions are estimated via ordinary least squares in the interests of simplicity and interpretation; however, the findings are robust to specifying the regressions as non-linear (i.e., tobit models). The baseline is the Information Control, and standard errors are adjusted to be robust to heteroscedasticity. Similar to the t-tests of means, the regressions show a statistically significant positive influence of the Child-Story and Guilt-Appeal treatments on average female donations. Females donate roughly \$1.53 to \$1.72 more in the Child-Story Treatment relative to the Information Control, and \$2.27 to \$2.34 more in the Guilt-Appeal Treatment. These results are similar with and without the control variables. For males, although the coefficients are consistently positive, none of the treatments have a statistically significant effect on average donations.

In regressions (5) to (8) we combine the Child Story and Guilt Appeal treatments and include indicator variables for Inequality, Guilt Appeal and the combined Child Story and Guilt Appeal treatments. This econometric specification allows us to directly test whether the “climax” included in the Guilt Appeal generates any additional donations, on average, beyond the increase associated with the children’s stories that are common to the Child-Story and Guilt-Appeal treatments. The separate Guilt Appeal treatment indicator is not statistically significant, while the coefficient for the pooled Child + Guilt is positive and statistically significant for females. A similar comparison of separate versus pooled treatments for males reveals no significant treatment effects in either. Overall, these results show that it is the children’s testimonies in the Child Story and Guilt Appeal treatments—and not the final climax in the Guilt Appeal treatment—that induce the increase in female donations.

Because the separate regressions do not allow for a direct comparison of the relative changes in donation behavior between males and females, we also estimate pooled regressions in which we interact each treatment with an indicator variable for whether a participant is female. This framework is similar to a difference-in-difference (DID) approach and estimates the variation in donations between the respective treatments and the Information Control for females relative to males. In Table 5, regression (1) presents the estimates without controls, and (2) includes the control variables. There are no statistically significant coefficients in the first two columns beyond the constant. However, the *Guilt*Female* and *Child*Female* interactions approach statistical significance at the 85–90 percent levels. In combination with the results in Table 1, we interpret this as suggestive evidence of gender-differentiated charitable giving.

Following the approach described above, we pool the Child Story and Guilt Appeal samples in columns (3) and (4) to exploit the similarity in these treatments. Regressions (3) and (4) demonstrate that when we combine the Child-Story and Guilt-Appeal treatments—and compare the combined effect relative to the Information Control—we find a statistically significant and positive effect on females relative to males (95 percent confidence level). The

⁸Inclusion of additional controls, such as student major or a measure of the attentiveness to each video, amongst others, does not change these results. As a result, these supplementary controls are not included in final specifications.

coefficient suggests that female participants who experience the Child-Story or Guilt-Appeal treatments donate on average \$1.45 to \$1.49 more than males, relative to their average donations in the Information Control. As above, this is an increase of approximately 62% to 63% over the average donations of \$2.35, suggesting a powerful effect on female donation behavior when charitable appeals include children's personal stories. Indeed, this factor may very well drive the gender differences in donations in both van Rijn et al. (2017) and this experiment. These findings provide strong evidence of gender-differentiated levels of charitable giving associated with children's stories. However, as is commonly found in the literature, we find no statistically significant effect of the treatments or gender on the probability of donating (results omitted but available upon request). This result highlights the importance of donation behavior at the intensive margin but not on the extensive margin.

Our findings in this section support Behavioral Hypothesis 1: females donate more in the Child-Story and Guilt-Appeal treatments relative to the Information Control; however, females do not donate more in the Inequality Treatment. Interestingly, the largest gender difference in average donations is observed at the introduction of the Child-Story treatment—as opposed to the Guilt-Appeal—where females end up donating 63% more than males. Furthermore, although females donate significantly more in the Child-Story and Guilt-Appeal treatments relative to the Information Control and Inequality Treatment, there are no significant differences in female donations between these two treatment groups, suggesting no additional effect on female donations of adding the emotional climax in the final sequence of the video, such as the imagery and sounds of the children receiving clean water. Again, we find no statistically significant differences in male donations across any of the four experimental groups, regardless of whether we pool the final two similar treatments.

4. Design outcomes

The behavioral outcomes confirm significant gender differences in giving in the Child-Story and Guilt-Appeal treatments. This section explores whether the treatments evoke the hypothesized feelings of empathic concern. As discussed above, the survey included 6 questions based on the Interpersonal Reactivity Index (IRI) to measure feelings of empathic concern, and the original IRI statements were modified to measure empathic concern in response to the treatment videos as opposed to general feelings of empathy. For example, the IRI statement “I am often quite touched by things that I see happen” is changed to: “I was really touched by the situation of the children, and their lack of access to clean water.” Each question offered a five-point scale, that is normalized so that zero is neutral, with a positive number indicates greater feelings of empathic concern, and a negative number indicating less empathic concern. The IRI index measure is a simple average of each participant's responses to the six questions. A similar approach is used to measure feelings of inequality aversion and manipulation and other emotional responses. Empirical results for those variables are presented in the Appendix.

Table 6 compares the average empathic concern index measure for males and females under each treatment. In all treatments, females report higher average feelings of empathic concern relative to males—these differences are statistically significant in each treatment except for the Guilt Appeal. We refer to these treatment levels as the “stock” of empathic concern.

These stock measures do not indicate whether the respective treatments evoked feelings of empathic concern relative to the Information Control—i.e., the *change* in empathic concern—and whether there are gender differences in these changes. However, they do confirm DH1, and are consistent with previous research on charitable appeals, in finding that females report greater feelings of empathic concern relative to males.

In Tables 7 and 8, we compare the differences in empathic concern across the treatments for males and females, respectively, in pursuit of whether the treatments evoke greater feelings of empathic concern relative to the Information Control. Table 7 shows that males felt, on average, more empathic concern in the Guilt-Appeal treatment relative to the Information Control and Inequality treatments. Moreover, the increase in their measure was somewhat larger than that experienced by females (which is not consistent with the latter part of DH2). However, as shown in Table 8, females experienced more empathic concern in the Child-Story Treatment relative to the Information Control and the Inequality treatments. Similar to the approach above with the Behavioral Hypotheses, we also perform regression analyses both with and without controls, and capture the same basic design outcomes (results omitted for concision but available upon request).

Overall, we confirm that females experience greater empathic concern levels relative to males in the Control, Inequality and Child-Story treatments, but not in the Guilt-Appeal Treatment (modest support for DH1). We also find that females felt more empathic concern in the Child-Story Treatment relative to Information Control and Inequality Treatment, but not in the Guilt-Appeal Treatment (weak support for first part of DH2). However, as males experience a slightly greater increase than females in their level of empathic concern in the Guilt-Appeal treatment relative to the Information Control treatment, the second part of DH2 is not confirmed.

These results point to several conclusions: The Child-Story Treatment appears to be effective in evoking empathic concern among females, but not males; whereas, the Guilt Appeal is effective at evoking empathic concern among males, but no additional empathic concern among females. This finding arguably underscores the fundamental value of children's stories to generating empathic concern to both genders. However, for females, the additional jubilant celebration evoked by the guilt appeal's climax did not lead to additional donations relative to simply sharing children's stories. We now turn to the analysis of the Motivations Hypotheses to determine whether the evoked emotion of empathetic concern helps to explain the observed gender differences in donation behavior.

5. Motivations for donating

This section examines whether the feelings of empathy that result from the treatments significantly increase average donations for females relative to males and how much of the gender difference in giving can be explained by empathic concern. We first present the results from a naïve regression strategy that simply regresses donation amount on a female indicator with potential mediating variables. Then, we deploy causal mediation techniques that attempt to identify direct and indirect effects of the treatment on emotional pathways,

with a focus on empathy, and whether the evoked emotions indeed contribute to the total treatment effect on donation behavior.

Mediation analysis approaches illustrate the total effect of predictors, decomposed into direct and mediated effects (Fairchild & MacKinnon, 2009), and allow for an explicit test of the motivation hypothesis that empathic concern is an important mechanism linking the charitable appeals to donation behavior. Fig. 1 illustrates the basic idea of mediation, where X is our treatment and Y represents the donation amount. The direct path, c , captures the total treatment effect of X on Y , while c' is the direct effect of X on Y that remains once the analysis controls for the indirect effect of the mechanism, M . In our case, M , refers to (self-reported) empathic concern. If c is statistically significant and c' is not—and the indirect effect is also statistically significant—then the analysis suggests that the indirect effect accounts fully for the direct effect, or in other words that the treatment is fully mediated by the empathic concern pathway M .

We use causal mediation methods to identify the effect of empathic concern on donation outcomes, utilizing the estimation strategy demonstrated by Hicks and Tingley (2012) and Imai, Keele, Tingley and Yamamoto (2011).⁹ Their approach initially fits separate models for the observed outcome and mediator variables as depicted below in Eqs. (1) and (2). In these equations, T is the treatment that individual i experiences, M is the empathic concern mediator, X is a vector of other exogenous variables, and Y is the outcome of interest (donation amount). The next step simulates model parameters from their sampling distribution. The third step involves repeating the following three simulations for each draw of the model's parameters: the potential values of the mediator, the potential outcomes given the simulated values of the mediator, and the quantities of interest (i.e., the average causal mediation effect of the average direct effect). The final step is to compute summary statistics for the decomposed direct and indirect effects.

$$M_i = \alpha_2 + \beta_2 T_i + \zeta_2 X_i + \varepsilon_{i2} \quad (1)$$

$$Y_i = \alpha_3 + \beta_3 T_i + \gamma M_i + \zeta_3 X_i + \varepsilon_{i3} \quad (2)$$

We present the causal mediation results immediately after the naïve regression results, because they are more directly comparable. The causal mediation analysis relies on the identifying assumption of sequential ignorability. This implies that (i) treatment assignment is independent of potential outcomes and mediators (commonly known as unconfoundedness or exogeneity) given the set of observed control variables; and (ii) given observed treatment and pre-treatment variables, the observed mediator is ignorable. In our experiment, these conditions are satisfied as treatment assignment is random by construction and other covariates are determined pre-treatment.

⁹Amongst others, these methods build on the contributions of Robins and Greenland (1992), King, Tomz, and Wittenberg (2000), Pearl (2001), Imai, Keele, and Tingley (2010), and Imai, Keele, and Yamamoto (2010).

The naïve regression results are shown in Table 9, with column (1) acting as a baseline that includes a female indicator variable as the sole independent variable. Then we add empathic concern as an additional explanatory variable in column (2). As expected, feelings of empathic concern are statistically significant and positively related to donations. Regression (1) shows that, on average, females donate \$1.00 more than males. However, when we add in empathic concern as an additional covariate, the coefficient for female is no longer statistically significant, and the size of the gender coefficient falls nearly in half. Thus, the effect of gender on donations is significantly reduced when empathic concern is added as an additional explanatory variable. This suggests that there may be a differential effect of empathic concern on donation behavior for females relative to males. In other words, empathic concern may explain a relatively substantial portion of the gender difference in giving, but this exercise does not help us to distinguish whether the difference is driven by more empathic concern or more responsiveness to a given level of empathic concern.

Table 9b (Appendix) explores the extent to which the inclusion of each of 17 additional potential explanatory variables influence the gender coefficient. We note that from the baseline regression, the coefficient on female varies very little with the inclusion of additional covariates. In fact, the smallest the coefficient becomes is 0.610 when including inequality aversion as an additional explanatory variable, which is still larger in magnitude than the 0.524 coefficient when including empathic concern. The R-squared is also higher when including empathic concern than it is in any other regression. Besides inequality aversion, all 16 of the other potential explanatory and control variables have little effect on the magnitude or statistical significance of the female coefficient.

Next, we consider the mediation analysis results displayed in Table 10 for females. Recall that male donations do not change substantially with any of the treatments, and not surprisingly we do not find evidence of an emotional pathway that mediates male donations in a parallel mediation analysis.¹⁰ While the results found below focus on the role of empathic concern in mediating donation behavior, we also conduct this same analysis for other potential explanatory variables from Table 9b—such as inequality aversion, manipulation and inspiration—and none of the alternatives are statistically significant.¹¹

Table 10 reports the effects of increased empathic concern on the average causal mediation effect, the direct effect of the treatment, and the percent of the total effect for females. While the largest percent of total treatment effect mediated by empathic concern occurs in the Child-Story treatment (24%), it is not statistically significant. However, the proportion of the total effect mediated by empathic concern is statistically significant in the Child-Story + Guilt-Appeal treatments and the Guilt Appeal alone. In these two, increases in empathic concern mediate 17% and 9% of the total treatment effect, respectively. While nontrivial, this is not a large proportion of the overall gender difference. When combined with the observation from Tables 7 and 8 that show that males and females both experience higher empathic concern in the Child Story and Guilt Appeal treatments, the mediation analysis supports the conclusion that it is female responsiveness to empathic concern that helps

¹⁰Results for males are available in the Appendix.

¹¹Results omitted for concision.

explain the gender difference in donation behavior. Although males also experience empathic concern as a result of these treatments, they do not increase their donations as a result.

The sum of the evidence in this and the preceding sections indicates that while females and males experience increased empathic concern across the experimental treatments, empathic concern evoked by child storytelling stands out as having the largest positive and statistically significant impact on donation behavior (MH1), but only among females. These results help explain the underlying gender difference in donation behavior across the charitable appeals and highlight the salience of empathic concern evoked by children's stories relative to the alternatives tested in our experimental framework.

6. Discussion

Using a dictator game experimental design with a charitable organization as the donation recipient, this study attempts to explain gender differences in giving by exogenously varying the degree to which children's personal stories of hardship are included in a real-world guilt-appeal charitable video, with a focus on the influence of the empathic concern pathways. The main finding is that treatments that feature children sharing their personal struggles of hardship significantly increase female donations but have no statistically significant effect on male donations. More specifically, we find no significant gender differences in donations in the baseline control group and the Inequality Treatment, but females donate 63% more than males in treatments that explicitly involve children's personal stories. These results confirm previous studies in the literature that find significant gender differences in donation behavior (Andreoni & Vesterlund, 2001; Eckel & Grossman, 1998, 2008a; Engel, 2011; van Rijn et al., 2017; Visser & Roelofs, 2011). However, the results also contribute to this literature by emphasizing the role of children's stories in creating large gender differences in average donations. More explicitly, in treatments that do not emphasize children we find no gender differences in giving, but in treatments that highlight children's personal stories of hardship, there are statistically significant and large gender differences in average donations. Future research should be mindful of the presence of children when investigating gender differences in charitable giving.

An additional contribution of our study lies in our attempt to explain the observed gender difference in donations associated with feelings of empathic concern. Using causal mediation techniques, we find that empathic concern towards children explains 17% (and potentially about a quarter) of the observed gender difference. This finding confirms the importance of empathic concern in explaining gender differences in giving (e.g., Bekkers, 2004; Wiepking & Maas, 2009; Willer et al., 2015), and improves on previous studies by exogenously linking empathic concern to variation in children's personal stories in an experimental setting. Nonetheless, these results leave the majority of the observed gender difference unexplained. This is true even after considering 17 other explanatory variables commonly found in the literature, including inequality aversion, manipulation, guilt, sadness, volunteer time and religiosity. While our research highlights the importance of children in eliciting females' donations and the important role that associated empathic concern plays, other factors that may influence gender differences in charitable giving

remain unidentified. Future research could seek to better understand other emotional pathways that drive females to respond more to charitable appeals featuring children relative to males and whether this is also true for appeals that feature adults instead of children.

Another key avenue of future research could be to explore why empathic concern evoked by charitable appeal videos increased female donations, while increases in empathic concern and inequality aversion evoked among males did not affect their donations. The literature regarding men's motivations for charitable giving is relatively sparse. However, several studies show that men are more sensitive to the value the donation amount has for recipients relative to women (Andreoni & Vesterlund, 2001; Andreoni, Brown & Rischall, 2003). Future research thus might explore the separate (or added) value of providing more information related to the impact and efficiency of donations as a substitute (or complement) to emotional guilt appeals that feature children. Importantly, in this experiment—and contrary to van Rijn et al. (2017)—feelings of manipulation that resulted from the charitable appeal videos did not have a negative effect on male donations. This, in turn, suggests that there is no inherently negative effect on male donations from charitable appeals that evoke emotions—such as donor fatigue or a “boomerang effect”—as some authors propose (Brennan et al., 2014; Chouliaraki, 2010; Cotte, Coulter & Moore, 2005; Coulter & Pinto, 1995; Hudson, Van Heerde-Hudson, Dasandi & Gaines, 2016).

Motivations for giving are complex and there may be various mechanisms that lead to gender differences in giving. For example, in a nationally representative survey, Willer et al. (2015) find that while men are generally less motivated by empathy, framing poverty as an issue that negatively affects *all* Americans increased men's hypothetical willingness to donate to the cause, and eliminated the gender gap. However, this “aligned self-interest” framing negatively affected pro-social motivations for females, as women reported lower willingness to volunteer time for poverty relief after being exposed to the self-interested framing. Therefore, discovering the proper framing of charitable appeals that motivates both female and male donations—without increasing one gender's donations at the expense of the other—may not be an easy task. Yet, given the importance of private charitable giving for poverty relief and humanitarian causes in the US, it is a laudable goal that researchers and policymakers should continue to strive for).

Acknowledgements

The authors would like to express our gratitude to the BRITE Lab management team for its financial and logistical support for this research. We thank the Graduate School of the University of Wisconsin for its financial backing. This research was also supported by training grant T32 HD007014 and core grant P2C HD047873, awarded to the Center for Demography and Ecology at the University of Wisconsin by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, as well as the University of Wisconsin-Madison Science and Medicine Graduate Research Scholars Program. Laura Schechter, Justin Sydnor, and Brian Mayhew were generous in their feedback and guidance in the research design and analysis efforts. Kathryn Carroll, BRITE Lab manager was patient, flexible, and creative as we pushed recruitment methods to obtain their largest experiment sample size to date. Rebekah Dix, Matt Eggebean, Junhong Liang, and Michael Warren provided valuable assistance in the laboratory, and of course we thank the students who participated in the experiment. We are also grateful to Eric Dieckman for his help with editing the videos and to Nandipa Sipengane for her narration. Finally, we thank participants at the University of Wisconsin Development Economics and Household Finance seminars for their helpful comments and suggestions on earlier drafts of the paper.

Appendix

Tables A1a–A1c and Tables A2a–A2c.

Table A1a

Treatment 2 randomization checks by sex (*T*-tests).

<i>Treatment 2 vs Control (Males)</i>					
Variables	Mean T2	Obs. T2	Mean Con	Obs. Con	P-value
<i>Age</i>	20.77	66	21.41	66	0.188
<i>Foreign born</i>	0.818	66	0.803	66	0.824
<i>Education Level</i>	1.682	66	1.985	66	0.455
<i>Student Loan Debt</i>	\$13,854	65	\$16,692	65	0.484
<i>International News</i>	3.879	66	3.909	66	0.868
<i>Religious Attendance</i>	0.848	66	0.909	66	0.250
<i>Time Outside United States</i>	3.242	66	3.091	66	0.466
<i>Student Club Participation</i>	1.591	66	1.682	66	0.227
<i>Familiar with World Vision</i>	0.242	66	0.303	66	0.595
<i>Monthly Volunteer Hours</i>	4.015	66	4.045	66	0.983
<i>Treatment 2 vs Control (Females)</i>					
Variables	Mean T2	Obs. T2	Mean Con	Obs. Con	P-value
<i>Age</i>	21.17	78	20.82	78	0.322
<i>Foreign born</i>	0.744	78	0.833	78	0.170
<i>Education Level</i>	2.256	78	2.013	78	0.687
<i>Student Loan Debt</i>	\$20,346	68	\$19,723	74	0.910
<i>International News</i>	3.628	78	3.308	78	0.172
<i>Religious Attendance</i>	1.321	78	1.234	77	0.800
<i>Time Outside United States</i>	3.256	78	3.115	78	0.523
<i>Student Club Participation</i>	2.077	78	1.872	78	0.219
<i>Familiar with World Vision</i>	0.436	78	0.526	78	0.250
<i>Monthly Volunteer Hours</i>	7.231	78	5.744	78	0.272

Table A1b

Treatment 3 randomization checks by sex (*T*-tests).

<i>Treatment 3 vs Control (Males)</i>					
Variables	Mean T3	Obs. T3	Mean Con	Obs. Con	P-value
<i>Age</i>	21.06	64	21.41	66	0.481
<i>Foreign born</i>	0.750	64	0.803	66	0.468
<i>Education Level</i>	1.922	64	1.985	66	0.940
<i>Student Loan Debt</i>	\$16,483	60	\$16,692	65	0.964
<i>International News</i>	4.016	64	3.909	66	0.511
<i>Religious Attendance</i>	0.922	64	0.909	66	0.899
<i>Time Outside United States</i>	3.531	64	3.091	66	0.278

<i>Student Club Participation</i>	1.859	64	1.682	66	0.398
<i>Familiar with World Vision</i>	0.156	64	0.303	66	0.374
<i>Monthly Volunteer Hours</i>	2.219	64	4.045	66	0.103
Treatment 3 vs Control (Females)					
Variables	Mean T3	Obs. T3	Mean Con	Obs. Con	P-value
<i>Age</i>	20.76	78	20.82	78	0.851
<i>Foreign born</i>	0.782	78	0.833	78	0.416
<i>Education Level</i>	1.885	78	2.013	78	0.510
<i>Student Loan Debt</i>	\$16,726	73	\$19,723	74	0.558
<i>International News</i>	3.513	78	3.308	78	0.576
<i>Religious Attendance</i>	1.359	78	1.234	77	0.982
<i>Time Outside United States</i>	3.308	78	3.115	78	0.625
<i>Student Club Participation</i>	1.859	78	1.872	78	0.364
<i>Familiar with World Vision</i>	0.397	78	0.526	78	0.758
<i>Monthly Volunteer Hours</i>	5.731	78	5.744	78	0.992

Table A1cTreatment 4 randomization checks by sex (*T*-tests).

Treatment 4 vs Control (Males)					
Variables	Mean T4	Obs. T4	Mean Con	Obs. Con	P-value
<i>Age</i>	20.94	66	21.41	66	0.317
<i>Foreign born</i>	0.727	66	0.803	66	0.305
<i>Education Level</i>	1.909	66	1.985	66	0.972
<i>Student Loan Debt</i>	\$33,477	65	\$16,692	65	0.028**
<i>International News</i>	3.924	66	3.909	66	0.758
<i>Religious Attendance</i>	1.015	66	0.909	66	0.222
<i>Time Outside United States</i>	3.258	66	3.091	66	0.483
<i>Student Club Participation</i>	1.788	66	1.682	66	0.744
<i>Familiar with World Vision</i>	0.424	66	0.303	66	0.095*
<i>Monthly Volunteer Hours</i>	3.227	66	4.045	66	0.481
Treatment 4 vs Control (Females)					
Variables	Mean T4	Obs. T4	Mean Con	Obs. Con	P-value
<i>Age</i>	21.23	77	20.82	78	0.517
<i>Foreign born</i>	0.779	77	0.833	78	0.394
<i>Education Level</i>	1.831	77	2.013	78	0.784
<i>Student Loan Debt</i>	\$22,615	73	\$19,723	74	0.651
<i>International News</i>	3.221	77	3.308	78	0.344
<i>Religious Attendance</i>	1.221	77	1.234	77	0.971
<i>Time Outside United States</i>	3.558	77	3.115	78	0.065*
<i>Student Club Participation</i>	1.831	77	1.872	78	0.542
<i>Familiar with World Vision</i>	0.403	77	0.526	78	0.252
<i>Monthly Volunteer Hours</i>	4.718	77	5.744	78	0.363

Table A2a

Inequality aversion *T*-tests: males vs. females.

	Males	Females	Male Obs	Female Obs	<i>P</i> -value
Info	0.576	1.146	66	78	0.0000***
Inequality	0.627	1.008	66	78	0.0041***
Child	0.603	1.100	64	78	0.0004***
Guilt	0.830	1.005	66	77	0.1408
Manipulation T-tests: Males vs. Females					
	Males	Females	Male Obs	Female Obs	<i>P</i> -value
Info	-0.352	-0.477	66	78	0.365
Inequality	-0.482	-0.428	66	78	0.695
Child	-0.413	-0.387	64	78	0.873
Guilt	-0.558	-0.540	66	77	0.903

Notes.

- *** $p < 0.01$,
- ** $p < 0.05$,
- * $p < 0.1$.

Table A2b

Design *T*-tests: inequality aversion among males by treatment.

	Info	Inequality	Child	Guilt	Obs	<i>P</i> -value
Info vs. Inequality	0.576	0.627			66	0.722
Info vs. Child	0.576		0.603		66	0.856
Info vs. Guilt	0.576			0.830	66	0.065*
Inequality vs. Child		0.627	0.603		66	0.874
Inequality vs. Guilt		0.627		0.830	66	0.148
Child vs. Guilt			0.603	0.830	66	0.120
Design T-tests: Manipulation among Males by Treatment						
	Info	Inequality	Child	Guilt	Obs	<i>P</i> -value
Info vs. Inequality	-0.352	-0.482			66	0.363
Info vs. Child	-0.352		-0.413		66	0.706
Info vs. Guilt	-0.352			-0.558	66	0.168
Inequality vs. Child		-0.482	-0.413		66	0.637
Inequality vs. Guilt		-0.482		-0.558	66	0.569
Child vs. Guilt			-0.413	-0.558	66	0.342

Notes.

- *** $p < 0.01$,
- ** $p < 0.05$,
- * $p < 0.1$.

The Kruskal–Wallis rank test and nonparametric order test *p*-values are 0.331 and 0.086, respectively.

Table A2cDesign *T*-tests: inequality aversion among females by treatment.

	Info	Inequality	Child	Guilt	Obs	P-value
Info vs. Inequality	1.146	1.008			78	0.207
Info vs. Child	1.146		1.100		78	0.675
Info vs. Guilt	1.146			1.005	78	0.180
Inequality vs. Child		1.008	1.100		78	0.427
Inequality vs. Guilt		1.008		1.005	78	0.982
Child vs. Guilt			1.100	1.005	78	0.396
Design T-tests: Manipulation among Females by Treatment						
	Info	Inequality	Child	Guilt	Obs	P-value
Info vs. Inequality	-0.477	-0.428			78	0.711
Info vs. Child	-0.477		-0.387		78	0.512
Info vs. Guilt	-0.477			-0.540	78	0.631
Inequality vs. Child		-0.428	-0.387		78	0.780
Inequality vs. Guilt		-0.428		-0.540	78	0.432
Child vs. Guilt			-0.387	-0.540	78	0.300

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.The Kruskal–Wallis rank test and nonparametric order test p -values are 0.439 and 0.308, respectively.

References

- Aguiar F, Brañas-Garza P, Miller LM, 2008 Moral distance in dictator games. *Judgement and Decision Making* 3 (4), 344–354.
- Alaerts K, Nackaerts E, Meyns P, Swinnen SP, Wenderoth N, 2011 Action and emotion recognition from point light displays: An investigation of gender differences. *PloS One* 6 (6), e20989. [PubMed: 21695266]
- Aldashev G, Verdier T, 2010 Goodwill bazaar: Ngo competition and giving to development. *Journal of Development Economics* 91 (1), 48–63.
- Alexander GM, Wilcox T, 2012 Sex differences in early infancy. *Child Development Perspectives* 6 (4), 400–406.
- Andreoni J, Brown E, Rischall I, 2003 Charitable giving by married couples who decides and why does it matter. *Journal of human Resources* 38 (1), 111–133.
- Andreoni J, Vesterlund L, 2001 Which is the fair sex? Gender differences in altruism. *Quarterly Journal of Economics* 293–312.
- Babchuk WA, Hames RB, Thompson RA, 1985 Sex differences in the recognition of infant facial expressions of emotion: The primary caretaker hypothesis. *Ethology and Sociobiology* 6 (2), 89–101.
- Baez S, Flichtentrei D, Prats M, Mastandueno R, García AM, Cetkovich M, et al., 2017 Men, women... who cares? A population-based study on sex differences and gender roles in empathy and moral cognition. *PloS One* 12 (6), e0179336. [PubMed: 28632770]
- Basil DZ, Ridgway NM, Basil MD, 2008 Guilt and giving: A process model of empathy and efficacy. *Psychology and Marketing* 25 (1), 1–23.

- Batson CD, Fultz J, Schoenrade PA, 1987 Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of Personality* 55 (1), 19–39. [PubMed: 3572705]
- Batson Charles Daniel, 2011 *Altruism in humans*. Oxford University Press, USA.
- Bekkers RH, 2004 *Giving and volunteering in the netherlands: Sociological and psychological perspectives*. Utrecht University.
- Bekkers R, Ottoni-Wilhelm M, 2016 Principle of care and giving to help people in need. *European Journal of Personality* 30 (3), 240–257. [PubMed: 27867258]
- Bekkers R, Wiepking P, 2010 A literature review of empirical studies of philanthropy: Eight mechanisms that drive charitable giving. *Nonprofit and Voluntary Sector Quarterly*.
- Brañas-Garza P, 2006 Poverty in dictator games: Awakening solidarity. *Journal of Economic Behavior and Organization* 60 (3), 306–320.
- Brañas-Garza P, 2007 Promoting helping behavior with framing in dictator games. *Journal of Economic Psychology* 28 (4), 477–486.
- Social marketing and behaviour change: Models, theory and applications. In: Brennan L, Binney W, Parker L, Aleti T, Nguyen D (Eds.), *Social marketing and behaviour change: Models, theory and applications*. Edward Elgar Publishing.
- Cadsby CB, Servátka M, Song F, 2010 Gender and generosity: Does degree of anonymity or group gender composition matter? *Experimental economics* 13 (3), 299–308.
- Charities Aid Foundation, 2017, *World Giving Index: A global view of giving trends*, 9 2017.
- Cherry TL, Shogren JF, 2008 Self-interest, sympathy and the origin of endowments. *Economics Letters* 101 (1), 69–72.
- Cherry TL, Frykblom P, Shogren JF, 2002 Hardnose the dictator. *The American Economic Review* 92 (4), 1218–1221 sympathy and the origin of endowments. *Econ. Lett.* 101 (1), 69–72.
- Chouliaraki L, 2010 Post-humanitarianism: Humanitarian communication beyond a politics of pity. *International journal of cultural studies* 13 (2), 107–126.
- Christov-Moore L, Simpson EA, Coudé G, Grigaityte K, Iacoboni M, Ferrari PF, 2014 Empathy: Gender effects in brain and behavior. *Neuroscience & Biobehavioral Reviews* 46, 604–627.
- Connellan J, Baron-Cohen S, Wheelwright S, Batki A, Ahluwalia J, 2000 Sex differences in human neonatal social perception. *Infant behavior and Development* 23 (1), 113–118.
- Cotte J, Coulter RA, Moore M, 2005 Enhancing or disrupting guilt: The role of ad credibility and perceived manipulative intent. *Journal of Business Research* 58 (3), 361–368.
- Coulter RH, Pinto MB, 1995 Guilt appeals in advertising: What are their effects? *Journal of applied Psychology* 80 (6), 697. [PubMed: 8557622]
- Davis M, 1983 Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of personality and social psychology* 44 (1), 113–126.
- Davis M, 1994 *Empathy: A social psychological approach*. Westview Press.
- Davis MH, 1980 Interpersonal reactivity index (IRI). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology* 10, 85.
- Dimberg U, Lundquist LO, 1990 Gender differences in facial reactions to facial expressions. *Biological Psychology* 30 (2), 151–159. [PubMed: 2285765]
- Dovidio JF, Piliavin JA, Schroeder DA, Penner LA, 2017 *The social psychology of prosocial behavior*. Psychology Press.
- Eckel C, Grossman P, 1998 Are women less selfish than men?: Evidence from dictator experiments. *The Economic Journal* 108 (448), 726–735.
- Eckel C, Grossman P, 2008a Differences in the economic decisions of men and women: Experimental evidence. *Handbook of Experimental Economics Results* 1, 509–519.
- Eckel C, Grossman P, Johnston R, 2005 An experimental test of the crowding out hypothesis. *Journal of Public Economics* 89 (8), 1543–1560.
- Edele A, Dziobek I, Keller M, 2013 Explaining altruistic sharing in the dictator game: The role of affective empathy, cognitive empathy, and justice sensitivity. *Learning and Individual Differences* 24, 96–102.

- Einolf CJ, 2008 Empathic concern and prosocial behaviors: A test of experimental results using survey data. *Social Science Research* 37 (4), 1267–1279. [PubMed: 19227702]
- Eisenberg N, Eggum ND, 2009 Empathic responding: Sympathy and personal distress. *The Social Neuroscience of Empathy* 6, 71–83.
- Eisenberg N, Hofer C, Sulik MJ, Liew J, 2014 The development of prosocial moral reasoning and a prosocial orientation in young adulthood: Concurrent and longitudinal correlates. *Developmental Psychology* 50 (1), 58. [PubMed: 23731289]
- Engel C, 2011 Dictator games: A meta study. *Experimental Economics* 14 (4), 583–610.
- Etang A, Fielding D, Knowles S, 2012 Giving to Africa and perceptions of poverty. *Journal of Economic Psychology* 33 (4), 819–832.
- Fairchild AJ, MacKinnon DP, 2009 A general model for testing mediation and moderation effects. *Prevention Science* 10 (2), 87–99. [PubMed: 19003535]
- FeldmanHall O, Dalgleish T, Evans D, Mobbs D, 2015 Empathic concern drives costly altruism. *NeuroImage* 105, 347–356. [PubMed: 25462694]
- Fong C, Luttmer E, 2011 Do fairness and race matter in generosity? Evidence from a nationally representative charity experiment. *Journal of Public Economics* 95 (5), 372–394.
- Gault BA, Sabini J, 2000 The roles of empathy, anger, and gender in predicting attitudes toward punitive, reparative, and preventative public policies. *Cognition & Emotion* 14 (4), 495–520.
- Genevsky A, Västfjäll D, Slovic P, Knutson B, 2013 Neural underpinnings of the identifiable victim effect: Affect shifts preferences for giving. *Journal of Neuroscience* 33 (43), 17188–17196. [PubMed: 24155323]
- Giving U.S.A. (2017). Giving USA 2018. Website: <https://givingusa.org/see-the-numbers-giving-usa-2018-infographic>.
- Hampson E, van Anders SM, Mullin LI, 2006 A female advantage in the recognition of emotional facial expressions: Test of an evolutionary hypothesis. *Evolution and Human Behavior* 27 (6), 401–416.
- Hicks R, Tingley D, 2012 Causal mediation analysis. *The Stata Journal* 11 (4), 605–619.
- Hoffman ML, 1977 Sex differences in empathy and related behaviors. *Psychological Bulletin* 84 (4), 712. [PubMed: 897032]
- Hoffman ML, 2008 Empathy and prosocial behavior. *Handbook of Emotions* 3, 440–455.
- Hudson D, Van Heerde-Hudson J, Dasandi N, Gaines NS, 2016,, 4 Emotional pathways to engagement with global poverty: An experimental analysis Public opinion & foreign aid workshop. University of Essex.
- Imai K, Keele L, Tingley D, 2010 A general approach to causal mediation analysis. *Psychological Methods* 15, 309–334. [PubMed: 20954780]
- Imai K, Keele L, Tingley D, Yamamoto T, 2011 Unpacking the black box of causality: Learning about causal mechanisms from experimental and observational studies. *American Political Science Review* 105, 765–789.
- Imai K, Keele L, Yamamoto T, 2010 Identification, inference, and sensitivity analysis for causal mediation effects. *Statistical Science* 25, 51–71.
- Jaffee Sara, Janet Shibley Hyde, 2000 Gender differences in moral orientation: a meta-analysis. *Psychol Bull* 126 (5), 703. [PubMed: 10989620]
- Kamas L, & Preston A (2017). Can empathy explain gender differences in economic policy views in the US?.
- Kevrekidis P, Skapinakis P, Damigos D, Mavreas V, 2008 Adaptation of the emotional contagion scale (ECS) and gender differences within the Greek cultural context. *Annals of General Psychiatry* 7 (1), 14. [PubMed: 18718010]
- King G, Tomz M, Wittenberg J, 2000 Making the most of statistical analyses: Improving interpretation and presentation. *American Journal of Political Science* 44, 347–361.
- Lennon R, Eisenberg N, 1987 Gender and age differences in empathy and sympathy. *Empathy and its Development* 195–217.
- Lundqvist LO, 1995 Facial emg reactions to facial expressions: A case of facial emotional contagion? *Scandinavian Journal of Psychology* 36 (2), 130–141. [PubMed: 7644897]

- Macaskill A, Maltby J, Day L, 2002 Forgiveness of self and others and emotional empathy. *The Journal of Social Psychology* 142 (5), 663–665. [PubMed: 12236474]
- McClure EB, 2000 A meta-analytic review of sex differences in facial expression processing and their development in infants, children, and adolescents. *Psychological Bulletin* 126 (3), 424. [PubMed: 10825784]
- Merchant A, Ford John B., Sargeant A, 2010 Charitable organizations' storytelling influence on donors' emotions and intentions. *Journal of Business Research* 63 (7), 754–762.
- Michalska KJ, Kinzler KD, Decety J, 2013 Age-related sex differences in explicit measures of empathy do not predict brain responses across childhood and adolescence. *Developmental cognitive neuroscience* 3, 22–32. [PubMed: 23245217]
- Osofsky JD, O'Connell EJ, 1977 Patterning of newborn behavior in an urban population. *Child Development* 532–536.
- Pearl J, 2001 Direct and indirect effects In: *Proceedings of the seventeenth conference in uncertainty in artificial intelligence*. San Francisco Morgan Kaufmann, pp. 411–420.
- Pelligra V, Stanca L, 2013 To give or not to give? Equity, efficiency and altruistic behavior in an artefactual field experiment. *The Journal of Socio-Economics* 46, 1–9.
- Robins JM, Greenland S, 1992 Identifiability and exchangeability for direct and indirect effects. *Epidemiology* 3, 143–155. [PubMed: 1576220]
- Rueckert L, Naybar N, 2008 Gender differences in empathy: The role of the right hemisphere. *Brain and Cognition* 67 (2), 162–167. [PubMed: 18295950]
- Sagi A, Hoffman ML, 1976 Empathic distress in the newborn. *Developmental Psychology* 12 (2), 175.
- Schieman S, Van Gundy K, 2000 The personal and social links between age and self-reported empathy. *Social Psychology Quarterly*, 63, 152–174.
- Simner ML, 1971 Newborn's response to the cry of another infant. *Developmental Psychology* 5 (1), 136.
- Sokolov AA, Krüger S, Enck P, Krägeloh-Mann I, Pavlova MA, 2011 Gender affects body language reading. *Frontiers in Psychology* 2, 16. [PubMed: 21713180]
- Sonnby-Borgström M, 2002 Automatic mimicry reactions as related to differences in emotional empathy. *Scandinavian Journal of Psychology* 43 (5), 433–443. [PubMed: 12500783]
- Thayer J, Johnsen BH, 2000 Sex differences in judgement of facial affect: A multivariate analysis of recognition errors. *Scandinavian Journal of Psychology* 41 (3), 243–246. [PubMed: 11041306]
- Toussaint L, Jon RW, 2005 Gender differences in the relationship between empathy and forgiveness. *The Journal of social psychology* 145 (6), 673–685. [PubMed: 16334893]
- van Rijn J, Barham B, Sundaram-Stukel R, 2017 An experimental approach to comparing similarity- and guilt-based charitable appeals. *Journal of Behavioral and Experimental Economics* 68, 25–40.
- Verhaert GA, Van den Poel D, 2011 Empathy as added value in predicting donation behavior. *Journal of Business Research* 64 (12), 1288–1295.
- Visser MS, Roelofs MR, 2011 Heterogeneous preferences for altruism: Gender and personality, social status, giving and taking. *Experimental Economics* 14 (4), 490–506.
- Wiepking P, Maas I, 2009 Resources that make you generous: Effects of social and human resources on charitable giving. *Social Forces* 87 (4), 1973–1995.
- Willer R, Wimer C, Owens LA, 2015 What drives the gender gap in charitable giving? Lower empathy leads men to give less to poverty relief. *Social Science research* 52, 83–98. [PubMed: 26004450]

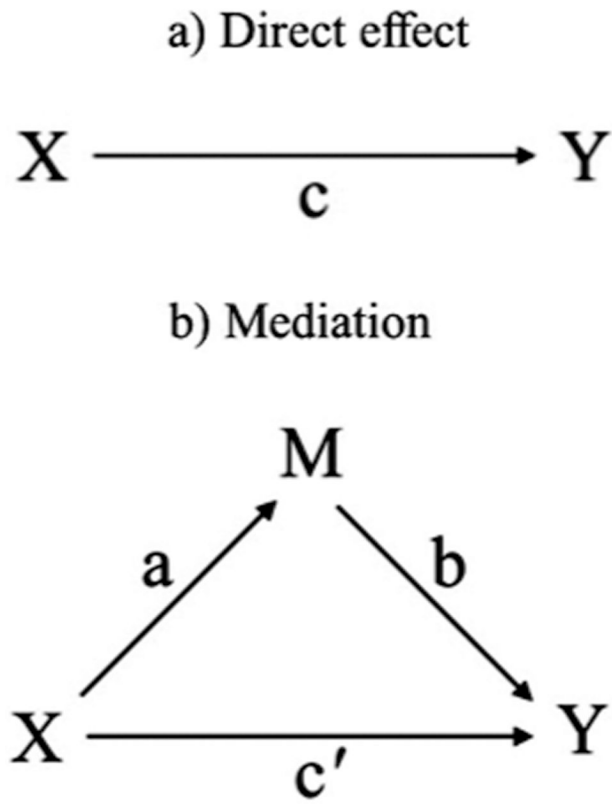


Fig. 1.
Direct vs. mediation models.

Table 1Behavioral *T*-tests donation amount by treatment.

	Males	Females	<i>P</i> -value
Information Control	\$2.18	\$2.49	0.607
Inequality Treatment	\$2.52	\$2.77	0.663
Child-Story Treatment	\$2.59	\$4.22	0.027**
Guilt-Appeal Treatment	\$2.92	\$4.77	0.016**

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.

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Table 2Behavioral *T*-tests donation amount among males by treatment.

	Info	Inequality	Child	Guilt	<i>P</i>-value
Info vs. Inequality	\$2.18	\$2.52			0.602
Info vs. Child	\$2.18		\$2.59		0.503
Info vs. Guilt	\$2.18			\$2.92	0.247
Inequality vs. Child		\$2.52	\$2.59		0.902
Inequality vs. Guilt		\$2.52	\$2.59	\$2.92	0.538
Child vs. Guilt				\$2.92	0.607

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.

We also perform Kruskal–Wallis rank and nonparametric tests to test for differences across the four treatments combined. The respective p -values are 0.533 and 0.139.

Table 3Behavioral *T*-tests donation amount among females by treatment.

	Info	Inequality	Child	Guilt	<i>P</i>-value
Info vs. Inequality	\$2.49	\$2.77			0.618
Info vs. Child	\$2.49		\$4.22		0.014**
Info vs. Guilt	\$2.49			\$4.77	0.002***
Inequality vs. Child		\$2.77	\$4.22		0.029**
Inequality vs. Guilt		\$2.77		\$4.77	0.004***
Child vs. Guilt			\$4.22	\$4.77	0.4908

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.

We also perform Kruskal–Wallis rank and nonparametric tests to test for differences across the four treatments combined. The respective p -values are 0.0126 and 0.001.

Table 4

Behavioral outcomes by gender.

VARIABLES	(1)	(2)		(3)		(4)		(5)		(6)		(7)		(8)
	Without controls Females Don. Amount	Males	Without controls Females Don. Amount	Males	Without controls Females Don. Amount	Males	Without controls Females Don. Amount	Males	With Controls Females Don. Amount	Males	With Controls Females Don. Amount	Males		
Inequality	0.276 (0.552)	0.333 (0.637)	-0.130 (0.635)	0.272 (0.656)	0.276 (0.552)	0.333 (0.637)	0.272 (0.656)	0.333 (0.637)	-0.130 (0.635)	0.272 (0.656)	-0.130 (0.635)	0.272 (0.656)		
Child Story	1.724** (0.692)	0.412 (0.613)	1.531** (0.727)	0.346 (0.646)										
Guilt Appeal	2.275*** (0.709)	0.742 (0.639)	2.344*** (0.764)	0.877 (0.631)	0.548 (0.794)	0.330 (0.640)	0.531 (0.685)	0.330 (0.640)	0.813 (0.818)	0.531 (0.685)	0.813 (0.818)	0.531 (0.685)		
Guilt + Child					1.724** (0.692)	0.412 (0.613)	0.346 (0.646)	0.412 (0.613)	1.531** (0.727)	0.346 (0.646)	1.531** (0.727)	0.346 (0.646)		
Constant	2.494*** (0.419)	2.182*** (0.432)	0.839 (1.524)	0.506*** (0.179)	2.494*** (0.419)	2.182*** (0.432)	0.839 (1.524)	2.182*** (0.432)	0.839 (1.524)	2.033* (1.229)	0.839 (1.524)	2.033* (1.229)		
Observations	311	262	286	254	311	262	286	262	286	254	286	254		
R-squared	0.048	0.005	0.092	0.058	0.048	0.005	0.048	0.005	0.092	0.048	0.005	0.048		

Notes. Robust standard errors in parentheses. Regressions (3) - (4) and (7) - (8) include the following control variables: *father's education, mother's education, familiarity with World Vision, U.S. born, international news, non-white, non-heterosexual, test score, expected student loan debt and time spent outside U.S.* We also perform the same regressions with the probability of donating as our dependent variable but find no statistically significant gender differences in the probability of donating. Sample sizes are smaller when including the controls because some students did not answer all of the additional survey questions.

*** $p < 0.01$,

** $p < 0.05$,

* $p < 0.1$.

Table 5

Behavioral outcomes.

VARIABLES	(1)	(2)	(3)	(4)
	No Controls	With Controls	No Controls	With Controls
	Don. Amount	Don. Amount	Don. Amount	Don. Amount
Inequality	0.333 (0.637)	0.295 (0.654)		
Child Story	0.412 (0.613)	0.363 (0.635)		
Guilt Appeal	0.742 (0.638)	0.879 (0.630)		
Guilt + Child			0.413 (0.450)	0.480 (0.461)
Female	0.312 (0.602)	0.597 (0.623)	0.283 (0.420)	0.368 (0.439)
Ineq*Female	-0.058 (0.843)	-0.455 (0.896)		
Child*Female	1.312 (0.925)	1.157 (0.963)		
Guilt*Female	1.530 (0.954)	1.408 (0.970)		
(Guilt + Child)*Female			1.446 ^{**} (0.660)	1.489 ^{**} (0.688)
Constant	2.182 ^{***} (0.432)	1.164 (1.034)	2.348 ^{***} (0.317)	1.241 (1.025)
Observations	573	540	573	540
R-squared	0.047	0.078	0.045	0.075

Notes. Robust standard errors in parentheses. Regressions (3)-(4) and (7)-(8) include the following control variables: *father's education, mother's education, familiarity with World Vision, U.S. born, international news, non-white, non-heterosexual, expected student loan debt and time spent outside U.S.* We also perform the same regressions with the probability of donating as our dependent variable but find no statistically significant gender differences in the probability of donating. Sample sizes are smaller when including the controls because some students did not answer all of the additional survey questions.

 $p < 0.01$,

**
 $p < 0.05$,

*
 $p < 0.1$.

Table 6Empathic concern *T*-tests: males vs. females.

	Males	Females	Male Obs	Female Obs	<i>P</i> -value
Info	0.992	1.303	66	78	0.0047***
Inequality	0.977	1.293	66	78	0.0022***
Child	1.099	1.464	64	78	0.0008***
Guilt	1.225	1.359	66	77	0.1985

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.

Table 7Design *T*-tests: empathic concern among males by treatment.

	Info	Inequality	Child	Guilt	Obs	<i>P</i> -value
Info vs. Inequality	0.992	0.977			66	0.901
Info vs. Child	0.992		1.099		66	0.402
Info vs. Guilt	0.992			1.225	66	0.056*
Inequality vs. Child		0.977	1.099		66	0.303
Inequality vs. Guilt		0.977		1.225	66	0.028**
Child vs. Guilt			1.099	1.225	66	0.285

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.

We also perform Kruskal–Wallis rank and nonparametric tests to test for differences across the four treatments combined. The respective *p*-values are 0.055 and 0.014.

Table 8Design *T*-tests: empathic concern among females by treatment.

	Info	Inequality	Child	Guilt	Obs	P-value
Info vs. Inequality	1.303	1.293			78	0.906
Info vs. Child	1.303		1.464		78	0.075*
Info vs. Guilt	1.303			1.359	78	0.550
Inequality vs. Child		1.293	1.464		78	0.062*
Inequality vs. Guilt		1.293		1.359	78	0.483
Child vs. Guilt			1.464	1.359	78	0.269

Notes.

 $p < 0.01$,**
 $p < 0.05$,*
 $p < 0.1$.

We also perform Kruskal–Wallis rank and nonparametric tests to test for differences across the four treatments combined. The respective p -values are 0.114 and 0.120.

Table 9

Motivations for donating: Naïve regressions.

	(1)	(2)
Variables	Don. Amount	Don. Amount
Female	1.004 ^{***} (0.334)	0.524 (0.322)
Empathic Concern		1.708 ^{***} (0.266)
Constant	2.553 ^{***} (0.225)	0.721 ^{**} (0.342)
Observations	573	573
R-squared	0.0152	0.085

Notes. Robust standard errors in parentheses.

^{***}
 $p < 0.01$,

^{**}
 $p < 0.05$,

^{*}
 $p < 0.1$.

Table 9b

Motivations for donating: Naive regressions (Other potential pathways).

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount
Female	0.996*** (0.330)	0.999*** (0.329)	0.610* (0.331)	0.996*** (0.334)	0.941*** (0.331)	1.000*** (0.334)	0.827** (0.338)	0.977*** (0.335)	0.912*** (0.336)	0.992*** (0.335)	0.986*** (0.332)	1.003*** (0.335)	0.945*** (0.335)	1.001*** (0.333)	1.009*** (0.343)	1.168*** (0.342)	1.015*** (0.330)
Happy	0.656*** (0.201)																
Manipulation		-0.833* (0.192)															
Inequality Aversion			0.974*** (0.237)														
Entertained				0.130 (0.165)													
Inspired					0.524*** (0.158)												
Manipulated						-0.074 (0.156)											
Sad							0.376** (0.163)										
Guilty								0.048 (0.136)									
Empathy									0.323* (0.171)								
Video Quality										0.219 (0.298)							
Familiarity											0.116 (0.223)						
Test Score												-0.088 (0.265)					
Religious Attend.													0.197 (0.138)				
Time Abroad														0.125 (0.081)			
Volunteer Time															-0.002 (0.025)		
International News																0.319** (0.139)	
Other Donations																	0.673*** (0.192)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount	Don. Amount
Constant	1.563 *** (0.374)	2.178 *** (0.229)	1.911 *** (0.272)	2.354 *** (0.341)	1.089 ** (0.480)	2.706 *** (0.387)	1.326 ** (0.565)	2.444 *** (0.406)	1.336 ** (0.676)	1.874 ** (0.946)	2.521 *** (0.237)	2.845 *** (0.937)	2.372 *** (0.253)	2.143 *** (0.338)	2.560 *** (0.236)	1.301 ** (0.566)	1.732 *** (0.315)
Observations	573	573	573	573	573	573	573	573	573	573	573	573	572	573	573	573	573
R-squared	0.035	0.046	0.048	0.016	0.036	0.016	0.024	0.015	0.021	0.016	0.016	0.015	0.019	0.019	0.015	0.024	0.043

Notes. Robust standard errors in parentheses.

*** $p < 0.01$,

** $p < 0.05$,

* $p < 0.1$.

Table 10

Empathic concern causal mediation analysis (Females).

	Avg. causal mediation effect	Direct effect	% of total effect mediated
Inequality	-0.057	0.033	4.6%
Child Story	0.364	1.048	23.8%
Guilt Appeal	0.224	2.020 *	9.0% *
Child Story + Guilt Appeal	0.344	1.584 *	17.4% *

Notes. The final treatment combines Child-Story and Guilt-Appeal treatments to increase degrees of freedom in estimation.

* $p < 0.05$.

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Table 11

Causal mediation analysis (Males).

	Avg. causal mediation effect	Direct effect	% of total effect mediated
<i>Inequality Aversion</i>			
Inequality	0.035	0.275	4.2%
Child Story	-0.025	0.397	-2.8%
Guilt Appeal	0.252	0.598	23.4%
Child Story + Guilt Appeal	0.096	0.543	11.8%
<i>Empathic Concern</i>			
Inequality	-0.007	0.300	-0.8%
Child Story	0.039	0.317	4.7%
Guilt Appeal	0.472*	0.358	44.9%
Child Story + Guilt Appeal	0.238	0.390	29.1%
<i>Manipulation</i>			
Inequality	0.059	0.265	6.8%
Child Story	0.111	0.306	12.0%
Guilt Appeal	0.094	0.767	9.0%
Child Story + Guilt Appeal	0.143	0.510	17.2%

Notes. The final treatment combines Child Story and Guilt Appeal treatment to increase degrees of freedom in estimation.

* $p < 0.05$.