University of Wisconsin-Madison
Department of Agricultural & Applied Economics

Staff Paper No. 586 *revised* October 2018

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AGRICULTURAL &

APPLIED ECONOMICS

STAFF PAPER SERIES

Does Empathic Concern for Children Explain the Gender-Donations Gap?

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October 2018

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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 among both males and females relative to the control; however, empathic concern that results from the treatment videos increases average donations among females but not males.

Causal mediation methods show that empathic concern explains up to 17% of the observed gender differences in giving. While the treatments also evoke other emotions in addition to empathic concern, none of these helps to explain observed gender differences in donations. In fact, we find no significant effects (positive or negative) of the treatments on male donations. Our study sheds light on the role of children's personal stories and the empathy evoked by them in explaining the gender-donations gap found in the literature.

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

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.

I. 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; Eckel & Grossman, 2008a; Engel, 2011; Visser & Roelofs, 2011; Willer et al. 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 U.S. private giving comes from individuals. In 2017 private giving totaled $287 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 very common element of charitable appeals, especially in requests for donations to alleviate poverty and support international development projects. However, 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 for children 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 their 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 they will among males (Dovidio et al. 2006; Slovic, 2010; 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 (Batson et al., 1996; Gault & Sabini, 2000; Lennon & Eisenberg, 1987; Macaskill et al., 2002; Rueckert & Naybar, 2008; Schieman & Van Gundy, 2000; Toussaint & Webb, 2005). However, some recent studies suggest 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 et al, 2012).

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 there appear to be sex differences in social behaviors (for a review, see Alexander and 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,

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

1977; Sagi & Hoffman, 1976; Simner, 1971) and are more likely to orient to faces (Connellan et al., 2000) and voices (Osofsky and O'Connell, 1977). Moreover, as adults, females are faster and more accurate than males in recognizing facial expressions (e.g., Babchuk et al., 1985; Hampson et al., 2006; Thayer & Johnson, 2000), and exhibit greater facial mimicry when viewing expressions (Dimberg & Lundquist, 1990; Lundqvist, 1995; Sonnby-Borgströmet al., 2003). Females, as compared to males, also appear faster (Alaerts et al., 2011) and more accurate at recognizing bodily emotions (Sokolov et al., 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 et al., 2008). Finally, females exhibit more caring prosocial moral judgment (Jaffee & Hyde, 2000) and more sophisticated forms of prosocial moral reasoning (Eisenberg et al., 2014).

Psychologists often distinguish between situational empathy—empathy responding to a specific context— and dispositional empathy—a stable character trait of an individual (Batson, Fultz, & Schoenrade, 1987; Davis, 1994; Eisenberg et al., 2010; Eveland & Crutchfield, 2004; Stueber, 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, 2000). *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 et al., 1987, 1988; Eisenberg et al., 1994; Eisenberg, 2000). 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 (Hall et al., 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, & 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, Wilmer and Owens (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 influence *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. She finds 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 improve on previous studies by using incentivized experiments as opposed to hypothetical donations or volunteer time. We also build on other research that assess 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 mainly driven by existing differences in general, persistent feelings of empathy, or whether the gender differences arise in response to charitable appeals. In particular, our experiment focuses on the specific aspects of a charitable appeal that might evoke empathy (or other feelings), and then testing 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.

The various treatments successively expand the role of children in a real-world charitable appeal from being simply part of the imagery to sharing personal stories of hardship in their own words. We first edit the charitable appeal into a baseline control video by removing any personal stories of children and emotional music and imagery, and only including narration that focuses on providing information and statistics including what lack of clean water means for children's well-being. We then compare average donations and self-reported emotions in the baseline control with three treatment videos. The first treatment 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 the 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 an aid worker facilitating access to clean water, crescendoing music, and smiling children. Participants are randomly assigned one of the four experimental groups, which allows us to compare average donations and emotions between the groups, and identify which elements of the charitable video evoke the most emotion and highest average donation.

While empathic concern is perhaps the best candidate for explaining gender differences in giving in this context, other emotional pathways may also prove important. A number of experiments find that females are more averse to inequality relative to men; in dictator games women tend to prefer more equal allocations, whereas men are more likely to be either perfectly selfish or perfectly selfless (Andreoni & Vesterlund, 2001; Cadsby, Servátka & Song, 2010; Dickinson & Tiefenthaler, 2002; Dufwenberg and Muren, 2006; Eckel and Grossman, 1998; Selten & Ockenfels, 1998). Therefore, while the treatment videos are likely to evoke empathic concern, they also highlight inequalities and may create feelings of inequality aversion that is more pronounced for female participants relative to males. There may also be gender differences in the extent to which participants perceive a manipulative or deceptive intent by the donors, and how they respond to that perception. There is increasing evidence that the abundance of charitable appeals contributes to "donor fatigue" and may even create a "boomerang effect" such that potential donors become angry at charities for intentionally playing on people's emotions by, for example, sharing provoking images of starving or maimed children (Chouliaraki, 2010; Hudson et al., 2016). Van Rijn et al. (2017) find that feelings of manipulation in response to a charitable guilt appeal video decrease male donations but have no effect on female donations, suggesting gender differences in the extent to which potential donors respond negatively to a perceived manipulative intent by charities. Therefore, while our analysis mainly focuses on the role of empathic concern in explaining gender differences in giving, we also include measures of inequality aversion and manipulation as other potentially important factors.

Our main findings are as follows: First, there are no statistically significant gender differences in donations when participants experience an information-based control video or a treatment that highlights inequalities. 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 treatments with personal stories of children increase empathic concern among both male and female participants, and inequality aversion among males. However, we find no effect of the treatments on feelings of manipulation. Fourth, analyses using causal mediation (Hicks and Tinsley, 2011) methods reveal that a substantial portion (up to 17%) of the increase in female donations are attributable to feelings of empathic concern in response to children's personal stories. We also utilize mechanism (Acharaya et al. 2015) techniques to further validate these findings. Inequality aversion and manipulation do not explain the observed gender differences in donations, nor do any of fifteen other potential explanatory variables commonly found in the literature. 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. However, the guilt appeals do not *decrease* male donations, which is contrary to the findings of van Rijn et al. (2017). In either case, we are unable to identify strategies that increase male donations; although males experience more empathic concern and inequality aversion when viewing charitable appeals featuring children relative to when they are provided information, they do not donate more in response to these emotions.

In sum, our approach highlights the importance of empathic concern associated with children as a significant determinant of gender differences in donation behavior. It is novel in demonstrating that females not only have larger stocks of empathic concern, but also donate more as a result of empathic concern evoked by an emotional charitable appeal featuring children's stories. The experimental design and causal mediation methods deployed advance our understanding of the key role that children play in evoking empathy and charitable donations among females.

The rest of our paper proceeds as follows: Section II describes our experimental design and reviews our main hypotheses. Sections III shares the empirical results regarding donation behavior. Section IV reviews the empirical results regarding the extent to which empathic concern, inequality aversion and manipulation were evoked in the treatments. Section V presents the econometric results used to explore the extent to which empathic concern evoked by the treatments mediates gender differences in donation behavior. Section VI summarizes and offers implications of our findings.

II. Experimental Design & Hypotheses

This experiment uses a dictator game with a charitable organization as the recipient, similar to and Eckel et al. (2005), Etang et al. (2012), and Fong and Luttmer (2011), among others. The 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, the study uncovered average male donations in an information-only control that were over 60% higher than females, while the results were completely reversed in the guilt-appeal treatment where females donated over twice as much as males. The present study attempts to probe this substantial gender difference in donation behavior in the context of a charitable guilt appeal video with an emphasis on systematically exploring salient emotional pathways.

Based on the literature, our experiment was designed in order to increasingly evoke empathic concern for children across four experimental treatments, which are described in more 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 was identical across the treatment in order to control for reputation of the organization, costs and benefits, and efficacy, all of which are key determinants of giving (Bekkers and Wiepking, 2010).

The Behavioral Research Insights through Experiments (BRITE) Lab recruited participants for the experiment from a broad pool of University of Wisconsin-Madison students (mostly undergraduates) and informed them they would receive $15 to participate in a 30-minute experiment. The funds were provided in the context of earned income in exchange for participating in the study, which included a pre- and post-survey. 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 et al., 2002; Cherry & Shogren, 2008). The real-world funds also help with internal validity, as 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, we aimed for 75 males and 75 females in each experimental group, for a total of 600 participants. However, we ended up with slightly more females than males. Our total sample includes 573 participants, with between 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.[2] 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 et al., 2010); a focus on differences (Brañas-Garza, 2006); presentation of an explicit need (Aguiar et al., 2008; Brañas-Garza et al., 2006; Pelligra and Stanca, 2013); and, the stimulation of negative emotions that can be alleviated with a donation (Basil et al., 2008; Merchant et al., 2010).

Since it is a critical component of our experiment, we briefly describe the original World Vision video and include a link to it.[3] 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 1,600 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 African 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 seconds." It invites the viewer to "join World Vision as they strive to change the lives of children forever." The music then lightens, becomes more uplifting, and crescendos as the viewer sees children smiling, dancing and running, and clean water spouts 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—did not isolate specific elements of the video to explore potential causes of the large gender effect they found. Instead, it 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, and video quality. 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. We expect that a subset of participants may also experience feelings of inequality aversion and/or manipulation.

To control for potential narrator effects, we use the same female narrator with a native British-African 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

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

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 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 et al. (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. Finally, the videos are of approximately the same length – about three minutes - varying by less than 30 seconds from each other in duration.

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 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 music as the other treatments.

- **Inequality Treatment:** Participants view the World Vision video edited to be similar to the Information Control, but now the narration emphasizes inequalities between potential donors in the United States and Zambian children, who represent the potential donation recipients. Again, the music is emotion-neutral, 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, including original narration, music and images of the children's stories, the receipt 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, inequality aversion or manipulation, and whether it leads to gender differences in giving relative to the Information Control. In the Child-Story Treatment, we add the children's personal stories, allowing us to compare the effect of children's personal stories relative to focusing primarily on the provision of information (Information Control) and focusing on inequalities (Inequality Treatment). Finally, the full Guilt-Appeal treatment enables us to determine whether it is in fact the "climax" of a 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. In this manner, we attempt to isolate the specific components of a guilt appeal that evoke empathic concern, inequality aversion and/or feelings of manipulation, and potentially lead to significant differences in gender giving.

Following the charitable appeal, participants completed a survey that included questions used to measure feelings of empathic concern, inequality aversion and manipulation, as well as a variety of other potential emotional pathways—including sadness, happiness, guilt, inspiration and entertainment—that they might have experienced when watching the video. To measure empathic concern, we used the Interpersonal Reactivity Index (IRI) and asked participants to what extent they agreed with a variety of statements.[4] The statements are similar to those used in the IRI, but are edited or reframed to focus on reactions to the respective video. We included 6 statements related to empathic concern and then created an index from -2 to +2 indicating the degree of empathic concern felt in response to each treatment video. A similar approach was used to measure inequality aversion and manipulation, although these statements were created from scratch since the IRI does not specifically measure these emotions. Other potential emotional pathways were measured using self-reported emotions and five-point scales, as in van Rijn et al. (2017). Finally, we also include survey questions that measure 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 regularly follow international news. In addition, we include a brief five-question test that measures the extent to which participants were able to answer basic questions about the videos they just watched; this allows us to control for participants that rushed through the experiment without actually watching or paying attention to the video.

Our hypotheses and analyses are broken into three categories. "Behavioral Hypotheses" refer to hypotheses related to donation behavior which we compare between the experimental groups and between genders. Next, we consider the "Design" hypotheses that examine whether the treatments in fact evoked the theorized emotions, and whether the experienced emotions differ by gender in the expected direction. Finally, the "Motivations Hypotheses" link emotions with donation behavior, and test whether the emotions experienced explain any observed gender differences in donations. Justifications for the hypotheses are based mostly on experimental evidence and the above literature, and are briefly summarized after the hypotheses.

Behavioral Hypotheses:

BH1: *Male participants will donate more on average than females in the Information Control, and will donate less in the Inequality, Child-Story and Guilt-Appeal treatments relative to the Information Control.*

BH2: *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 and inequality aversion relative to males in all treatments.*

DH2: *Females will feel more empathic concern and inequality aversion in the Inequality, Child-Story and Guilt-Appeal treatments relative to the Information Control.*

DH3: *Males will feel significantly more feelings of manipulation in the Inequality, Child-Story and Guilt-Appeal treatments relative to the Information Control.*

[4] See Appendix.

Motivations Hypotheses:

MH1: *Feelings of empathic concern and inequality aversion that result from the treatments will increase donations among females but not males.*

MH2: *Feelings of manipulation that result from the treatments will reduce donations among males but not females*

Our theoretical justification for the above hypotheses is as follows: ***BH1*** is based on van Rijn et al. (2017) and other studies that find males to be less moved by emotional charitable appeals. ***BH2*** draws from both theory and empirical evidence that provide rationale for higher pro-social behavior among females compared to males (e.g., Andreoni & Vesterlund, 2001; Eckel & Grossman, 1998; Eckel & Grossman, 2008a; Engel, 2011). ***DH1 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), while ***DH3*** is a hypothesis that stems from van Rijn et al. (2017), where males felt more manipulated in an emotional charitable appeal video relative to females. ***MH1 and MH2*** represent the main contribution of our study, and explicitly link the emotional pathway ("mechanism") generated by the respective treatment with donation behavior.

III. Behavioral Outcomes

The Behavioral Hypotheses explore the following questions: Did the treatments change donations among males or females relative to the control? Did the treatments lead to significant differences in donations between males and females?

Women donate more than men in all four experimental groups (Table 1); however, simple t-tests of means reveal that there are no statistically significant differences between male and female donations in the Information Control or the Inequality Treatment. Females, 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 is slightly smaller than the van Rijn et al. (2017) finding, it appears to confirm the large and significant gender differences in giving within a guilt appeal context. It also validates our experimental design, as we were successful in creating a gender-donations gap in two of the three treatments despite no 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 when including the "climax" (Guilt-Appeal Treatment).

Table 1: Behavioral T-tests

Donation Amount by Treatment

	Males	Females	P-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

When we compare donations between experimental groups *within* males and females (Tables 2 and 3, respectively), we find no significant differences in donations between any of the groups among males. We do find significant differences between groups among females, 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 quite large in magnitude, representing increases of 69.5% and 91.6% in the Child-Story and Guilt-Appeal treatments, respectively, relative to the baseline Information Control. Therefore, the Child-Story and Guilt-Appeal treatments appear to 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 treatments, suggesting no added benefit of the climax in the Guilt-Appeal video. Finally, none of the treatments significantly affect male donations, either positively or negatively.

Table 2: Behavioral T-tests

Donation Amount among Males by Treatment

	Info	Inequality	Child	Guilt	P-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

Table 3: Behavioral T-tests

Donation Amount among Females by Treatment

	Info	Inequality	Child	Guilt	P-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

Since our experiment is randomized[5], we can be confident in the simple t-tests of means for 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 or non-heterosexual. Finally, we include expected student loan debt upon graduation and time spent outside the U.S., since we find significant gender differences in these variables.[6]

The main regression results are shown both with and without the control variables in Table 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.

[5] See Appendix for verification.

[6] Inclusion 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.

Table 4
Behavioral Outcomes by Gender

	(1)	(2)	(3)	(4)
	Without controls		With controls	
	Females	Males	Females	Males
VARIABLES	Don. Amount		Don. Amount	
Inequality	0.276	0.333	-0.130	0.272
	(0.552)	(0.637)	(0.635)	(0.656)
Child Story	1.724**	0.412	1.531**	0.346
	(0.692)	(0.613)	(0.727)	(0.646)
Guilt Appeal	2.273***	0.742	2.344***	0.877
	(0.709)	(0.639)	(0.764)	(0.631)
Constant	2.494***	2.182***	0.839	0.506***
	(0.419)	(0.432)	(1.524)	(0.179)
Observations	311	262	286	286
R-squared	0.048	0.005	0.092	0.058

Notes. Robust standard errors in parentheses. Regressions (5) - (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.* *** p<0.01, ** p<0.05, * p<0.1

Because the separate regressions do not allow 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. Although there are no statistically significant coefficients in the first four columns beyond the constant, the interactions *Guilt*Female* and *Child*Female* are very close to statistically significant at the 90 percent confidence level in regressions without control variables (p-values of 0.109 and 0.156, respectively). The respective p-values are slightly higher when including control variables.

Table 5
Behavioral Outcomes

VARIABLES	(1) No Controls Don. Amount	(2) With Controls Don. Amount	(3) No Controls Don. Amount	(4) With Controls Don. Amount
Inequality	0.333	0.295		
	(0.637)	(0.654)		
Child Story	0.412	0.363		
	(0.613)	(0.635)		
Guilt Appeal	0.742	0.879		
	(0.638)	(0.630)		
Guilt + Child			0.413	0.480
			(0.450)	(0.461)
Female	0.312	0.597	0.283	0.368
	(0.602)	(0.623)	(0.420)	(0.439)
Ineq*Female	-0.058	-0.455		
	(0.843)	(0.896)		
Child*Female	1.312	1.157		
	(0.925)	(0.963)		
Guilt*Female	1.530	1.408		
	(0.954)	(0.970)		
(Guilt + Child)*Female			1.446**	1.489**
			(0.660)	(0.688)
Constant	2.182***	1.164	2.348***	1.241
	(0.432)	(1.034)	(0.317)	(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.* *** p<0.01, ** p<0.05, * p<0.1.

Our next step exploits the similarity in the Child-Story and Guilt Appeal treatments; these treatments are the only two that include the children talking to the screen in their own voices, and sharing their personal stories of struggle without clean water. The Guilt Appeal simply adds to this by also including the inspiring finale and climax at the end. Since these treatments are similar and build on each other, we attempt to combine them to see if our lack of statistical significance in regressions (1) – (2) is partly due to an insufficient sample size. Indeed, 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 coefficients suggest that female participants who experience the Child-Story or Guilt-Appeal treatments donate on average $1.45 to $1.49 more than males in these

treatments, relative to their average donations in the Information Control. 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 personal stories of children. Indeed, this factor may very well drive the gender differences in donations in both van Rijn et al. (2017) and this experiment. However, as is commonly found in the literature, we find no statistically significant effects of the treatments or gender on the probability of donating (results available upon request).

The above results support Behavioral Hypothesis 2: females donate more in the Child-Story and Guilt-Appeal treatments relative to the Information Control (BH2); however, females do not donate more in the Inequality Treatment. Furthermore, contrary to the first half of BH1, males do not donate more than females in an information-based control. 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 final climax of the video, such as the imagery and sounds of the children receiving clean water. Finally, we find no evidence that males decrease donations in response to more emotional charitable appeals (the second half of BH1); in fact, we find no statistically significant differences in male donations across any of the four experimental groups.

IV. Design Outcomes

The behavioral outcomes confirm significant gender differences in giving in the Child-Story and Guilt-Appeal treatments. In this section, we return to the Design Hypotheses and explore whether the treatments evoke the hypothesized feelings and emotions. Our main outcomes of interest are empathic concern, inequality aversion, and manipulation. As discussed above, the survey includes 6 questions based on the Interpersonal Reactivity Index (IRI) to measure feelings of empathic concern, and we create an index of the results that ranges from -2 to +2. However, the original IRI statements were modified to measure empathic concern in response to the treatments 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 includes a five-point scale, normalized so that zero is neutral, a positive number indicates more of that feeling, and a negative number indicates less of that feeling. Indices for each feeling are a simple average of the responses to the relevant questions. A similar approach is used to measure feelings of inequality aversion and manipulation.

Table 6 compares the average results for males and females under each treatment. In general, we find that females report higher average feelings of empathic concern and inequality aversion relative to males—these differences are statistically significant in the Information Control and each treatment except for the Guilt Appeal. We refer to these levels as the "stock" of empathic concern and inequality aversion; however, this result does not yet indicate whether we are able to evoke feelings of empathic concern and inequality aversion in the respective treatments *relative to the information control*—i.e., the *change* in emotions—and whether there are gender differences in these changes. Nonetheless, the results confirm DH1 and are consistent with previous research that finds that females have greater self-reported feelings of empathic concern and inequality aversion relative to males in the context of charitable

appeals. However, we find no significant gender differences in feelings of manipulation in any of the respective treatment groups.

Table 6

Empathic Concern T-tests: Males vs. Females

	Males	Females	Male Obs	Female Obs	P-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

Inequality Aversion T-tests: Males vs. Females

	Males	Females	Male Obs	Female Obs	P-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	P-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

In Tables 7 and 8, we compare the differences in emotion indices for males and females between the treatments. In other words, did the respective treatments in fact evoke feelings of empathic concern, inequality aversion and manipulation 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. On the other hand, as shown in Table 8, females felt more empathic concern in the Child-Story Treatment relative to the Information Control and the Inequality treatments. Finally, the treatments did not significantly evoke higher feelings of manipulation relative to the Information Control for either males or females. Similar to our approach 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).

In summary, we confirm that females experience greater empathic concern relative to males in the Control, Inequality and Child-Story treatments, but not in the Guilt-Appeal Treatment (DH1). We

also find that females felt more empathic concern in the Child-Story treatment relative to Information and Inequality treatments, but not in the Guilt-Appeal treatment (DH2). Females also do not experience greater feelings of inequality aversion or manipulation in any of the treatments relative to the Information Control. Males also do not feel more manipulation in the treatments relative to the control, contradicting DH3; however, they do experience greater feelings of empathic concern and inequality aversion in the Guilt-Appeal treatments. The results point to a number of preliminary 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. We now turn to the analysis of the Motivations Hypotheses to determine whether the evoked emotions explain the gender differences in donation behavior.

Table 7

Design T-tests: Empathic Concern among Males by Treatment

	Info	Inequality	Child	Guilt	Obs	P-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

Design T-tests: Inequality Aversion among Males by Treatment

	Info	Inequality	Child	Guilt	Obs	P-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	P-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

Table 8

Design 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

Design 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

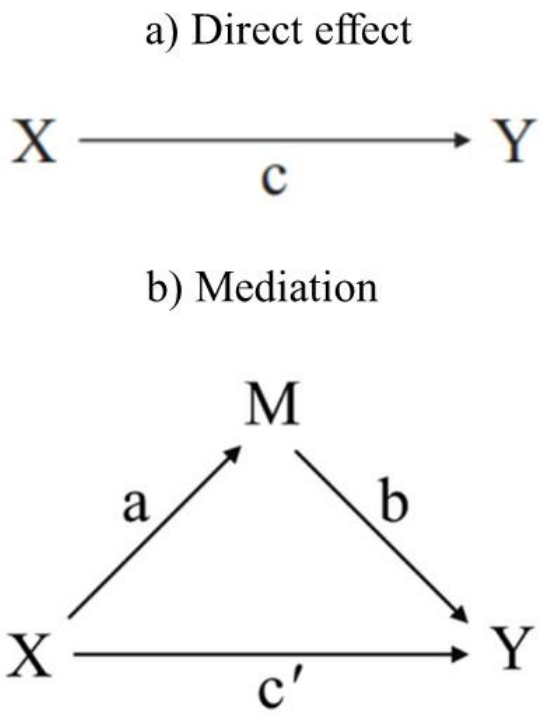
	Info	Inequality	Child	Guilt	Obs	P-value
Info vs. Inequality	-0.477	-0.428			78	0.711
Info vs. Child	-0.477		-0.387		78	0.512
Info vs. Guilt	-0.477			-0.540	78	0.631
Inequality vs. Child		-0.428	-0.387		78	0.780
Inequality vs. Guilt		-0.428		-0.540	78	0.432
Child vs. Guilt			-0.387	-0.540	78	0.300

V. Motivations for Donating

In this section, we examine the questions: Do the feelings and emotions that result from the treatments significantly increase average donations for females relative to males? How much of the gender difference in giving can be explained by empathic concern, inequality aversion and manipulation? We first explore these questions using a naïve regression strategy that simply regresses donation amount on a female indicator, and then subsequently adds potential mediating variables, such as empathic concern, inequality aversion and manipulation. Then, we deploy more sophisticated causal mediation techniques that attempt to identify whether there are direct and indirect effects of the treatment on emotional pathways, and whether the evoked emotions indeed contribute to the total treatment effect on donation behavior. Finally, we supplement our analysis with mechanism techniques that serve as a robustness check.

Mediation analysis shows the total effect of predictors, decomposed into direct and mediated effects (MacKinnon, 2008), and allows us to explicitly test the hypothesis that emotions are the mechanism linking charitable appeals to donation behavior. Figure 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*, includes self-reported emotions, such as empathic concern, inequality aversion and manipulation. 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 pathway *M*.

Figure 1. Direct vs. Mediation Models



In our analysis below, we first use causal mediation methods to identify the effect of different emotions on donation outcomes. We deploy the estimation strategy demonstrated by Hicks and Tingley (2011) and Imai et al (2011).[7] This approach initially fits separate models for the observed outcome and mediator variables as depicted below in equations (1) and (2). In these equations, *T* is the treatment that individual *i* experiences, *M* is the mediator, ***X*** is a vector of other exogenous variables, and *Y* is the

[7] Amongst 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).

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.

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

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

We present the causal mediation results immediately after the naïve regression results, because they are more directly comparable. We then turn to the mechanism results as a sensitivity test of our mediation results. In effect, the causal mechanism approach backs out the effect of the mediating variable from the outcome of interest and then regresses the treatment on the outcome of interest net of the variation explained by the mechanism to determine the proportion of the (direct or indirect) treatment effect that remains. Both the causal mediation and mechanism analyses essentially rely on the same identifying assumption: 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 experimental setting, these conditions are satisfied as treatment assignment is random by construction and other covariates are determined pre-treatment.

We first present the results of the naïve regressions in Table 9, with regression (1) acting as a baseline that includes a female indicator variable as the sole independent variable. The rest of the specifications (2) – (5) offer estimates as to how much of the gender difference in giving depends on distinct emotional pathways. Regressions (2) – (4) demonstrate the regression results when including in separate regressions empathic concern, inequality aversion and manipulation, in addition to the female indicator variable. Then regression (5) includes all three emotional pathways. 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. Furthermore, the size of the gender coefficient falls nearly in half. This suggests that empathic concern could explain a relatively substantial portion of the gender difference in giving.

We see a similar although smaller effect for inequality aversion, but almost no effect from including manipulation as an additional explanatory variable. When we include all three, the coefficient on female is only slightly different from when we include only empathic concern. Table 9b (Appendix) explores the extent to which the inclusion of each of 15 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 0.827 when including *sadness* as an additional explanatory variable, which is still much larger in magnitude than the 0.524 coefficient when including empathic concern. The R-squared is also highest when including empathic concern than in any other regression. Besides inequality aversion, all 14 of the

other potential explanatory and control variables have little effect on the magnitude or statistical significance of the female coefficient.

Table 9
Motivations for Donating: Naïve Regressions

VARIABLES	(1) Don. Amount	(2) Don. Amount	(3) Don. Amount	(4) Don. Amount	(5) Don. Amount
Empathic Concern		1.708***			1.385***
		(0.266)			(0.290)
Inequality Aversion			0.974***		0.185
			(0.237)		(0.259)
Manipulation				-0.833***	-0.541***
				(0.192)	(0.198)
Female	1.004***	0.524	0.610*	0.999***	0.536*
	(0.334)	(0.322)	(0.331)	(0.329)	(0.325)
Constant	2.553***	0.721**	1.911***	2.178***	0.701**
	(0.225)	(0.342)	(0.272)	(0.229)	(0.326)
Observations	573	573	573	573	573
R-squared	0.0152	0.085	0.048	0.046	0.098

Notes. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

We now turn to the more complete mediation analysis results, as displayed in Table 10. We focus here on the results for females, since our intent is to explain the role of emotional pathways in increasing female donations relative to males; male donations do not change with any of the treatments, and we find no emotional pathway that mediates male donations.[8] Table 10 displays the average causal mediation effect, the direct effect of the treatment, and the percent of the total effect that is mediated by the emotions of inequality aversion, empathic concern, and manipulation. As before, we also combine observations from the last two treatments (Child Story and Guilt Appeal) to increase the sample size, which is captured below in the last row under each emotion. The largest percent of total treatment effect mediated occurs in the Child-Story treatment under empathic concern (24%) but is not statistically significant. However, the percent of total effect mediated by empathic concern is relatively large and statistically significant for the Guilt-Appeal and Child-Story + Guilt-Appeal treatments: they mediate 9% and 17% of the total treatment effect, respectively. The only other statistically significant effects in the causal mediation analysis are for feelings of manipulation; however, the percent mediated never rises above 3%, a relatively small contribution.

As depicted in Table 11, the mechanism results confirm the relative importance of the empathic concern mechanism. In this instance, the recovered measure of interest is the average controlled direct effect (ACDE) coefficient, which is the estimated direct effect of the treatment once the specific

[8] Results for males are available in the Appendix.

mediating variable is accounted for by removing its effect. All of the estimates of the ACDE for the Child Story, Guilt Appeal, and the combination of the two are statistically significant for females (and insignificant for males). This suggests none of the mediating variables in question account for all of the direct treatment effects. More specifically, the estimated effects of these treatments when controlling for the empathic concern mechanism are all smaller than the estimates when controlling for the mechanisms of inequality aversion or manipulation. In other words, more explanatory variation remains in the treatment-to-outcome relationship when the inequality aversion or manipulation mechanisms are accounted for than when the empathic concern mechanism is netted out.

As an example of this, compare the lower 1.74 estimated effect of empathic concern in the combined Child-Story and Guilt-Appeal treatments with the corresponding 2.14 and 2.01 estimates for inequality aversion and manipulation. This difference suggests that empathic concern mediates more of the treatment effect than do the other two emotional mechanisms. The secondary finding is that the manipulation mechanism explains more than inequality aversion mechanisms, which is also consistent with the findings in Table 10. While the magnitudes of these coefficients may be relatively similar, the pattern of results is consistent with what we observe in the causal mediation analysis. Thus, the mechanism results illustrated in Table 11 provide supporting evidence for the causal mediation findings presented in Table 10.

Table 10. Causal Mediation Analysis (Females)

	Avg. Causal Mediation Effect	Direct Effect	% of Total Effect Mediated
	Inequality Aversion		
Inequality	-0.157	0.125	-13.1%
Child Story	-0.141	1.552*	-9.4%
Guilt Appeal	-0.093	2.524*	-3.7%
Child Story + Guilt Appeal	-0.135	2.053*	-6.9%
	Empathic Concern		
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%*
	Manipulation		
Inequality	0.001	0.013	0.1%
Child Story	0.040	1.426*	2.6%*
Guilt Appeal	0.082	2.409*	3.3%*
Child Story + Guilt Appeal	0.060	1.889*	3.1%*

Notes. The final treatment combines Child-Story and Guilt-Appeal treatments to increase degrees of freedom in estimation. * $p<0.05$

Table 11. Causal Mechanism Analysis (Females)

	ACDE Coefficient	S.E.	Z-score
Inequality Aversion			
Inequality	0.403	0.574	0.70
Child Story	1.783	0.669	2.67*
Guilt Appeal	2.494	0.708	3.52*
Child Story + Guilt Appeal	2.140	0.540	3.90*
Empathic Concern			
Inequality	0.290	0.551	0.53
Child Story	1.400	0.643	2.18*
Guilt Appeal	2.150	0.674	3.19*
Child Story + Guilt Appeal	1.743	0.528	3.30*
Manipulation			
Inequality	0.302	0.569	0.53
Child Story	1.754	0.683	2.57*
Guilt Appeal	2.218	0.696	3.19*
Child Story + Guilt Appeal	2.008	0.561	3.58*

Notes. Bootstrap standard errors based on 1,000 replications. The final treatment combines Child-Story and Guilt-Appeal treatments to increase degrees of freedom in estimation. * $p<0.05$

The sum of the evidence in this and the preceding sections indicates that while females and males experience empathic concern across the treatments, empathic concern as a function of treatments involving child storytelling stands out as having the largest positive and statistically significant impact on donation behavior (MH1), but only among females. Feelings of inequality aversion were not strongly evoked by the treatments, nor did they play a statistically significant effect in evoking donations for females (MH1) or males. Contrary to MH2, there was no evidence that feelings of manipulation as a result of any of the treatments reduced male donations in this experimental setting, while for females manipulation was shown in the causal mediation analysis to have a small but statistically significant positive effect on donations. These results help to explain the underlying differences in gender behavior across the charitable appeals and emphasize the salience of the empathic concern pathway evoked by children's stories relative to alternatives tested in our experimental framework.

VI. 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, and then probing potential emotional pathways. The main finding is that treatments that feature children sharing their personal struggles of hardship significantly increase female donations but have no 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; Eckel & Grossman, 2008a; Engel, 2011; van Rijn et al., 2017; Visser & Roelofs, 2011). The results contribute to the 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 therefore be mindful of the presence of children when investigating gender differences in charitable giving.

An additional contribution of our study lies in attempting to explain the observed gender difference in donations by probing various potential emotional pathways. While we confirm that children's personal stories increase female donations and not male donations—leading to large gender differences in average donations—we find that empathic concern only explains up to 17% 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, Wilmer & Owens, 2015), and improves on previous studies by exogenously linking empathic concern to variation in children's personal stories in an experimental setting. However, the results leave the majority of the observed gender difference unexplained. This is true even after considering 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 children relative to males.

Another key avenue of future research could include exploring why empathic concern evoked by some treatments led to 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). Therefore, future research might explore the separate (or added) value of providing more information on the impacts 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 donations of charitable appeals that are emotional—such as donor fatigue or a "boomerang effect"—as some authors propose (Brennan & Biney, 2010; Chouliaraki, 2010; Cotte et al., 2005; Coulter & Pinto, 1995; Hudson et al., 2016).

Nonetheless, 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, Wimer and Owens (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 completely 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 same 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's—is not an easy task. Nonetheless, given the importance of private charitable giving for poverty relief and humanitarian causes, it is a laudable goal that researchers and policymakers should continue to strive for.

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Appendix

A1. Randomization Check

Table A1a. Treatment 2 Randomization Checks by Sex (T-tests)

Treatment 2 vs Control (Males)

Variables	Mean T2	Obs. T2	Mean Con	Obs. Con	P-Value
Age	20.77	66	21.41	66	0.188
Foreign born	0.818	66	0.803	66	0.824
Education Level	1.682	66	1.985	66	0.455
Student Loan Debt	$13,854	65	$16,692	65	0.484
International News	3.879	66	3.909	66	0.868
Religious Attendance	0.848	66	0.909	66	0.250
Time Outside United States	3.242	66	3.091	66	0.466
Student Club Participation	1.591	66	1.682	66	0.227
Familiar with World Vision	0.242	66	0.303	66	0.595
Monthly Volunteer Hours	4.015	66	4.045	66	0.983

Treatment 2 vs Control (Females)

Variables	Mean T2	Obs. T2	Mean Con	Obs. Con	P-Value
Age	21.17	78	20.82	78	0.322
Foreign born	0.744	78	0.833	78	0.170
Education Level	2.256	78	2.013	78	0.687
Student Loan Debt	$20,346	68	$19,723	74	0.910
International News	3.628	78	3.308	78	0.172
Religious Attendance	1.321	78	1.234	77	0.800
Time Outside United States	3.256	78	3.115	78	0.523
Student Club Participation	2.077	78	1.872	78	0.219
Familiar with World Vision	0.436	78	0.526	78	0.250
Monthly Volunteer Hours	7.231	78	5.744	78	0.272

Table A1b. Treatment 3 Randomization Checks by Sex (T-tests)

Treatment 3 vs Control (Males)

Variables	Mean T3	Obs. T3	Mean Con	Obs. Con	P-Value
Age	21.06	64	21.41	66	0.481
Foreign born	0.750	64	0.803	66	0.468
Education Level	1.922	64	1.985	66	0.940
Student Loan Debt	$16,483	60	$16,692	65	0.964
International News	4.016	64	3.909	66	0.511
Religious Attendance	0.922	64	0.909	66	0.899
Time Outside United States	3.531	64	3.091	66	0.278
Student Club Participation	1.859	64	1.682	66	0.398
Familiar with World Vision	0.156	64	0.303	66	0.374
Monthly Volunteer Hours	2.219	64	4.045	66	0.103

Treatment 3 vs Control (Females)

Variables	Mean T3	Obs. T3	Mean Con	Obs. Con	P-Value
Age	20.76	78	20.82	78	0.851
Foreign born	0.782	78	0.833	78	0.416
Education Level	1.885	78	2.013	78	0.510
Student Loan Debt	$16,726	73	$19,723	74	0.558
International News	3.513	78	3.308	78	0.576
Religious Attendance	1.359	78	1.234	77	0.982
Time Outside United States	3.308	78	3.115	78	0.625
Student Club Participation	1.859	78	1.872	78	0.364
Familiar with World Vision	0.397	78	0.526	78	0.758
Monthly Volunteer Hours	5.731	78	5.744	78	0.992

Table A1c. Treatment 4 Randomization Checks by Sex (T-tests)

Treatment 4 vs Control (Males)

Variables	Mean T4	Obs. T4	Mean Con	Obs. Con	P-Value
Age	20.94	66	21.41	66	0.317
Foreign born	0.727	66	0.803	66	0.305
Education Level	1.909	66	1.985	66	0.972
Student Loan Debt	$33,477	65	$16,692	65	.0282**
International News	3.924	66	3.909	66	0.758
Religious Attendance	1.015	66	0.909	66	0.222
Time Outside United States	3.258	66	3.091	66	0.483
Student Club Participation	1.788	66	1.682	66	0.744
Familiar with World Vision	0.424	66	0.303	66	.095*
Monthly Volunteer Hours	3.227	66	4.045	66	0.481

Treatment 4 vs Control (Females)

Variables	Mean T4	Obs. T4	Mean Con	Obs. Con	P-Value
Age	21.23	77	20.82	78	0.517
Foreign born	0.779	77	0.833	78	0.394
Education Level	1.831	77	2.013	78	0.784
Student Loan Debt	$22,615	73	$19,723	74	0.651
International News	3.221	77	3.308	78	0.344
Religious Attendance	1.221	77	1.234	77	0.971
Time Outside United States	3.558	77	3.115	78	.065*
Student Club Participation	1.831	77	1.872	78	0.542
Familiar with World Vision	0.403	77	0.526	78	0.252
Monthly Volunteer Hours	4.718	77	5.744	78	0.363

A2. Motivations for Donation Supplemental Regression

Table 9b. Motivations for Donating: Naïve Regressions (Other Potential Emotional Pathways)

VARIABLES	(1) Don. Amount	(2) Don. Amount	(3) Don. Amount	(4) Don. Amount	(5) Don. Amount	(6) Don. Amount	(7) Don. Amount	(8) Don. Amount	(9) Don. Amount	(10) Don. Amount	(11) Don. Amount	(12) Don. Amount	(13) Don. Amount	(14) Don. Amount	(15) Don. Amount
Female	0.996***	0.996***	0.941***	1.000***	0.827**	0.977***	0.912***	0.992***	0.986***	1.003***	0.945***	1.001***	1.009***	1.168***	1.015***
	(0.330)	(0.334)	(0.331)	(0.334)	(0.338)	(0.335)	(0.336)	(0.335)	(0.332)	(0.335)	(0.335)	(0.333)	(0.343)	(0.342)	(0.330)
Happy	0.656***														
	(0.201)														
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 Attendance											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)
Constant	1.563***	2.354***	1.089**	2.706***	1.326**	2.444***	1.336**	1.874**	2.521***	2.845***	2.372***	2.143***	2.560***	1.301**	1.732***
	(0.374)	(0.341)	(0.480)	(0.387)	(0.565)	(0.406)	(0.676)	(0.946)	(0.237)	(0.937)	(0.253)	(0.338)	(0.236)	(0.566)	(0.315)
Observations	573	573	573	573	573	573	573	573	573	573	572	573	573	573	573
R-squared	0.035	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

A3. Mediation & Mechanism Results for Males

Table 12. Causal Mediation Analysis (Males)

	Avg. Causal Mediation Effect	Direct Effect	% of Total Effect Mediated
	Inequality Aversion		
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%
	Empathic Concern		
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%
	Manipulation		
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. * $p<0.05$

Table 13. Mechanism Analysis (Males)

	ACDE Coefficient	Bootstrap S.E.	Z-score
	Inequality Aversion		
Inequality	0.307	0.646	0.47
Child Story	0.395	0.593	0.67
Guilt Appeal	0.444	0.620	0.72
Child Story + Guilt Appeal	0.456	0.529	0.86
	Empathic Concern		
Inequality	0.350	0.624	0.56
Child Story	0.261	0.604	0.43
Guilt Appeal	0.306	0.605	0.51
Child Story + Guilt Appeal	0.314	0.523	0.60
	Manipulation		
Inequality	0.287	0.645	0.44
Child Story	0.358	0.580	0.62
Guilt Appeal	0.647	0.635	1.02
Child Story + Guilt Appeal	0.475	0.517	0.92

Notes. Bootstrap standard errors based on 1,000 replications. The final treatment combines Child Story and Guilt Appeal treatment to increase degrees of freedom in estimation. * $p<0.05$