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Keywords: self-image, social image, altruism, warm glow, experiment

JEL Classification: C90, D91, H40

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Philip J. Grossman[†] and Jonathan Levy[‡]

Abstract

Attempts by charities to motivate giving tend to focus on potential donors' altruistic tendencies. However, prior research suggests that approximately 50% of individuals are to some extent motivated by warm glow, the satisfaction received from the act of giving. The satisfaction derives from looking good to themselves (self-image) and/or to others (social image). We conduct an online experiment with a more realistic simulation of being watched to determine the importance of self- and social image to warm-glow giving. We find that self-image is important for the act of giving; social image significantly increases average giving. Our results suggest that charities looking to increase their donor bases might effectively do so by focusing on self-image concerns. Charities wishing to increase the amount donated might effectively do so by focusing on the social image concerns of the donor. We find evidence of reactance among a subsample of those experiencing the watching eyes.

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Ethics Statement. The Monash University Human Research Ethics Committee approved the protocol for this study (Project ID: 25385).

Experimental design and implementation. The experiment was preregistered at the Open Science Framework (Self- versus social image in warm glow giving: Date created: 2020-07-02 09:37 AM | Last Updated: 2020-08-03 09:11 AM). <https://osf.io/ej7d3/>

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It's not you (well, it is a bit you), it's me: Self- versus social image in warm-glow giving

1. Introduction

Both pure altruists and pure egoists might give to a charitable organization; the pure altruists out of concern for the well-being of the recipients, the pure egoists (unconcerned with the welfare of recipients) to receive warm glow from the act of giving (Andreoni, 1989; 1990). Impure altruists are motivated by both altruism and warm glow. Our focus is on warm-glow motivated giving.¹

There is considerable evidence that some giving is warm-glow motivated. Crumpler and Grossman (2008, CG hereafter) were the first to directly test Andreoni's (1989, 1990) warm-glow hypothesis. Approximately 50% of their subjects gave even though their giving was crowded out \$1:\$1, and donations averaged roughly 20% of subjects' endowments. Subsequent laboratory and online studies using CG's basic design report similar results (Luccasen and Grossman, 2017; Gangadharan et al., 2018; Gandullia, 2019; Gandullia et al., 2020). Gangadharan et al. (2021), using a different design, report that 41% of their sample were warm-glow givers.²

While these studies provide evidence of warm glow, they do not address whether warm glow derives from having a positive self-image [i.e., one's view or concept of oneself (<https://dictionary.apa.org/self-image>) May 3, 2022], a positive social image [i.e., identity or face presented to others in public contexts (<https://dictionary.apa.org/social-image>) May 3, 2022], or from both. We address this question by testing the relative importance of self- and social image for warm-glow giving.

A positive self-image comes from feeling good about one's self from having done a "good" deed. A positive social image comes from having the admiration, respect, and acclaim of others aware of the deed (Olson, 1965; Becker, 1974; Batson, 1998; Lamont, 2000). Bénabou and Tirole's (2006) theory of prosocial behavior combines both concerns for social reputation (social image) and self-respect (self-image). Bem's (1972) self-perception theory argues that individuals "know" themselves partially via internal cues, but that these are "... weak, ambiguous, or uninterpretable (p.2)." They must also rely, like an outside observer, on external cues if they are to infer their own inner state; they "know" they are good by the actions they take. Ariely et al. (2009) argue image motivation (i.e., "... the desire to be

¹ Warm glow has been used to justify a variety of behaviors. For example, people may vote, even though it is unlikely that their vote will be pivotal, because they wish to receive the warm-glow obtained from voting and/or being seen to vote (<https://mediastudies.as.cornell.edu/i-voted-stickers-civic-evidence>, May 3, 2022). Similarly, individuals may drive environmentally friendly vehicles to signal their concern for the environment.

² Subjects were asked to donate a fixed amount to a charity with a low probability the donation would be implemented. Those whose donations were not implemented were given the opportunity to pay to increase the probability their donations would occur. They argue that warm-glow givers would not pay to increase the probability.

liked and respected by others and *by one's self*" [p. 544, emphasis added]) is motivation for behaving prosocially.

Self-image is an explanation for warm-glow giving; participants in the studies mentioned above are obviously aware of their giving decisions. Creating a counterfactual in which self-image is switched off is difficult. A number of studies have, however, attempted to increase the salience of self-image. One does so by presenting subjects with real-time webcam feeds of themselves (Falk, 2021). A second (Adena and Huck, 2020) reports results from a natural experiment: Customers buying opera tickets through an online booking agent were asked at the time of checkout if they were willing to donate to a charity supporting disadvantaged children. In one treatment, customers who did not donate had the option of ticking a box indicating they had already donated or a second box saying "No, thank you." Relative to their baseline, the box ticking significantly increased the probability of giving and the average amount given. A third study increased self-image salience by requiring subjects to wear bracelets to remind them of their donation (van der Weele and von Siemens, 2020). It should be noted that these studies do not directly address warm-glow giving; they measure both altruistic as well as warm-glow giving. Also, it is difficult to be confident whether these manipulations successfully increased self-image salience. What is also uncertain is the role social image plays in the giving decision. To assess the impact of social image, Andreoni and Petrie (2004) and Ariely et al. (2009) compare private and public choices, attributing any difference to social image concerns.³

We report results from an online experiment using participants from the Amazon Mechanical Turk (MTurk) subject pool testing the importance of self- and social image for warm-glow giving. All participants play CG's Dictator game with a charity as the recipient. Dictators and their chosen charities each receive the same endowment amount. The dictators decide how much of their endowment to pass to their chosen charities, knowing that their giving is crowded out \$1:\$1. CG argued that pure altruists would not donate since their donations would not benefit the recipients.⁴

Participants are randomly assigned to one of three treatments: the standard game (with minimal to no social image influence); the social image influence game [participants are "watched" by a pair of dynamic eyes (explained below) as they make their donation decisions]; and the social image influence choice game (participants have the option of turning off the watching eyes before making their donation decisions). All other features of the experiment are the same across treatments.

It is worth noting that social image concerns could be introduced in a variety of ways. For instance, participants could observe one another in the laboratory as they make their donation decisions. This

³Friedrichsen and Engelmann (2018) compare public and private willingness-to-pay for fair trade and conventional chocolate. Those with a pre-lab preference for conventional chocolate offered a premium for fair-trade chocolate; those preferring fair-trade chocolate did not offer a premium. They conclude that their results indicate a "... negative correlation between intrinsic motivation and image concerns" (p. 73).

⁴ Not all nongivers are pure altruists. Some may just be neither altruistically nor warm-glow motivated.

approach risks introducing influences which are not necessarily related to social image, e.g., attractiveness, gender, reciprocity, and power. Moreover, these stronger manipulations are quite difficult to scale up. Although our method for introducing social image is somewhat weak, it enables us to control for these unintended influences, and simulates a policy that charitable organizations could use to influence donations at a relatively low cost to both the organization and the donor. For example, charitable organizations could include a recording of eyes (or the face of a typical recipient) on their website where people make their donations.

The results from our experiment suggest that self-image is the primary driver for warm-glow giving, accounting for the majority of giving. Roughly 50% of all participants make a positive donation and the probability of making a positive donation does not significantly vary across treatments. Self-image driven giving averages \$0.25; 12.5% of the endowment. Social image driven giving significantly increases by an additional \$0.08 on average. The results also imply that once the eyes have been seen, the social image effect remains; even if the participant chooses to turn the eyes off, the effect of the eyes cannot be turned off.

Our paper contributes to several different literatures. Literature of particular relevance explores the impact of the appearance of being watched (i.e., static pictures of eyes, stylized images, and three dots resembling the placement of eyes and nose on a face) on prosocial behavior. The effectiveness of this manipulation is the subject of debate. Studies of the effect on dictators' behavior in laboratory experiments have been mixed (Haley and Fessler, 2005; Burnham and Hare, 2006; Rigdon et al., 2009; Nettle et al., 2013). Nettles' et al. (2013) meta-analysis of seven studies reports that the static watching eyes significantly increased the probability of passing a positive amount, but not the average amount passed. Manesi et al. (2016) argue that only "watching" eyes increase prosocial behavior. Watching eyes are static pictures of real eyes looking straight ahead rather than up, down, or off to the side. In laboratory and field studies using charities as recipients, the results are more positive (Keller and Pfattheicher, 2011; Ekström, 2012; Powell et al., 2012). More recent meta-studies suggest that the impact of static watching eyes is only reliably positive in the reduction of antisocial behavior, not in increasing prosocial behavior (Northover et al., 2017a and b; Dear et al., 2019).

Our study is distinct from this prior research in three ways. First, we elicit the sensation of being "watched" in a new and more realistic way. Unlike the studies cited above, our eyes are not static images of actual or stylized eyes, but instead are dynamic (i.e., a pair of actual eyes on a 26 second video loop). Second, our study directly tests the relative importance of self- and social image for warm-glow giving. The fact that prior research found the influences of eyes are mixed is consistent with our finding suggesting that social image is relatively less important than self-image with respect to warm-glow giving decisions. Third, in one of our treatments we allow for participants to turn off the image of the eyes. These novel methodological features provide a richer, more realistic context for us to examine the relative significance of self- and social image for warm-glow giving. In many instances, individuals can

choose to make their decisions in a public setting or, possibly, delay doing so until they are in a private setting.

We also contribute to the “reluctant altruism” literature (Cain et al., 2014; Lin et al., 2016; Golman et al., 2017; Lin and Reich, 2017; Liu and Lin, 2017). Reluctant altruists want to appear [to themselves (self-image) and to others (social image)] prosocial, without bearing the cost of being prosocial. Presented with a donation request, they face either the monetary cost of giving or the psychological cost of not appearing as prosocial. Both self- and social image can be saved by either having reasons (i.e., “moral wiggle room,” Dana et al., 2007) that justifies not giving or by sidestepping the giving requests. When individuals are offered the moral wiggle room of opting out of playing the Dictator game, many take the option; giving is significantly less (Dana et al., 2006; Larson and Capra, 2009).⁵ Donors use a charity’s high overhead as an excuse not only to reduce giving but also to not give at all (Exley, 2016). Field experiments report that subjects exert effort (i.e., using a less convenient exit) to avoid being asked (DellaVigna et al., 2012; Trachtman et al., 2015; Exley and Petrie, 2016; Andreoni et al., 2017).

Our third contribution is to the social distance literature. Decisions in CG style games are not totally anonymous; there is some element of social image at play. For, example, in laboratory experiments, participants’ decisions are often exposed when they complete and sign receipt forms. Social image concerns in online experiments using MTurk, should be virtually irrelevant as participants (identified only by ID numbers) are anonymous to the experimenters and no receipt form is signed.⁶ Social image concerns arise when social distance is reduced and the anonymity of the individual and the individual’s actions are lessened. Hoffman et al. (1994 and 1996) find evidence that anonymity reduces prosocial behavior in a Dictator game. Varying the degree of anonymity from complete anonymity (i.e., the double-blind protocol; neither the recipient nor the experimenter can identify the dictator or the dictator’s decision) to a single-blind protocol (i.e., while the recipient cannot identify the dictator, the experimenter can identify the dictator as well as the dictator’s allocation decision), they find increased social distance significantly reduces prosocial behavior. Andreoni and Bernheim (2009) show that even splits of the endowment in the Dictator game increase with the decrease in the anonymity of the dictators’ decisions. Burnham (2003) finds that, relative to a no picture treatment, giving significantly increases when dictators (recipients) receive pictures of their recipients (dictators); however, there is no significant difference across treatments in the likelihood of giving.

Finally, we contribute to the experimenter demand effect (Zizzo, 2010) and psychological reactance literatures (Brehm, 1966; Steindl et al., 2015). According to the experimenter demand effect argument, the participant believes that the experimenter wants the participant to donate and as a result does so.⁷

⁵ van der Weele et al. (2014) offer contrary evidence from a trust game.

⁶ One concern is experimenter demand effects. We address this in section 4.2.

⁷ Evidence suggests that experimenter demand effects are minimal (de Quint et al., 2019; Mummolo and Peterson, 2019). Gandullia et al. (2020) argue that an online sample might minimize experimenter demand effects as the experimenters are not physically present at the time of data collection.

The psychological reactance effect is just the opposite. Participants, believing that the experimenter wants them to donate, feel that their “freedoms” are threatened and react negatively to the threat and donate less. In our design, the potential for experimenter demand exists in all three of our treatments, possibly stronger in the watching eyes treatments. The potential for psychological reactance is strongest in the watching eyes treatments. Our results suggest that psychological reactance is more prevalent than experimenter demand. Approximately one-third of our participants in our watching eyes treatments expressed, in the post-experiment survey, either discomfort with the eyes watching or that they “understood” that the eyes were intended to influence their donation decisions. Rather than having the predicted experimenter demand effect (i.e., donating more frequently and donating more because they believed that is what the experimenters wanted), they, on average, donated significantly less frequently and donated significantly less. Our results are consistent with those of Damgaard and Gravert (2018), Bolton et al. (2019), and Fan et al. (2019) who illustrate how various nudges can potentially result in negative outcomes for charitable organizations. Removing those subjects who expressed either understanding of the intention of the eyes or discomfort with the eyes significantly increases the influence of social image on both the frequency of giving and the amount given.

2. Methodology

The experiment, consisting of five treatments, was preregistered at the Open Science Framework (Self-versus social image in warm-glow giving: <https://osf.io/ej7d3/>); only three were conducted.⁸ The survey was programmed in Qualtrics and conducted with participants registered on MTurk. To improve the quality of data collected, we restricted participation to individuals located in the United States with a high approval rate (80%) in their previously completed Human Intelligence Tasks (HITs) and included comprehension check questions. This experiment is a between-subject design.

The experiment consists of three parts. In part 1, participants receive instructions related to the warm-glow giving task. Participants select from a list of ten, a charity to receive any donation they make (see Appendix A). They then have two tries to correctly answer two comprehension check quiz questions testing their understanding of the task. Participants answering one or more of the questions incorrectly on both tries were not allowed to complete the remainder of the experiment. In part 2, participants are asked various demographic questions. In part 3, participants answer 10 questions taken from the Big Five Personality traits test (Rammstedt and John, 2007). Questions from parts 2 and 3 are in Appendix A.

Participants who successfully answered both part 1 quiz questions were randomly assigned to one of three treatments:

⁸ We did not collect data for the “static eyes” and the “pay to turn off the dynamic eyes” treatments. We believed that if the dynamic eyes had no effect, the static eyes would also have no effect and that adding a cost to turn off the eyes would possibly result in too few eyes turned off observations.

Treatment 1 (NoEyes): Standard game as in CG. Both participants and charity of choice receive endowments of \$2. Participants can donate to their chosen charity from their endowments, but donations crowd out the experimenter's donation \$1:\$1. Participants make their donation decisions while observing a neutral image on the computer screen, i.e., a grey circle. This measure was taken to control for participants being influenced by the mere presence of an image. In this treatment, self-image concerns are active but social image concerns should not be. Running sessions on MTurk means that participants are truly anonymous to the experimenter and could not be watched.

Treatment 2 (DynamicEyes): Same as treatment 1 but with a dynamic image (i.e., a 26 second video on a loop) on screen of real eyes looking out at the participant and down at the keyboard while participants are making their donation decisions (a screenshot from the video is provided in Figure 1).⁹ In this treatment, by including the eyes on the screen, both self- and social image concerns are active. This enables us to capture the marginal impact of social image on warm-glow giving.

Treatment 3 (TurnOffEyes): Same as treatment 2 but participants are introduced to the video and told the video would remain on while they make their donation decisions unless they choose, at no cost to themselves, to turn the video off. In this treatment, we capture an individual's revealed preference for not being watched while making their donation decision.



Please indicate how many ECU you wish to donate to your selected charity.

Figure 1: DynamicEyes video screenshot

To determine whether our inclusion of the dynamic eyes had the effect we were hoping for, in a post-experiment survey, we asked participants in the **DynamicEyes** and **TurnOffEyes** treatments: "What did you think about the eyes?" Responses were varied and are discussed in Section 4.1.

⁹ Available upon request.

We performed power analysis based on results from Gandullia et al. (2020), an online experiment measuring warm-glow giving using the MTurk subject pool. We used G*Power (Faul et al., 2007) to conduct the power analysis. Our goal was to obtain .80 power to detect an effect size of .23 (Cohen’s d) at a standard .05 alpha error probability. This necessitated a minimum sample size of 291 participants in each treatment for a two-sided t-test. We ultimately recruited 960 participants: **NoEyes**, 309; **DynamicEyes**, 314; **TurnOffEyes**, 337).¹⁰

After completing their donation decisions, participants completed parts 2 and 3.

3. Theoretical framework

Donors have a vision of how prosocial they are, or they think they are, which we denote by $\varphi \in [0, 1]$. If $\varphi = 0$, donors are not prosocial and do not care about how prosocial they appear to themselves. As φ increases to 1, donors become more concerned about appearing to themselves as prosocial. Additionally, donors have a vision of how prosocial others see them, which we denote by $\varphi_s \in [0, 1]$. If $\varphi_s = 0$, donors are not prosocial and do not care about how prosocial they appear to others. As φ_s increases to 1, donors become more concerned about the opinion of others.

Donors hold beliefs about the giving of others which we denote by $\mu \geq 0$. Donors wish to be at least equal to if not more prosocial than others. Donors control μ ; donors can through motivated reasoning (Kunda, 1990; Di Tella et al., 2015; Gino et al., 2016) direct μ towards 0; i.e., donors can convince themselves that others only give a small amount and therefore that is all that is required of themselves to maintain self-image. Hence, if φ is sufficiently high, donors will give but they can convince themselves that the amount they give, however small, is sufficient. In the extreme, it becomes the act of giving, not the amount given, that matters.

Donors also hold beliefs about what others think is the appropriate amount to give, which we denote by $\mu_s \geq 0$. These beliefs are only relevant when donors believe their actions are publicly observable. In this case, donors want to donate at least as much if not more than what others think is the appropriate amount. Donors cannot through motivated reasoning reduce μ_s . It is a judgment of others that they have no control over.

The donor’s utility is defined as follows:

$$U = u_1(Y - g) + \varphi u_2(g - \mu) + \varphi_s f u_3(g - \mu_s),$$

in which,

¹⁰ There were a total of 1,423 responses. We eliminated duplicates and those who failed to answer the two comprehension check quiz questions correctly do not appear in our dataset.

$Y > 0$ is the donor's income (or endowment in our experiment), $g \geq 0$ is the amount donated, μ, μ_s, φ and φ_s are defined as above, and $f \in \{0, 1\}$ is the degree of public observability. The first RHS term is utility from private consumption, the second term is utility from a prosocial self-image, and the third term is utility from a prosocial social image. We assume that u_1, u_2 and u_3 satisfy the conventional assumptions of monotonicity and concavity. Specifically, $u'_1 < 0$, $u'_2, u'_3 > 0$ and $u''_1, u''_2, u''_3 < 0$. Partially differentiating the donor's utility function with respect to the amount donated yields

$$\frac{\partial U}{\partial g} = u'_1 + \varphi u'_2 + \varphi_s f u'_3. \quad (1)$$

There are two potential scenarios that we can explore in relation to equation (1). They are as follows.

Case 1: Let $f = 0$, i.e., giving is not publicly observable. This scenario relates to the **NoEyes** treatment in our experiment.

Therefore, the optimal level of giving g^* , satisfies the following condition:

$$\begin{aligned} \frac{\partial U}{\partial g} &= u'_1 + \varphi u'_2 = 0, \\ &\Rightarrow \varphi u'_2 = -u'_1. \end{aligned}$$

Donors maximize utility by equating the marginal utility derived from self-image with the marginal disutility derived from reduced income.

Case 2: Let $f = 1$, i.e., giving is publicly observable. This scenario relates to the **DynamicEyes** and **TurnOffEyes** treatments in our experiment.

Hence, the optimal level of giving g^{**} , satisfies the following condition:

$$\begin{aligned} \frac{\partial U}{\partial g} &= u'_1 + \varphi u'_2 + \varphi_s u'_3 = 0, \\ &\Rightarrow \varphi u'_2 + \varphi_s u'_3 = -u'_1. \end{aligned}$$

Donors maximize utility by equating the sum of the marginal utilities derived from self-image and social image with the marginal disutility derived from reduced income.

We can illustrate the difference in the level of giving in cases 1 and 2 graphically, see Figure 2.

If giving is positive when it is not publicly observable ($f = 0$), then it will also be positive when it is publicly observable, i.e., if $g^* > 0$, then $g^{**} > 0$. Furthermore, when donors are concerned about both their self-images and their social images, and $f = 1$, they will donate more than when they are only

concerned about their self-images i.e., $g^* < g^{**}$. These points are summarized in the following hypothesis.

Hypothesis: Concerns over social image do not affect giving at the extensive margin but they might positively affect giving at the intensive margin.

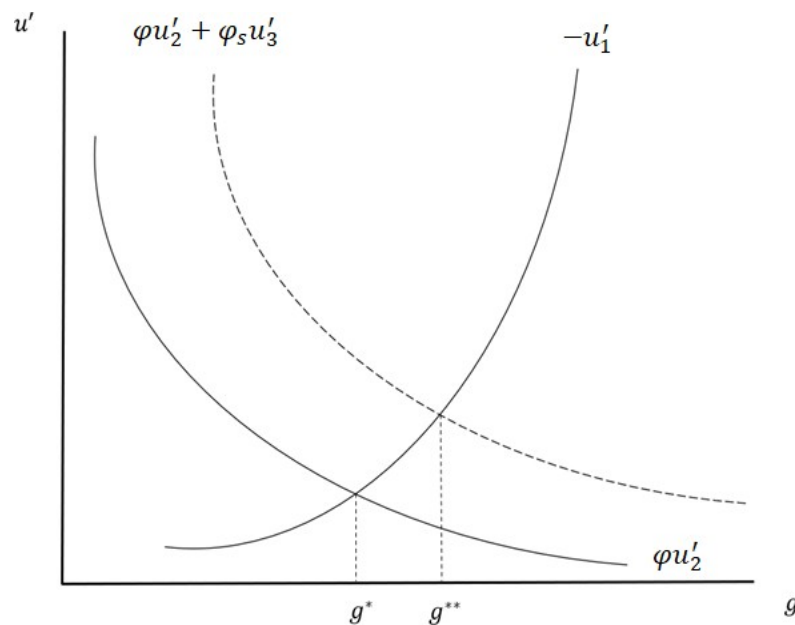


Figure 2: Optimal giving with and without public observation

4. Results

Appendix B, Table 1 provides a summary of the socioeconomic characteristics for the participant pool across the three treatments. Successful randomization is indicated by the lack of significant differences across treatments, with the exceptions of two Big 5 measures.¹¹

4.1 Experimenter demand or psychological reactance

We first consider if the watching eyes had a positive effect on the frequency and amount donated (i.e., an experimenter demand effect) or a negative effect (i.e., psychological reactance effect). We examine the comments and actions of the 651 participants who observed the watching eyes.

We classified participants into three categories based on their responses to the post-experiment survey question “What did you think about the eyes?” The comments of a majority (420) of participants are about the color, attractiveness, or other aspects of the eyes (Other). The second category (Discomfort)

¹¹ After applying the Bonferroni correction, only one characteristic (Conscientiousness) remains significant.

includes 184 comments that expressed discomfort with respect to the eyes (i.e., whether they disturbed the participant, if the eyes were “weird”, or they expressed concern about the watcher). The comments in this category did not overtly indicate that the eyes had any influence on the participants’ donation decisions. Finally, the last category (Influence) includes the 47 comments that suggested that the eyes were attempting to influence the participants’ donation decisions (i.e., “They were uncomfortable, and may have a psychological factor in people's choices,” “They were unsettling and potentially judging,” “they were there to force me to donate”). In Appendix B, Table 2, we report a randomly selected sample of 10 comments (verbatim) for each of the three categories.

At the bottom of Appendix B, Table 2, we report the frequency of donating and the average donation amount by category. We find no evidence of a positive experimenter demand effect, rather the evidence indicates a psychological reactance effect. On average, those who stated that they “understood” the purpose of the watching eyes did the opposite of what they believed the eyes were intended to bring about. Those who were discomforted by the eyes behaved in a similar manner. The frequency of giving and the average donation amount are significantly less for participants classified as Discomfort and Influence than those classified as Other (p -values < 0.001). There is no significant difference between Discomfort and Influence in either frequency of donating or average amount donated (p -values > 0.30).

In the subsequent analysis, we report results for the full sample, for the sample excluding those in the Influence category, and the sample excluding both those in the Influence category and the Discomfort category.

4.2 Main results

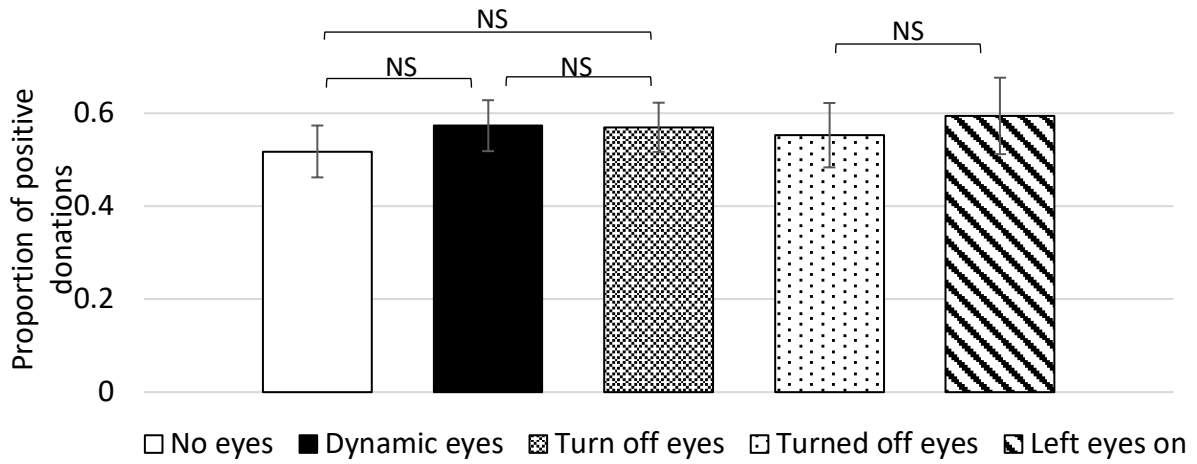
Result 1: Activating social image concerns by creating the appearance of being watched does not significantly increase the likelihood of warm-glow giving. Participants donate at approximately the same rate across the three treatments.

Across the three treatments, between 50 and 60% of participants make a positive donation (**NoEyes**: 51.8%; **DynamicEyes**: 57.3%; **TurnOffEyes**: 57.0% -- **TurnedOffEyes**: 55.3%; **LeftEyesOn**: 59.4%); see Figure 3, error bars represent 95% confidence intervals. Pairwise Fisher’s exact tests indicate no significant differences between treatments: **NoEyes** vs. **DynamicEyes**, p -value = 0.172; **NoEyes** vs. **TurnOffEyes**, p -value = 0.206; **DynamicEyes** vs. **TurnOffEyes**, p -value = 0.937).¹² A Kruskal-Wallis test for a difference across the three treatments also indicates no significant difference (p -value = 0.295).

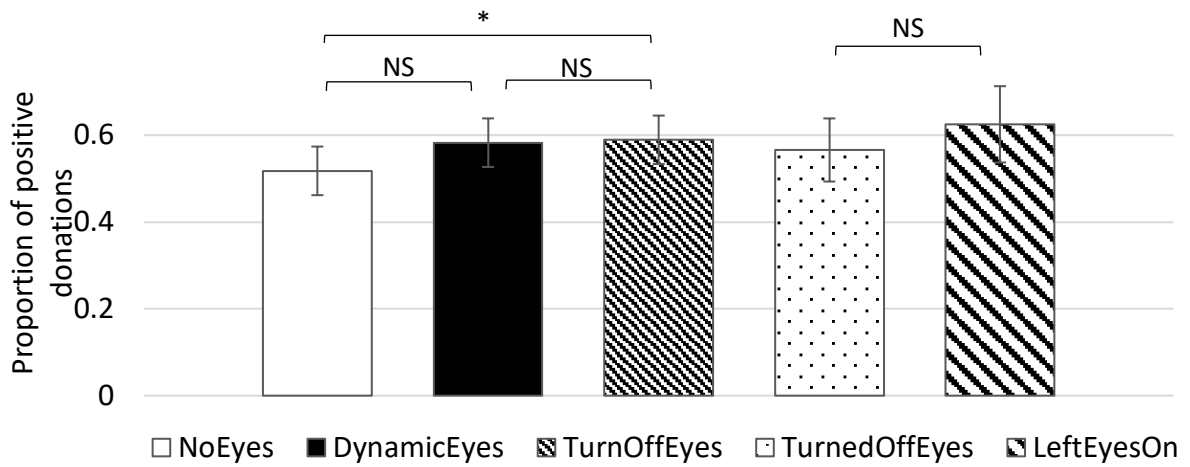
¹² All p -values reported are for two-tailed tests.

Figure 3: Proportion of positive donations across treatments

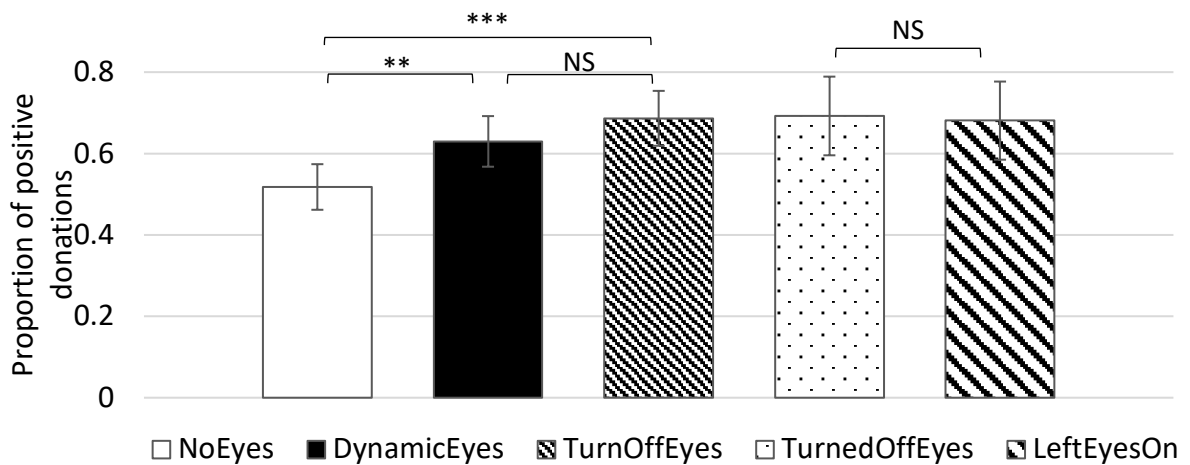
Panel A: Full Sample



Panel B: Full Sample less Influence



Panel C: Full Sample less Influence and Discomfort



Note: Error bars represent 95% confidence intervals

Our results replicate the rate of giving of both laboratory studies (CG; Luccasen and Grossman, 2017; Gangadharan et al., 2018) and MTurk studies (Gandullia, 2019; Gandullia et al., 2020). In these studies, social image concerns were minimal and between 40 and 60% of participants made a donation.

Result 1 is confirmed by a logit regression of *Donate* (= 1 if donation > 0) on dummy variables for the **DynamicEyes** and **TurnOffEyes** treatments (Appendix B, Table 3, column 1); **NoEyes** is the control group. Marginal values for the two treatment dummies equal 0.055 and 0.051, respectively, and they are both insignificantly different from zero and from one another (p -value = 0.928).

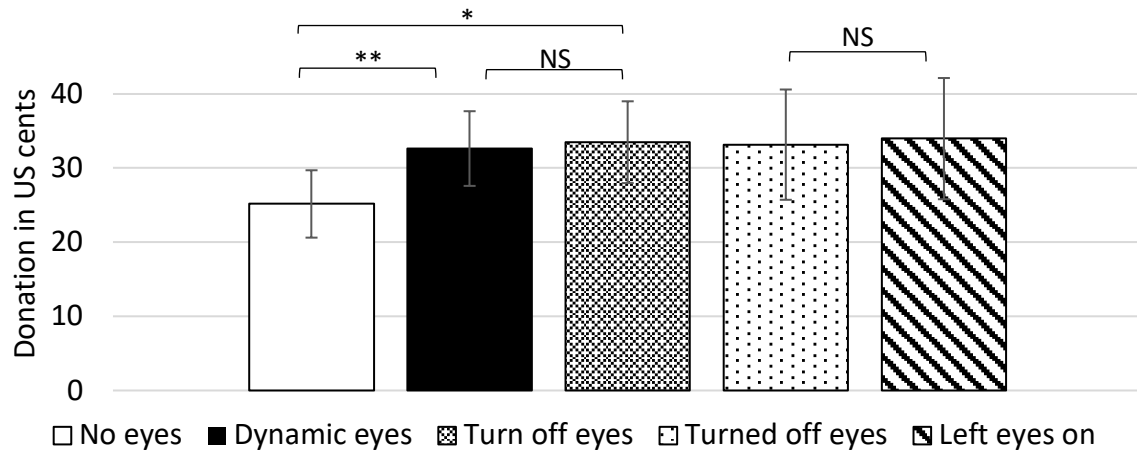
It should be noted that when we reduce our sample by excluding those in the Influence or Discomfort categories the results change dramatically. This point is reflected by a logit regression of *Donate* (= 1 if donation > 0) on dummy variables for the **DynamicEyes** and **TurnOffEyes** treatments (Appendix B, Table 3, column 3); **NoEyes** is the control group. Marginal values for the two treatment dummies equal 0.108 and 0.168, respectively, and they are both significantly different from zero (p -values < 0.01). This suggests that activating social image concerns by creating the appearance of being watched did significantly increase the likelihood of warm-glow giving for those who were neither influenced by nor discomforted by the watching eyes.

Result 2: Creating the appearance of being watched significantly increases warm-glow giving at the intensive margin, but self-image accounts for the majority of all giving.

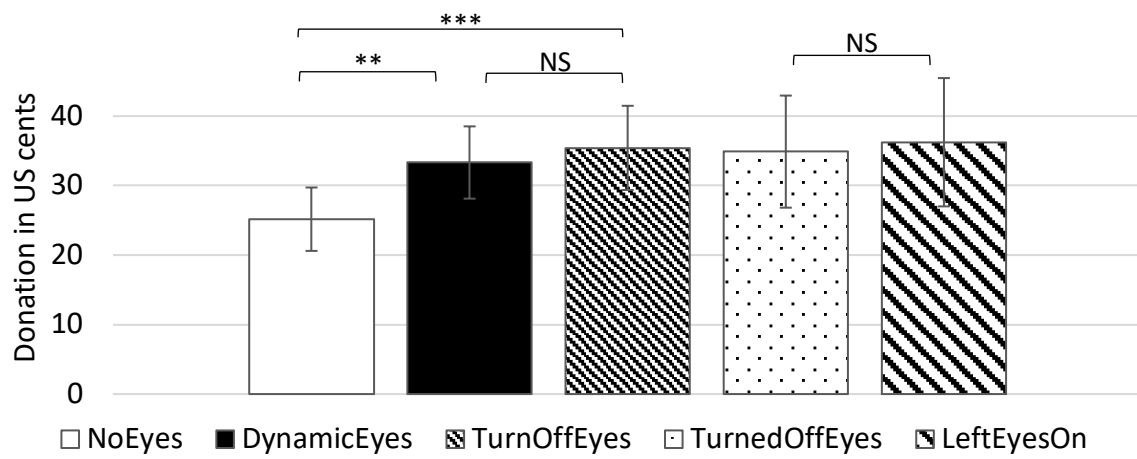
The average donation motivated by self-image, in the **NoEyes** treatment, is \$0.25, approximately 12.5% of the endowment (see Figure 4). Activating social image with the watching eyes increases the average donation by approximately 33%. The average donation in the **DynamicEyes** (**TurnOffEyes**) treatment equals \$0.33 (\$0.34). Pairwise t-tests and Mann-Whitney (MW) tests indicate significantly higher giving in the two Eyes treatments than the **NoEyes** treatment: **NoEyes** vs. **DynamicEyes** (t test: p -value = 0.031, MW: p -value = 0.017); **NoEyes** vs. **TurnOffEyes** (t test: p -value = 0.024, MW: p -value = 0.089); and **NoEyes** vs. combined **DynamicEyes** and **TurnOffEyes** treatments (t test: p -value = 0.014, MW: p -value = 0.020). A Kruskal-Wallis test for a difference across the three treatments indicates a significant difference (p -value = 0.055).

Figure 4: Average donations across treatments

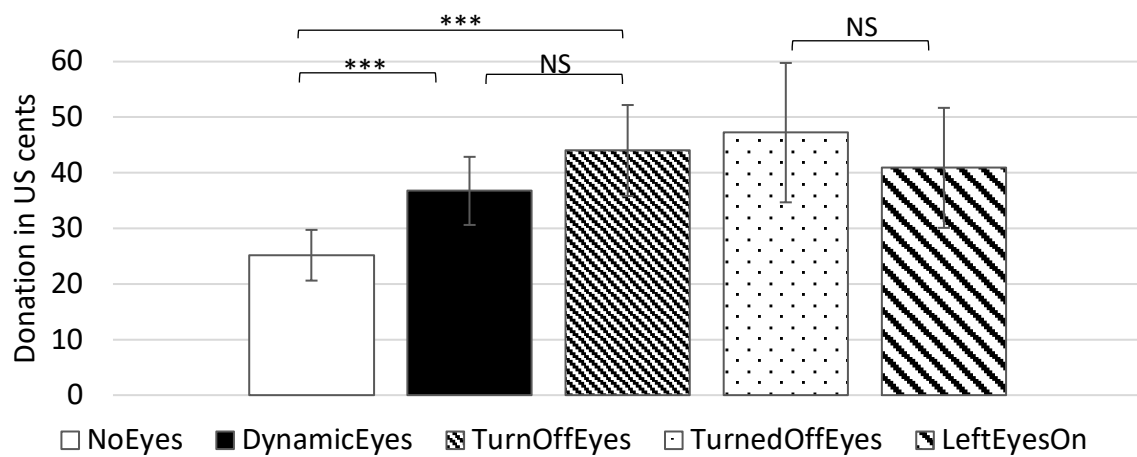
Panel A: Full Sample



Panel B: Full Sample less Influence



Panel C: Full Sample less Influence and Discomfort



Note: Error bars represent 95% confidence intervals

Result 2 is confirmed by a Tobit regression of Donation (= amount passed to the charity) on the **DynamicEyes** and **TurnOffEyes** dummy variables (**NoEyes** is our control group) with censoring at 0 and 200 (Appendix B, Table 4, column 1). Coefficients for the two dummy variables equal 12.8 and 14.3, both are significantly different from zero (p -value = 0.047 and 0.033, respectively), but they are insignificantly different from one another (p -value = 0.830).

Again, after excluding those in our sample in the Influence or Discomfort categories the results change dramatically (Appendix B, Table 4, column 3). The coefficients for the **DynamicEyes** and **TurnOffEyes** treatments increase by as much as 60% (to 20.9 and 33.0, respectively) and both are significantly different from zero (p -values < 0.01).

We also generated a variable Ratio (= Donation/average donation in the **NoEyes** treatment). Regressing Ratio on the **DynamicEyes** and **TurnOffEyes** dummy variables (**NoEyes** is our control group) gives coefficients of 29.9 and 33.3 for the two dummy variables, respectively, indicating that the appearance of being watched increased giving by approximately 30% (Appendix B, Table 5, column 1). This effect increases to between 46 and 75% (Appendix B, Table 5, column 3) when we exclude from our sample participants that were either influenced by or discomforted by the watching eyes. Both coefficients are significantly different from zero (p -values < 0.05) but are insignificantly different from one another (p -values > 0.1).

Results 1 and 2 are in line with the hypothesis derived in section 3.

Result 3: A majority (59%) of participants in the **TurnOffEyes** treatment turned off the eyes, but this did not alter their likelihood of donating or the amount donated.

As indicated in Figure 3, there was no difference in the proportion of positive donations in the **TurnOffEyes** treatment between the 199 participants who turned off the eyes (**TurnedOffEyes**) and the 138 participants who left the eyes on (**LeftEyesOn**), 55.3% vs. 59.4% (p -value = 0.502). Likewise, as indicated in Figure 4, leaving the eyes on did not significantly alter average giving: **TurnedOffEyes**: \$0.33; **LeftEyesOn**: \$0.34; (t test: p -value = 0.887, MW: p -value = 0.352).

Result 3 is confirmed by a logit regression, restricted to the **TurnOffEyes** subsample, of Donate on a dummy variable **LeftEyesOn** (=1 if participant did not turn off the eyes) and a Tobit regression, restricted to the **TurnOffEyes** subsample, of Donation on **LeftEyesOn**, with censoring at 0 and 200 (Appendix B, Table 6, columns 1 and 2, respectively). The marginal effect for **LeftEyesOn** from the logit regression equals an insignificant 0.04 (p -value = 0.45). The coefficient for **LeftEyesOn** from the Tobit regression equals an insignificant 3.84 (p -value = 0.70).

5. Conclusion

Prior research suggests approximately 50% of individuals are warm-glow givers. Whether these individuals give to maintain their self-images or to maintain their social images is something that required investigation. Our online experiment attempts to bridge this knowledge gap. We find that approximately 50% of our participants make a donation even though any giving was crowded out \$1:\$1, regardless of treatment, replicating the results of both laboratory and MTurk experiments. We find that participants donated significantly more in the **DynamicEyes** and **TurnOffEyes** treatments than in the **NoEyes** treatment. This suggests that warm-glow giving, while partially motivated by social image, is primarily motivated by self-image. We also find that approximately 59% of participants in our study chose to turn off the eyes prior to making their donation decisions, suggesting that participants have an aversion to being monitored while making donations, though it does not significantly impact the probability of giving or the amount given.

Approximately one-third of our sample in the **DynamicEyes** and **TurnOffEyes** treatments, indicated that the watching eyes were intended to influence donation decisions or were discomforted by the eyes. The behavior of these participants is consistent with a psychological reactance effect rather than a positive experimenter demand effect; the frequency of giving and the average donation are significantly less for these participants relative to the rest of the sample. Excluding these participants increases the impact of social image on both frequency of giving and average donations.

The use of social norms has been shown to be effective in increasing charitable giving (Croson et al., 2009; Agerström et al., 2016). Norms are important for both self- and social image. Societal norms help an individual determine whether or not to give and how much to give to maintain the desired self- and social image. The individual faces a trade-off between private consumption and both self- and social image; give more (less) and look better (worse) to one's self and to others. Prying eyes are less necessary for the individual to understand that giving is necessary to maintain the desired self-image. However, without the fear of diminished social image, the amount given is less important. The individual can, via motivated reasoning (Kunda, 1990; Di Tella et al., 2015; Gino et al., 2016) convince him/herself that the amount given, however meager, is the socially acceptable amount. Knowing, however, that prying eyes are watching, and judging, means the donor risks diminished social image if the donation is less than what the societal norm prescribes. The individual can still, via motivated reasoning, attempt to justify a meager donation, but it is no longer just the self that needs to be convinced, it is the others who observe the amount given.

Our results suggest that charities looking to increase their donor bases might effectively do so by focusing on the self-image concerns of potential donors, while charities looking to increase the amount donated by their existing donors might effectively do so by focusing on the social image concerns of the donors. The inclusion of dynamic eyes on the screen while participants make donation decisions is

essentially a nudge. The prominence and impact of nudges has grown significantly in recent years (see, for example, Lin et al., 2017; Marchiori et al., 2017; Congiu and Moscati, 2022). Like other nudges, the dynamic eyes on the screen imposed a very low cost to both the policymaker and the donor, and indeed had a positive impact on prosocial behavior. Consequently, this policy instrument is simple to implement on a large scale and can yield positive behavior change.

Warm glow has been used to justify behavior in a variety of settings e.g., public health, voter turnout, environmental policy, business, and philanthropy. By expanding our understanding of the determinants of warm-glow motivated behavior we can effect change in many policy relevant domains. Our findings suggest that policymakers wishing to encourage warm-glow motivated behavior should focus on highlighting the self-image incentives. Stressing social cues, though productive, is relatively less effective.

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Appendix A

[Note: the following instructions pertain to the NoEyes treatment. Instructions for the other treatments are very similar.]

Welcome

This HIT consists of XX Parts in total and will take approximately 10 minutes to complete. You are asked to answer some questions and make some decisions.

You will receive **\$2.00** for completing all XX Parts.

Part 1:

Charity choice

You will be paired with a charity of your own choosing selected from ten different charities listed below. A short description of each charity is also provided.

American Cancer Society

Provides many services to cancer patients and their families such as information, medical equipment, transportation to treatment locations, and a support system.

American Red Cross

Offers blood donation information and services, disaster relief, many helpful educational classes, as well as HIV/AIDS support groups.

Big Brothers Big Sisters

Provides one-to-one mentoring for youth and children residing in a one parent family for the purpose of creating caring, confident and competent young adults.

COVID-19 Solidarity Response Fund – WHO

Donations support WHO's work to track and understand the spread of the virus; to ensure frontline workers get essential supplies; and to accelerate research and development of a vaccine and treatments.

Doctors Without Borders

Doctors and nurses volunteer to provide urgent medical care in some 70 countries to civilian victims of war and disaster regardless of race, religion, or politics.

Feed the Children

One of America's most effective charities providing food, clothing, medical care, education, and emergency relief to children in the United States and overseas since 1979.

Oxfam America

Invests privately raised funds and technical expertise in local organizations around the world that hold promise in their efforts to help poor move out of poverty; committed to long term relationships in search of lasting solutions to hunger, poverty and social inequities.

Safe Horizon

Provides free and confidential services to survivors of intimate partner violence.

Sierra Club

Protects and preserves environmentally sensitive areas.

YMCA

Provides parent visitation monitoring services and physical fitness services.

Please indicate your charity of choice. Select one and only one charity.

- American Cancer Society _____
- American Red Cross _____
- Big Brothers Big Sisters _____
- COVID-19 Solidarity Response Fund – WHO _____
- Doctors Without Borders _____
- Feed the Children _____
- Oxfam America _____
- Safe Horizon _____
- Sierra Club _____
- YMCA _____

The charity you selected will receive \$2.00 from the experimenter. From the \$2.00 you have been paid, you have the option of donating to the charity you have just selected. You may donate as little or as much of your \$2.00 as you wish.

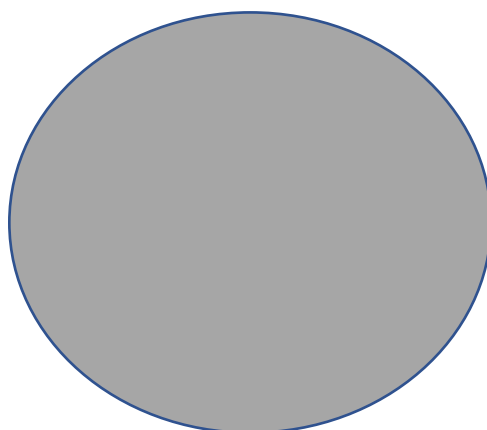
PLEASE NOTE: The amount contributed to your selected charity by the experimenter will be reduced by however much you pass to your selected charity. Your selected charity will receive neither more nor less than \$2.00.

Before you make your donation decision, please answer the following question.

You elect to keep \$1.50 for yourself and pass \$0.50 to your charity of choice.

How much will you be paid for your participation today? (In USD)

How much will your selected charity receive? (In USD)



Please indicate how much you wish to donate to your selected charity. _____

Part 2:

Please answer the following demographic survey questions.

Age _____

Your Gender:

Man

Woman

Non-binary/Gender Diverse

My Gender identity isn't listed

Prefer not to say

Highest Level of Education:

Not applicable

Primary School

High School

College Undergraduate Degree

Postgraduate Degree

Ethnicity:

African American

Caucasian

Hispanic/Latino

Asian

Native American

Other

Prefer not to say

My religion is very important to me

Strongly Disagree

Disagree

Neutral, Agree

Strongly Agree

Prefer not to say

Average Income per year:

Less than \$49,999

\$50,00-\$99,999

\$100,000-\$149,999

- \$150,000-\$199,999
- \$200,000-\$249,999
- More than \$250,000

In the past month, how many times have you volunteered your time to a charitable cause? _____

In the past month, how many times have you made a donation of money to a charitable cause? _____

[Chosen Charity] is a charity that supports a worthy cause?

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

“Think about the last time you gave to a charity before today. What was more important to you:”

- The total amount given by everyone, or
- The amount that you personally gave
- Both the total amount given by everyone and the amount you personally gave
- Some other aspect of giving

Why did you choose to donate/not donate to your chosen charity in Stage 1?

How many participants out of 10 do you believe donated to their charities of choice? _____

Part 3:

Please answer the following questions.

Instructions: How well do the following statements describe your personality? Please place an X indicating how strongly you agree or disagree with each statement.

I see myself as someone who:

		Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly
1	Is reserved					
2	Is generally trusting					
3	Tends to be lazy					
4	Is relaxed, handles stress well					
5	Has few artistic interests					
6	Is outgoing, sociable					
7	Tends to find fault with others					
8	Does a thorough job					
9	Gets nervous easily					
10	Has an active imagination					

Appendix B

Table 1: Summary statistics

	NoEyes	DynamicEyes	TurnOffEyes	Kruskal-Wallis test <i>p</i> -value (F-test <i>p</i> -value+)
Mean Age (Std. Err)	37.60 (0.62)	36.51 (0.60)	35.86 (0.56)	0.13 (0.11)
Gender				
Man	153	159	165	0.89*
Woman	155	155	172	(0.90)
Non-binary gender	1	0	0	
Education				
Not applicable	0	0	1	
Primary School	0	1	0	0.76
High School	86	70	72	(0.82)
College Undergraduate Degree	151	176	194	
Postgraduate Degree	72	67	70	
My religion is very important to me				
Strongly disagree	86	75	97	
Disagree	35	28	29	0.37
Neutral	38	49	40	(0.37)
Agree	86	83	81	
Strongly agree	62	78	83	
Prefer not to say	2	1	7	
Income				
< \$49,999	140	142	141	
\$50,00-\$99,999	126	131	133	0.73
\$100,000-\$149,999	24	29	28	(0.25)
\$150,000-\$199,999	11	10	16	
\$200,000-\$249,999	6	2	7	
> \$250,000	2	0	4	
Ethnicity				
African American	22	26	37	
Caucasian	246	225	244	
Hispanic/Latino	10	25	20	0.26
Asian	15	17	17	(0.51)
Native American	13	19	12	
Other	2	2	5	
Prefer not to say	1	0	2	
Extraversion (Std. Err)	5.16 (0.19)	5.38 (0.12)	5.42 (0.12)	0.27 (0.24)
Agreeableness (Std. Err)	6.91 (0.11)	6.97 (0.11)	6.96 (0.10)	0.95 (0.91)
Conscientiousness (Std. Err)	7.75 (0.10)	7.19 (0.11)	7.63 (0.09)	0.003 ^β (0.0002) ^β
Neuroticism (Std. Err)	5.47 (0.13)	5.74 (0.12)	5.38 (0.11)	0.05 (0.09)
Openness (Std. Err)	7.12 (0.11)	7.04 (0.10)	7.22 (0.10)	0.39 (0.44)
Observations	309	314	337	

Notes: * - chi-square contingency table test *p*-value; + Regression (OLS) of characteristic on treatment dummy variables, *p*-value of F-statistic. ^β - Statistically significant after applying the Bonferroni correction.

Table 2: Ten randomly selected written comments by category and donation amount

Comments (verbatim)	Tokens Donated	Other (n=420)	Discomfort (n=184)	Influence (n=47)
The eyes expressed a panic situation.	50	X		
sad	30	X		
Very sad and expecting	0	X		
alluring	100	X		
THE OWNER OF THIS EYES HAVE SOME PHYSICAL PROBLEM	150	X		
I could really tell what color they were. They were like a grey/blue mix.	0	X		
They are unhealthy.	30	X		
I didn't have many thoughts on them.	0	X		
has any defects	20	X		
A question to check that I am not a robot.	20	X		
Unrelated to the task, distracting	0		X	
I thought I was a little uncomfortable looking directly at eyes like that.	0		X	
It shows me that he or she need some help	30		X	
kind of disturbing	0		X	
it was very weird	0		X	
watching me	50		X	
They scared me because they looked so mean.	25		X	
They were sort of ominous.	0		X	
they were annoying	0		X	
The eyes seemed creepy and judgmental.	0		X	
I understand what you're trying to study, but for me this was simply a math problem and the eyes had no effect.	0			X
They were uncomfortable, and may have a psychological factor in people's choices	0			X
I think they were meant to make me donate	0			X
They made you feel like you were being watched and therefore judged about your choice	50			X
They were unsettling and potentially judging	100			X
I thought they were creepy and judging.	25			X
they were there to force me to donate	0			X
They were meant to make me feel judged.	0			X
I felt that the eyes were watching me make my decision on whether or not to donate.	0			X
It looks judgmental.	0			X
% donating (full sample)		65.5%	42.9%	38.3%
Chi-square test p-value				
Other v Discomfort				
Other v Influence				
Discomfort v Influence		0.565		
Average donation (full sample) (Std Err.)		39.94 (2.53)	21.68 (3.13)	16.49 (4.09)
t-test p-value (two-tailed)				
Other v Discomfort				
Other v Influence				
Discomfort v Influence				

Table 3: Decision to donate

	Marginal Effect (Std Err.)		
	Full Sample	Full Sample less Influence	Full Sample less Influence and Discomfort
DynamicEyes	0.055 (0.040)	0.064 (0.040)	0.108*** (0.041)
TurnOffEyes	0.051 (0.039)	0.071* (0.040)	0.168*** (0.044)
Pseudo R ²	0.002	0.003	0.016
N	960	913	729

Notes: Logit regressions; Dependent variable: Donate (= 1 if donation > 0, otherwise 0); NoEyes is the omitted treatment; *** 1%, ** 5%, * 10% significance level.

Table 4: Amount donated

	Coefficient (Std Err.)		
	Full Sample	Full Sample less Influence	Full Sample less Influence and Discomfort
DynamicEyes	12.84* (6.69)	14.13** (6.76)	20.92*** (6.88)
TurnOffEyes	14.25** (6.58)	17.96** (6.76)	32.99*** (7.33)
Constant	-4.42 (4.95)	-4.50 (4.97)	-3.101 (4.79)
R ²	0.001	0.001	0.004
N	960	913	729

Notes: Tobit regressions; Dependent variable: Donation (= amount donated); censored at 0 and 200; NoEyes is the omitted treatment; *** 1%, ** 5%, * 10% significance level.

Table 5: Ratio

	Coefficient (Std Err.)		
	Full Sample	Full Sample less Influence	Full Sample less Influence and Discomfort
DynamicEyes	29.70** (14.77)	32.43** (15.10)	46.00*** (16.30)
TurnOffEyes	33.12** (14.51)	40.78*** (15.10)	74.85*** (17.50)
Constant	100.00*** (0.10)	100.00*** (0.11)	100.00*** (0.11)
R ²	0.006	0.007	0.024
N	960	913	729

Notes: OLS regressions; Dependent variable: Ratio (= Donation/average donation in the NoEyes treatment); NoEyes is the omitted treatment; *** 1%, ** 5%, * 10% significance level.

Table 6: TurnOffEyes Only: Decision to give and amount given

	1	2
	Logit+	Tobit++
	Marginal Effect (Std Err.)	Coefficient (Std Err.)
LeftEyesOn	0.04 (0.05)	3.84 (10.20)
Constant		4.98 (6.86)
Pseudo R ² R ²	0.001	0.0001
N	337	

Notes: Full sample; + Dependent variable: Donate (= 1 if donation > 0, otherwise 0); ++ Dependent variable: Donation (= amount donated); censored at 0 and 200; # Dependent variable: Ratio = (= Donation/average donation in the NoEyes treatment); TurnedOffEyes is the omitted variable; *** 1%, ** 5%, * 10% significance level.