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Original Article

Effects of Watching Eyes and Norm Cues on Charitable Giving in a Surreptitious Behavioral Experiment

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Abstract: A series of experimental studies by multiple groups of researchers have found that displaying images of watching eyes causes people to behave more prosocially. It is not yet clear whether watching eyes increase prosocial motivation per se, or whether they simply make people's behavior more normative. Here, we report results from a surreptitious behavioral experiment examining the impacts of watching eye images and cues to local norms on charitable donations in a controlled setting. Eye images significantly increased average donations. Eye images did not make people conform more closely to the apparent norm overall. Instead, there were different patterns according to the apparent norm. For an apparent norm of small donations, eye images made many participants more generous than the norm. For an apparent norm of large donations, there was an excess of participants giving zero in the no-eyes treatment, which was abolished in the eyes treatment. Our results can be explained by a combination of watching eyes increasing prosocial motivation and reluctance to leave a donation visibly less generous than the norm.

Keywords: charitable giving, prosocial behavior, watching eyes, norms, norm psychology

Introduction

Many studies have found that people are more generous to others when they act under the gaze of watching eyes. This is true when those eyes belong to real human beings (Bull and Gibson-Robinson, 1981; Kurzban, 2001). More recently, experimental results have been reported showing that even artificial images of eyes can suffice to induce more prosocial behavior (e.g., Baillon, Selim, and van Dolder, 2013; Bateson, Nettle, and

Roberts, 2006; Burnham, 2003; Burnham and Hare 2007; Ekström, 2012; Ernest-Jones, Nettle, and Bateson, 2011; Francey and Bergmüller, 2012; Haley and Fessler, 2005; Keller and Pfattheicher, 2011; Nettle et al., 2013; Powell, Roberts, and Nettle, 2012; Rigdon, Ishi, Motoki, and Kitayama, 2009; Sparks and Barclay, 2013 ; though see Fehr and Schneider, 2010).

There are two subtly different accounts of how the "watching eyes effect" works. The first (the prosociality account) is that the possibility of observation always causes a directional increase in the level of prosociality. This hypothesis is supported by models of the evolution of cooperation through reputation-based partner choice (Roberts 1998; Sylwester and Roberts, 2010). In these models, a direct payoff for unconditional generosity is being chosen by others as an interaction partner in the future. This suggests that the greater the observability of a behavioral act, the more individuals should use that act to display their generosity.

The second account (the normativity account) is suggested by norm psychology. Humans are, in many contexts, motivated to behave as people in their surrounding environment do (Kallgren, Reno, and Cialdini, 2000) and will often sanction departures from normative behavior in others (Chudek and Henrich, 2011). Thus, it could be that watching eyes make people more concerned with conforming to local norms because of the possibility of sanctions by observers. This hypothesis predicts that eye images would make people conform more closely to what they perceive to be the locally normative level of prosociality. Where the local norm is a low level of prosociality, watching eyes might actually reduce levels of prosocial behavior relative to when there are no watching eyes. Support for the normativity account came from a study by Nettle at al. (2013), which showed that, in a laboratory test of generosity, eye images decreased the variance in donations; that is, fewer participants gave either nothing or everything when eyes were displayed.

To date, there has been only one direct attempt to adjudicate experimentally between the prosociality and normativity accounts of the watching eyes effect. Bateson, Callow, Holmes, Redmond Roche, and Nettle (2013) looked at rates of littering in public areas under a 2x2 factorial experimental design; eye images were either displayed or not displayed and litter was either strewn about or cleared up to manipulate the perception of locally normative behavior. This constitutes an *experimentum crucis* between the two accounts, since the prosociality account predicted that watching eyes would decrease littering in both the littered and the litter-free condition, whereas the normativity account predicted that eyes would decrease littering only (or more) in the litter-free condition. Bateson et al. (2013) found evidence for main effects of both watching eyes and the local norm, but no evidence for the interaction predicted by the normativity account. They thus interpret their results as lending more support to the prosociality than the normativity account of the watching eyes effect.

In the current study, we sought to complement the efforts of Bateson et al. (2013) in adjudicating between the prosociality and normativity accounts. We also created a 2x2 factorial design in which watching eyes were either present or absent and cues were placed in the environment to suggest that the norm was either high or low levels of prosociality. Our paradigm differed from theirs in a number of key respects. Bateson et al.'s (2013) was a field experiment in a public setting. Although this provides the advantage of high ecological validity, it also introduced a significant amount of uncontrolled variation (e.g., in

how many real people were in the vicinity at the time of the decision whether to litter or not). Our study took place in a more controlled setting with volunteers who were alone at the time of their choice. In addition, the outcome measured by Bateson et al. (2013)—i.e., littering—is an antisocial behavior with clear injunctive and legal proscription against it. The factors affecting the probability of littering need not be identical to those affecting a more positive act of generosity. Thus, we chose as our outcome *charitable giving*, a positive—but not prescribed—prosocial act that we have elsewhere shown can be susceptible to the watching eyes effect (Powell et al., 2012). Finally, our norms manipulation was not concerned with whether it was normative to be prosocial, as in the Bateson et al. (2013) study, but rather the magnitude of the prosocial act (i.e., the size of charitable donation) that was locally normative.

Our design involved placing an opportunity for charitable giving at the end of a study. The study, which involved filling in questionnaires on a computer, was advertised as relating to prosociality, but the key behavioral decision took place after the study had ostensibly finished and was not presented as part of the study's measures. At the end of the questionnaire task, the participant was paid for their participation in coins. A transparent charity donation jar had been placed in the laboratory with an appeal to donate. Cues that donation was normative were provided by having 45 coins already visible in the jar, and cues to the magnitude of donation that was normative were manipulated by altering the denominations of those coins. Manipulating the money visible in a collection box has been shown to affect people's donations in a series of field experiments (Martin and Randal, 2008, 2009). Among other effects, Martin and Randal found that donation amounts were strongly influenced by the denominations of the initial seed money. In our experiment, the distributions of coins already in the jar were chosen to cue descriptive norms either that most donations were small (around 10 or 20 pence; the small-norm treatment), or that most donations were large (£1 or more; the large-norm treatment). The watching eyes manipulation involved displaying posters on the laboratory walls that were irrelevant to the current study and either did (eyes treatment) or did not (no eyes treatment) have eye images on them.

The critical prediction of the prosociality account is that watching eyes should directionally increase the level of donations, regardless of what the apparent local norm is. Thus, we should see a positive effect of watching eyes on the average level of donations in both the small-norm and large-norm treatments. It is not possible to specify in advance a prediction from the normativity account for whether eyes will increase or decrease the average donation, since this will depend on how far the average donation is from the norm when eyes are absent. However, the normativity account does critically predict that there should be a greater prevalence of donations that conform to the apparent norm when eyes are present than when they are absent. To test this, we categorized donations as either conforming or not conforming to the apparent norm, and tested whether conforming donations were more prevalent when eyes were displayed than when they were not.

Materials and Methods

Ethics statement

Ethical approval for the study was attained from the Newcastle University's Faculty of Medical Sciences ethics committee. All participants gave formal written consent and

were fully debriefed about the nature and critical variables of the study. All monies put into the charity jar in the course of the study were donated to the designated charity.

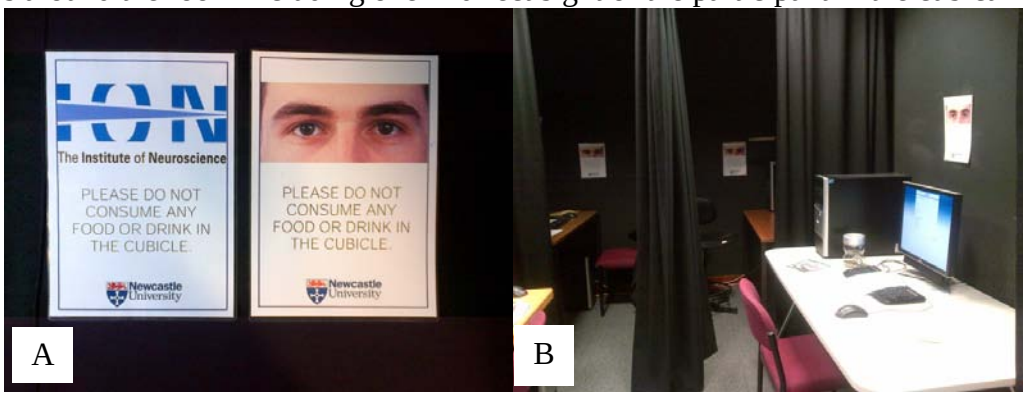
Participants

In total, 123 participants were recruited from a volunteer database held by the Institute of Neuroscience, Newcastle University. This database includes university students and staff as well as other members of the community. The volunteers included 45 males (37%) and 78 females (63%) aged 18–74 years (M = 34.57, SD = 15.50). Subjects were invited via email to take part in a study to examine "the impact of personality and faith on pro-social behaviors." Volunteers were told that they would be able to take up to £5 home.

Materials

Posters. We used the male-eyes and control posters from Nettle et al. (2013). The posters displayed the irrelevant message "please do not consume any food or drink in the cubicle." In the eyes treatment, the message was combined with a masculine face, whereas in the control treatment, an Institute of Neuroscience logo replaced the face (see Figure 1A). There were five identical posters in each condition that were displayed around the room, and one poster was placed directly above the monitor of the computer on which the participant would work. Therefore, the poster was constantly present in the participants' peripheral vision in the cubicle during the course of the experiment (see Figure 1B).

Figure 1. (A) The posters used in the experiment; (B) The laboratory set up with five posters around the room including one in direct sight of the participant in the cubical



Charity jar. Placed on the desk where the participant sat was a transparent plastic charity jar with a coin slot and logos of a local charity. The charity was the Great North Air Ambulance (GNAA), a well-known local organization that provides air ambulance services in the North of England. In both treatments, the jar contained 45 coins, but in the large-norm treatment, those coins mainly consisted of £1 and £2 coins, giving a total jar value of £56.50. In the small-norm treatment, the coins in the jar were mostly 10p and 20p, giving a total jar value of £25.50. We envisaged that most people would donate due to the proximity of the jar, a direct appeal to donate, and the fact that we provided each participant with their £5 in coins (see below). It was not obvious that we would empty and count the jar's contents after every participant, and the amount donated was never described as part of the study.

Procedure

Subjects were greeted by the experimenter and were taken to the laboratory where the experiment took place. The laboratory had been preset with the appropriate posters and charity jar. Before starting the experiment, participants were asked to sign a consent form and receipt for the £5 that they would receive during the experiment, emphasizing the fact that this sum now belonged to them. On the table in the cubicle, the subjects found an instruction sheet in the center, a brown envelope marked "£5" on the right-hand side of the desk, and the charity jar and GNAA information leaflet on the left-hand side of the desk (see Figure 1B). The brown envelope contained £5 made up of seven coins of all denominations between 10p and £2 (1 x £2, 2 x £1, 1 x 50p, 2 x 20p, 1 x 10p), allowing the participant to make donations of any size they wished.

Participants were left alone in complete privacy for approximately 15 minutes while they completed a number of personality questionnaires via a web browser. These included a five-factor personality inventory and the Santa Clara Strength of Religious Faith questionnaire (Plante and Boccaccini, 1997). The questionnaire measures were irrelevant to our hypotheses and are not analyzed here. In the final step of the online survey, participants were informed that they completed the questionnaires and that the £5 was theirs to take away, but they could, if they wished, donate some of it to our featured charity, the GNAA.

When participants had finished, they notified the experimenter, who re-entered the room and debriefed them. After each participant, the jar was emptied and the amount of donation was separated and recorded.

Data analysis

Donations to the charity jar are hereafter expressed in pence. We treated amount donated as a continuous variable since, by using combinations of the coins and in some cases introducing coins of their own, the participants made donations of 16 different values. The data were analyzed using R (R Core Development Team, 2013). The distribution of donations was truncated at zero and was extremely right skewed, with many people donating nothing and a few donating 500p. Thus, we modeled the data using negative binomial regression rather than normal linear models. Using Poisson regression produces the same results and conclusions as the negative binomial regression, but negative binomial regression is more appropriate because the variance in donations was very much larger than the mean (M = 88.74p, variance = 19939.43p), indicating overdispersion. Our main analysis treated donations as a continuous variable. However, previous studies have often found watching eyes to specifically affect the probability of donating something rather than nothing (Haley and Fessler, 2005; Nettle et al., 2013), and so we also categorized donations dichotomously into zero and more than zero, and tested for the effects of eyes, norm, and their interaction on this outcome.

To test the prediction of the normativity account, we classified donations as "conforming" if the norm was small and the amount donated was between 1p and 99p or if the norm was large and the amount donated was 100p or more, and "non-conforming" otherwise. We then tested whether conforming donations were more frequent in the eyes treatment than the no-eyes treatment, both for the whole sample and for the subset of participants who donated something.

Results

The data from the study are available in "csv" format as Electronic Supplementary Material. Sixty-six participants (54%) donated something. The median donation overall was 33p, but the median amongst those who donated something was 100p. In preliminary analysis, we fitted a negative binomial model with amount donated as the response variable and age and sex as the predictors. There were no significant effects (Age: $B = 0.011$, $s.e.(B) = 0.015$, $z = 0.762$, $p = 0.446$; Sex: $B = 0.720$, $s.e.(B) = 0.487$, $z = 1.478$, $p = 0.139$). Thus, in subsequent analysis, we did not include age or sex in the models.

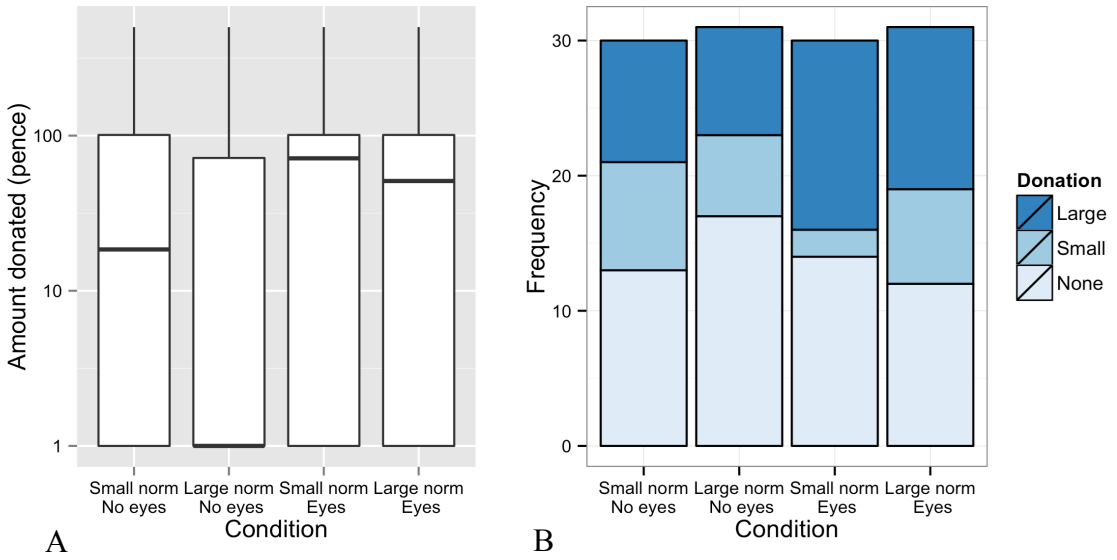
In all conditions, there were participants who gave nothing, and a few participants who gave 500p. However, the median donation was higher across the two eyes conditions (50p) than the two no-eyes conditions (10p). The median donations were very similar across the two large-norm conditions and the two small-norm conditions (35p and 33p, respectively). Figure 2A shows a boxplot of donations by condition. As the figure shows, the median donation was larger when eyes were present than absent, both in the small-norm treatment and in the large-norm treatment, but the difference was much more marked in the large-norm treatment. This was, however, due to a low median donation when eyes were absent rather than an especially high median donation when they were present (medians: small, no eyes = 20p; small, eyes = 72.5p; large, no eyes = 0p; large, eyes = 50p).

To test these differences formally, we fitted a negative binomial regression model with eyes, norm, and their interaction as predictors. The main effect of eyes was significant ($B = 0.308$, $s.e.(B) = 0.028$, $z = 11.172$, $p < 0.001$), as was the interaction between eyes and norm ($B = -0.127$, $s.e.(B) = 0.038$, $z = -3.273$, $p = 0.001$). The main effect of norm was not significant ($B = 0.045$, $s.e.(B) = 0.029$, $z = 1.537$, $p = 0.125$). These effects did not appear to be driven by significant alterations in the probability of giving something rather than nothing, because in the logistic regression model predicting donating something versus nothing from eyes, norm, and their interaction, there were no significant effects (Eyes: $B = -0.135$, $s.e.(B) = 0.519$, $z = -0.259$, $p = 0.795$; Norm: $B = -0.462$, $s.e.(B) = 0.516$, $z = -0.897$, $p = 0.370$; Norm*Eyes: $B = -0.788$, $s.e.(B) = 0.732$, $z = 1.077$, $p = 0.281$).

To test the normativity account of the watching eyes effect, we computed the frequencies of conforming and non-conforming donations in the eyes and no-eyes treatments. In the whole sample, 16 of 61 donations (26.2%) were conforming in the no-eyes treatment, and 14 of 61 (23.0%) in the eyes treatment. This difference was not significant ($OR = 0.838$, $X^2(1) = 0.177$, $p = 0.674$). Restricting the analysis to those participants who donated something, 16 of 31 (51.6%) were conforming in the no eyes treatment, and 14 of 35 (40%) were conforming in the eyes treatment. Again, the difference was not significant ($OR = 0.625$, $X^2(1) = 0.894$, $p = 0.344$).

To qualitatively understand the nature of the eyes effect and of the interaction between eyes and norm, we tabulated the frequencies of zero, small (1–99p), and large (100p+) donations across the four conditions (see Figure 2B). The large-norm condition without eyes produced the greatest prevalence of zero donations (17 out of 31). Adding eyes in the large-norm condition reduced the frequency of these zero donations from 17 to 12, increasing the prevalence of large donations (8 to 12) more than small donations (6 to 7). In the small-norm treatment, the principal impact of the eyes appears to have been to increase the frequency of large donations (from 9 to 14) while decreasing the frequency of small ones (from 8 to 2).

Figure 2. (A) Boxplot of donations by condition; (B) Breakdown by condition of the frequencies of no donation, small donations (less than 100p), and large donations (100p or more)



Note. Logarithmic scale; dark bars represent the median

Discussion

We created a 2x2 factorial experiment where participants chose whether and how much to donate to a charity jar with or without images of watching eyes in their environment, and with cues indicating other donors had donated either large or small amounts. The prosociality account of the watching eyes effect predicted that average donations would increase in both the large- and small-norm treatments, whereas the normativity account predicted that the effect of the eyes would be to make people conform to the apparent norm of donations suggested by the coins in the jar.

We found a significant main effect of eyes on average donation, with eyes leading to higher average donations. Cohen's *d* for the eyes/no-eyes comparison was 0.15, suggesting that the effect was small, though this measure of effect size is perhaps misleading given the highly non-normal distribution of donations. The prosociality account of the watching eyes effect was supported in that the average donation was higher when eyes were present than when they were absent, both in the large-norm and small-norm treatments. Unlike several of the previous studies (Haley and Fessler, 2005, Nettle et al., 2013), the eyes effect was not driven by a change in the probability of giving anything at all, since giving nothing was only marginally more common in the no-eyes than the eyes conditions.

There was no evidence that watching eyes made people more likely to conform to the apparent local norm. This was true when considering all participants and remained true when considering only those who donated something. The latter is perhaps the more relevant comparison, since our norms manipulation concerned the apparent amounts people donated and not their probability of donation. The presence of eyes in the small-norm treatment *decreased* the frequency of small donations, even though these were apparently

normative, and *increased* the frequency of large donations, even though these were apparently counter-normative. Thus, the pattern is hard to explain under the normativity account. It suggests instead that people in the low-norm treatment signaled greater-than-average generosity when they felt observed, as would be predicted by models of reputation-based partner choice (Roberts, 1998; Sylwester and Roberts, 2010). Far from people conforming to the crowd when they felt they were being watched, they were more likely to make donations that made them stand out. This is consistent with our previous field experiment in which watching eyes increased charitable donations in a context where it was not normative to donate (Powell et al., 2012).

However, this does not mean that the norms manipulation in our experiment was irrelevant to the impact of the eyes. There was a significant interaction between eyes and norm. This was driven by a pattern in the large-norm treatment that we interpret as suggesting that normative concerns were at play. When eyes were absent in the large-norm treatment, there was a relative excess of zero donations, and hence a median donation of zero. This might reflect people feeling unwilling to make a visibly smaller-than-normative donation and preferring instead to donate nothing at all. The effect of the eyes in this treatment was to increase the frequency of large (not small) donations while reducing the frequency of zeroes. Thus, the eyes provided an increase in motivation to be prosocial, but the norm cues provided the indication of what an acceptable minimum level of prosociality might be.

Taken across the two norms treatments, our results can be explained by a combination of an increase in prosocial motivation when people are exposed to cues of being watched (regardless of norm) and a normative concern in at least some participants not to make donations that are visibly less generous than other people in the local environment are making. This concern did not appear to be symmetric, in that many participants in the low-norm treatment made donations that were apparently *more* generous than those of other people. Thus, though there was no support for the specific normative account of the watching eyes effect discussed by Nettle et al. (2013), there was support for the more general influence of normative concerns on prosocial decisions. This conclusion is somewhat similar to that of Bateson et al. (2013), who found effects of both watching eyes and normative cues on littering behavior but did not find that the effect of watching eyes could be reduced to increased conformity to an apparent local norm.

We did not find a main effect of apparent norm (Cohen's *d* for mean donation across the two norms treatments = 0.02), and thus did not replicate the main findings of Martin and Randal's (2008, 2009) larger field experiments. However, we did not have an empty-jar condition, and so we did not directly address one of their key findings that evidence of other people donating increases the probability of donation compared to no evidence. In addition to finding that putting larger denominations or larger sums in the box increased the average size of donations, Martin and Randal found that larger denominations or larger sums decreased the number of donations. They attributed this to people declining to contribute at all when their contribution would be visibly less generous than the norm. Our data from the large norm, no-eyes treatment suggest a similar pattern. However, the eye images helped overcome this effect, reducing the prevalence of zero donations in the large-norm treatment to the same level as the small-norm conditions. This suggests that interventions of the kind used by Martin and Randal (2008, 2009) to increase giving are likely to be most effective when people make their donation decisions under cues of being

watched, either from real people or, as in the present study, artificial eye stimuli. More generally, our results confirm the considerable potential for the use of watching eye images in increasing charitable generosity (Powell et al., 2012), and support models of prosociality based on the idea that unconditional giving has its origins in reputation-building signaling (Roberts, 1998; Sylwester and Roberts, 2010), and is thus sensitive to the potential of conspecific observation.

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