

# Stylized and Photographic Eye Images Do Not Increase Charitable Donations in a Field Experiment

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The effects of watching eyes upon prosocial behavior have been explored in various contexts, for example, in relation to charitable donations, honor-system payments and littering. Whilst studies have explored the effects of both photographic and stylized eyes upon prosocial behavior, no study, to our knowledge, has compared stylized eyes to photographic eyes. Here we explored the effects of stylized and photographic eye images upon prosocial behavior assessed via charitable donations in a 'free cakes' field experiment. Charitable giving was assessed under six eye image conditions, three stylized eye images (evil eye, eye of Horus, all-seeing eye), one photographic eye image (human eye image) and two control images (geometric shape control, blank control). No difference in the amount of money donated was found between any of the eye image conditions. These results suggest that watching eyes, whether stylized or photographic, are not effective at eliciting prosocial behavior via charitable giving. However, further study contrasting single and paired eye imagery, and exploration of the effects of stylized eye imagery in deterring littering and crime, would be beneficial.

## Keywords

eye images, watching eyes effect, prosociality, field experiments

## Introduction

There is considerable current debate about the role of watching eyes in eliciting prosocial behavior. Some previous research has found that images of watching eyes encourage prosocial and normative behavior in a variety of field settings, such as by increasing charitable donations (Fathi, Bateson, & Nettle, 2014; Oda & Ichihashi, 2016; Powell, Roberts, & Nettle, 2012), and honor-system payments (Bateson, Nettle, & Roberts, 2006), and decreasing littering (Bateson, Callow, Holmes, Roche, & Nettle, 2013; Bateson, Robinson, Abayomi-Cole, Greenlees, O'Connor, & Nettle, 2015; Ernest-Jones,

Nettle, & Bateson, 2011), and bicycle theft (Nettle, Nott, & Bateson, 2012). However, other studies have found no effects of images of watching eyes on human behavior (e.g., Manesi & Pollet, 2017; Matsugasaki, Tsukamoto, & Ohtsubo, 2015; Raihani & Bshary, 2012).

Many studies of the watching eyes effect have used photographs of human eyes (e.g., Bateson et al. 2006; Ernest-Jones et al. 2011; Nettle et al. 2012). However, others have used stylized eye images, such as the Eye of Horus, which was also effective in promoting prosocial behavior (e.g., Haley & Fessler, 2005; Oda, Niwa, Honma, & Hiraishi, 2011; Sparks & Barclay, 2013). Various stylized eye images have been used throughout human history, mainly as a sign to ward off dangerous or harmful intentions (Bohigian, 1997; Potts, 2015). These symbols have been used on jewelry, upholstery, clothing and art. Culturally significant stylized eye imagery includes the evil eye, the eye of Horus, and the all-seeing eye, which have been used across many cultures for perceived protection and defense (Bohigian, 1997; Lykiardopoulos, 1981; Potts, 2015).

Despite previous research having utilized either stylized or photographic eye images, no study, to our knowledge, has compared the effects of stylized and photographic eyes in eliciting prosocial behavior. In this study, we determined the efficacy of stylized and photographic eye images in increasing prosocial behavior as measured by charitable giving in a 'free cakes' field experiment.

## Methods

### Study site and subjects

The study was performed at Hartpury College, Gloucestershire, UK using four different locations around the university campus (the library, the canteen, the assignment submission area and the student services area). The four locations were selected in order to ensure maximum exposure and through-flow of foot traffic. The participants were staff, students and visitors to the site. Participation was voluntary and participants could choose whether to take a cake, whether to donate to the charity and, if doing so, how much to donate. Participants were not identified and were unaware that they were taking part in the study. The study abided by the guidelines of the Institutional Research Ethics Committee.

### Procedure

The study took place over three weeks (Monday through Thursday per week) during the academic term. Six eye image conditions were used in the study; three stylized eye images (evil eye, eye of Horus, all-seeing eye), one photographic eye image (human eye image) and two control images (geometric shape control, blank control) (Figure 1). All images were the same size (borders of image: 55 mm x 55 mm), with the eye being 'life size'

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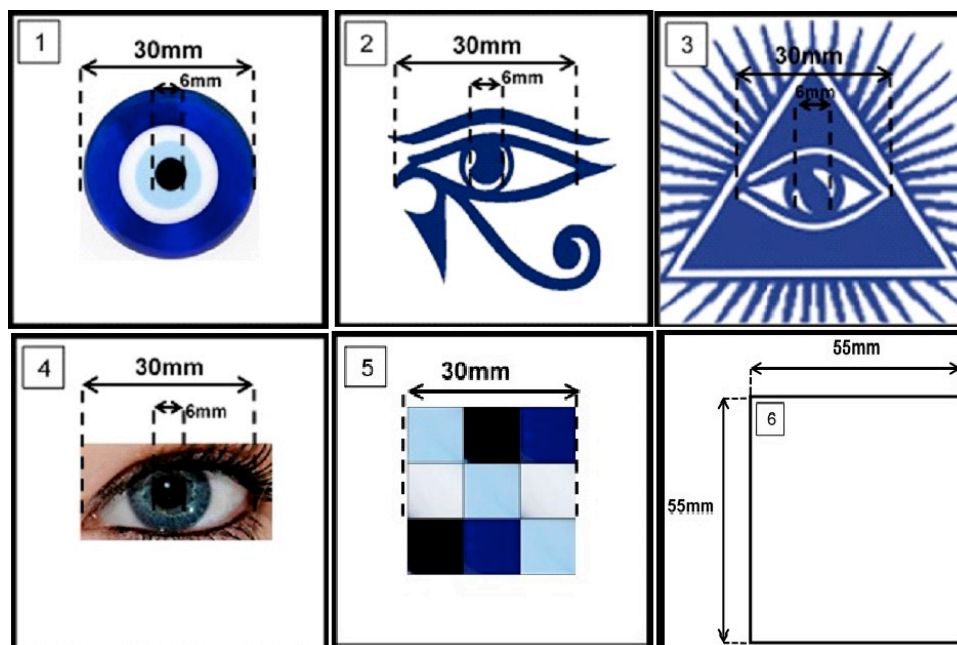
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**Figure 1.** Eye image conditions used in the study (1) evil eye, (2) eye of Horus, (3) all-seeing eye, (4) human eye image, (5) geometric shape control and (6) blank control.

in each image (30 mm in diameter), except for the blank control, which contained no image.

Throughout the study period, the conditions were cycled through the four locations with each image being placed in the same location on two occasions and upon different days. This was done with the aim of ensuring that any effects upon charitable donations were due to the eye condition rather than differences in levels of foot traffic between days and locations. Cakes were available daily throughout the study from 10am to 4pm, which coincided with the busiest times of day on campus. At the start of each day, 50 iced sponge cakes with plain white sugar icing and chocolate sweet toppings were laid out on two silver trays (diameter 30 cm, 25 cakes per tray) on a table at each location. The cakes were sourced from local supermarkets, and were of uniform size, shape and decoration. The table also held an orange charity collection tin (for the African Children's Fund), the condition image (55 mm x 55 mm) and a sign saying 'FREE CAKES, HELP YOURSELF! Please consider donating to the African Children's Fund'. The free cakes sign was located at the front of the table in a central position. The condition image was placed between the cakes and the collection tin, in the direct line of sight of anyone approaching the table. The table was un-manned for the duration of the day and no attempts to solicit or entice participants occurred throughout the study. Collection boxes were emptied at the end of each day and the amount of money donated per day in each condition was recorded.

#### Data analysis

For each of the six eye image conditions, the amount of money donated and the number of cakes taken per day was recorded. For each of the eight days for each image condition, the ratio of money donated to the number of cakes taken was then calculated. Kruskal-Wallis ANOVAs were conducted to look for differences in i) the ratio of

the money donated to the number of cakes taken, ii) the amount of money donated, and iii) the number of cakes taken, between the six eye image conditions. In addition, Mann-Whitney  $U$  tests were performed to determine if there was a difference in these measures between an eye-condition (combining evil eye, eye of Horus, all-seeing eye, and human eye) and a control condition (combining geometric image and blank image). Kruskal-Wallis ANOVAs were also used to evaluate whether there were any effects of day of the week or location upon the amount of money donated. The statistical significance level was accepted at  $p < 0.05$ . All analyses were carried out in SPSS (version 24.0, SPSS Inc. 2016).

#### Results

There was no significant difference found in the ratio of the money donated to the number of cakes taken ( $\chi^2(5) = 3.177, p = .673$ ), the amount of money donated per condition ( $\chi^2(5) = 3.169, p = .674$ ) nor the number of cakes taken per eye image condition ( $\chi^2(5) = 2.445, p = .785$ ). No significant differences were also found between the eye-condition and control condition in the ratio of the money donated to the number of cakes taken ( $U = 218.000, n_1 = 32, n_2 = 16, p = .406$ ), the amount of money donated per condition ( $U = 208.500, n_1 = 32, n_2 = 16, p = .299$ ) nor the number of cakes taken per condition ( $U = 220.000, n_1 = 32, n_2 = 16, p = .427$ ). There was no effect of day of the week ( $\chi^2(3) = 6.201, p = .102$ ) or location ( $\chi^2(3) = 6.777, p = .079$ ) on the amount of money donated. Throughout the study, 1348 cakes were taken and the total value of donations was £172.56 (Evil Eye = £21.83; 225 cakes taken; Eye of Horus = £32.92; 254 cakes taken; All Seeing Eye = £47.31; 225 cakes taken; Human Eye = £29.57; 230 cakes taken; Geometric Pattern Control = £22.64; 240 cakes taken; Blank control = £18.29; 174 cakes taken).

## Discussion

In this study, we aimed to determine the efficacy of stylized and photographic eye images in increasing prosocial behavior as measured by charitable giving in a field experiment. There was no difference in the donations made between any of the eye image conditions. These results do not suggest that stylized eyes are effective at eliciting prosocial behavior, though neither do they suggest that photographic images of eyes are any more efficacious. These results are somewhat surprising, considering previous work where stylized eyes were found to promote prosocial behavior (e.g., Haley & Fessler, 2005; Oda et al. 2011; Sparks & Barclay, 2013), in addition to the effects of watching eyes seen in previous charitable donation studies (e.g., Oda & Ichihashi, 2016; Powell et al. 2012). The findings of this study do however coincide with a recent meta-analysis suggesting a lack of effect of watching eye imagery on generosity (Northover, Pedersen, Cohen, & Andrews, 2017).

Eye imagery has been suggested as potentially being less effective at enhancing costly forms of prosociality that lack clear benefits to the actor, such as returning lost letters (Manesi & Pollet, 2017). The charitable donations anticipated in this study are not overly costly in terms of time or expense and, in addition, donation to charity is associated with reputational benefits (Milinski, Semmann, & Krambeck, 2002). It is difficult to therefore explain the findings in this context. However, another potential explanation for the lack of effect may relate to the eye symbols used. Eye imagery is culturally important, however, these eye symbols are frequently used in a protective context (Bohigian, 1997; Lykiardopoulos, 1981; Potts, 2015). Potentially, these stylized eyes may be more effective in a defensive context, such as by protecting property, via encouraging adherence to laws or reducing criminal activity, rather than in encouraging prosocial behavior via charitable donations. It is worth noting though that if this was the case, we may have expected enhanced donations within the photographic eye condition. However, this was not found to be any more effective than the other conditions. This is despite photographic images having proven effective in promoting prosocial behavior in other studies (e.g., Bateson et al. 2006; Nettle et al. 2012).

A further explanation to consider is that using single eye images may have not been effective. Research in non-human animals has suggested that pairedness of eye-like stimuli may be biologically significant (Jones, 1980; Mukherjee & Kodandaramaiah, 2015). Paired eye-like stimuli have been found to be more effective in predator deterrence than single eyespots (e.g., Jones, 1980; Mukherjee & Kodandaramaiah, 2015). Previous work into the effects of watching eyes, whether using realistic or stylized eyes, has tended to use paired cues (e.g., Bateson et al. 2006; Manesi & Pollet, 2017; Oda & Ichihashi, 2016; Powell et al. 2012). Whilst use of single eye images coincides with the cultural display of eye imagery (e.g., in evil eye amulets; use of all-seeing eye), using images of single eyes could have rendered our stimuli less biologically significant and may have impacted on their ability to elicit prosocial behavior. The size of the eye images used may also have been important. The eye images used in the study were life-size, however the eye images used in other studies were often larger (e.g.,

Manesi & Pollet, 2007; Nettle et al. 2012; Oda et al. 2011). Whilst similar sized images to those used in this study have elicited charitable giving behavior in previous work (e.g., Oda & Ichihashi, 2016; Powell et al. 2012), the size of the watching eye stimuli may impact on the salience of the cue and is a point to consider in future studies of this nature.

In conclusion, the findings of our study do not suggest that either stylized or photographic eye images elicit prosocial behavior in this charitable donation context. However, further study using paired and single eye imagery, and of stylized eye imagery in other prosocial contexts (such as littering and crime deterrence) would be beneficial.

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## References

- Bateson, M., Callow, L., Holmes, J. R., Roche, M. L. R., & Nettle, D. (2013). Do images of 'watching eyes' induce behaviour that is more pro-social or more normative? A field experiment on littering. *PloS ONE*, 8, e82055. (doi: 10.1371/journal.pone.0082055)
- Bateson, M., Nettle, D., & Roberts, G. (2006). Cues of being watched enhance cooperation in a real-world setting. *Biology Letters*, 2, 412–414. (doi: 10.1098/rsbl.2006.0509)
- Bateson, M., Robinson, R., Abayomi-Cole, T., Greenlees, J., O'Connor, A., & Nettle, D. (2015). Watching eyes on potential litter can reduce littering: evidence from two field experiments. *PeerJ*, 3, e1443. (doi: 10.7717/peerj.1443)
- Bohigian, G. H. (1997). The history of the evil eye and its influence on ophthalmology, medicine and social customs. *Documenta Ophthalmologica*, 94, 91–100.
- Ernest-Jones, M., Nettle, D., & Bateson, M. (2011). Effects of eye images on everyday cooperative behavior: a field experiment. *Evolution and Human Behavior*, 32, 172–178. (doi: 10.1016/j.evolhumbehav.2010.10.006)
- Fathi, M., Bateson, M., & Nettle, D. (2014). Effects of watching eyes and norm cues on charitable giving in a surreptitious behavioral experiment. *Evolutionary Psychology*, 12, 878–887. (doi: 10.1177/147470491401200502)
- Haley, K. J., & Fessler, D. M. (2005). Nobody's watching? Subtle cues affect generosity in an anonymous economic game. *Evolution and Human Behavior*, 26, 245–256. (doi: 10.1016/j.evolhumbehav.2005.01.002)
- Jones, R. B. (1980). Reactions of male domestic chicks to two-dimensional eye-like shapes. *Animal Behaviour*, 28, 212–218. (doi: 10.1016/S0003-3472(80)80025-X)
- Lykiardopoulos, A. (1981). The evil eye: towards an exhaustive study. *Folklore*, 92, 221–230. (doi: 10.1080/0015587X.1981.9716210)
- Manesi, Z., & Pollet, T. V. (2017). No support for the watching eyes effect across three "lost letter" field experiments. *Letters on Evolutionary Behavioral Science*, 8, 12–15. (doi: 10.5178/lebs.2017.56)
- Matsugasaki, K., Tsukamoto, W., & Ohtsubo, Y. (2015). Two failed replications of the watching eyes effect.

- Letters on Evolutionary Behavioral Science, 6, 17–20. (doi: 10.5178/lebs.2015.36)
- Milinski, M., Semmann, D., & Krambeck, H. (2002). Donors to charity gain in both indirect reciprocity and political reputation. *Proceedings of the Royal Society B: Biological Sciences*, 269, 881–883. (doi: 10.1098/rspb.2002.1964)
- Mukherjee, R., & Kodandaramaiah, U. (2015). What makes eyespots intimidating—the importance of pairedness. *BMC Evolutionary Biology*, 15, 34. (doi: 10.1186/s12862-015-0307-3)
- Nettle, D., Nott, K., & Bateson, M. (2012). ‘Cycle thieves, we are watching you’: impact of a simple signage intervention against bicycle theft. *PloS ONE*, 7, e51738. (doi: 10.1371/journal.pone.0051738)
- Northover, S. B., Pedersen, W. C., Cohen, A. B., & Andrews, P. W. (2017). Artificial surveillance cues do not increase generosity: two meta-analyses. *Evolution and Human Behavior*, 38, 144–153. (doi: 10.1016/j.evolhumbehav.2016.07.001)
- Oda, R., & Ichihashi, R. (2016). The watching eyes effect on charitable donation is boosted by fewer people in the vicinity. *Letters on Evolutionary Behavioral Science*, 7, 9–12. (doi: 10.5178/lebs.2016.52)
- Oda, R., Niwa, Y., Honma, A., & Hiraishi, K. (2011). An eye-like painting enhances the expectation of a good reputation. *Evolution and Human Behavior*, 32, 166–171. (doi: 10.1016/j.evolhumbehav.2010.11.002)
- Potts, A. M. (2015). *The world’s eye*. Kentucky: The University Press of Kentucky.
- Powell, K. L., Roberts, G., & Nettle, D. (2012). Eye images increase charitable donations: evidence from an opportunistic field experiment in a supermarket. *Ethology*, 118, 1096–1101. (doi: 10.1111/eth.12011)
- Raihani, N. J., & Bshary, R. (2012). A positive effect of flowers rather than eye images in a large-scale, cross-cultural dictator game. *Proceedings of the Royal Society B: Biological Sciences*, 279, 3556–3564. (doi: 10.1098/rspb.2012.0758)
- Sparks, A., & Barclay, P. (2013). Eye images increase generosity, but not for long: the limited effect of a false cue. *Evolution and Human Behavior*, 34, 317–322. (doi: 10.1016/j.evolhumbehav.2013.05.001)