The watching eyes phenomenon:
The role of a sense of being seen and public self-awareness

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Abstract

In recent years, a growing number of researchers have examined the watching eyes phenomenon (i.e., increased prosocial and decreased antisocial behavior when subtle watching eyes are present in the environment). Somewhat surprisingly, the questions how and under what conditions subtle cues of being watched operate have been unanswered so far. The present contribution addresses this research gap. In two studies we document that (a) subtle cues of being watched induce a sense of being seen and (b) chronic public self-awareness moderates the watching eyes phenomenon in that specifically individuals with strong chronic public self-awareness show more prosocial behavior under conditions of watching eyes. The applicability of subtle cues of being watched in research on social presence is discussed.

Word count: 118

Keywords: eye cue; spotlight effect; subtle social presence; watching eyes
INTRODUCTION

There is long-standing striking evidence that individuals (strategically) modify their behavior when being observed by others (Markus, 1978; Zajonc, Heingartner, & Herman, 1969). In particular, humans are motivated to manage their impression in the eyes of others (Leary & Kowalski, 1990; Schlenker, 1980) and they are motivated to gain a valuable reputation through acting prosocially (van Bommel, van Prooijen, Elffers, & van Lange, 2014; van Vugt, Roberts, & Hardy, 2007). The hyper-sociality that can be observed in the human species (Kropotkin, 1902/1972; Ridley, 1996) appears in that individuals not only behave differently under actual presence of others but also when subtle cues of being watched (i.e., stylized watching eyes) are present in the environment (Haley & Fessler, 2005). In recent years, a growing number of researchers have examined the prosocial effects of subtle cues of being watched on several facets of human behavior such as bicycle theft (Nettle, Nott, & Bateson, 2012) and littering (Ernest-Jones, Nettle, & Bateson, 2011; notice published null effects by several authors, cf. the meta-analyses of Nettle, Harper, Kidson, Stone, Penton-Voak, & Bateson, 2013, and Sparks & Barclay, 2013). Remarkably, research on cues of being watched show that subtle watching eyes influence humans’ behavior in situations in which their behavior cannot be traced back to the person, that is, subtle cues of being watched influence humans’ behavior in completely anonymous situations.

Somewhat surprisingly, however, the question how and under what conditions subtle cues of being watched operate has been unanswered so far. The present work addresses this remarkable gap in that we empirically tested two assumptions. First, whether subtle cues of being watched do increase a sense of being seen, as suggested by other research (e.g., Izuma, 2012; Nettle et al., 2013). Second, whether chronic public self-awareness moderates the watching eyes phenomenon (i.e., increased prosocial behavior and decreased antisocial behavior when subtle watching eyes are present in the environment).
Several researchers argue that subtle cues of being watched induce a sense of being seen and render humans’ reputation systems salient (e.g., Barclay, 2013; Fehr & Schneider, 2010; Izuma, 2012; Oda, Niwa, Honma, & Hiraishi, 2011). In this regard, some individuals are particularly concerned about their reputation and how they appear in the eyes of others. These are individuals possessing strong chronic public self-awareness (Fenigstein, Scheier, & Buss, 1975; Gervais & Norenzayan, 2012). Accordingly, we assume that individuals who are especially sensitive and concerned about how they appear in the eyes of others – individuals with strong chronic public self-awareness – should particularly display the watching eyes phenomenon.

The present work elaborates on these assumptions. We first present Study 1 which investigates whether subtle cues of being watched induce a sense of being seen. In the second study we test whether public self-awareness moderates the watching eyes phenomenon.

**STUDY 1**

In the first study, the assumption that a subtle cue of being watched induces a belief that one is seen by others is tested building on the spotlight effect (Gilovich, Medvec, & Savitsky, 2000). The spotlight effect reflects individuals’ tendency “to believe that the social spotlight shines more brightly on them than it really does” (Gilovich et al., 2000, p. 211). Gilovich et al. (2000) demonstrated the existence of the spotlight effect by asking participants to wear a T-shirt displaying a picture of the pop singer Barry Manilow. Each participant was then escorted to another room in which a couple of normally dressed participants were seated. In the end, participants were asked how many of those seated in the room would recall who was displayed on their T-shirt. In order to examine the actual sensitivity of the other participants regarding the T-shirt, the normally dressed participants were asked whether they noticed who was displayed on the T-shirt. Results support the spotlight effect, that is, participants overestimated how many other participants noticed their T-shirt. Thus, the spotlight effect reflects a bias in humans’ evaluation in that individuals overestimate the extent to which they are seen by others. In this sense, the
paradigm of Gilovich et al. (2000) is perfectly suitable to test whether subtle cues of being watched induce a sense of being seen. If watching eyes actually induce a sense of being seen, we should observe that people estimate a higher number of people who notice them under conditions of a subtle cue of being watched (vs. no subtle cue of being watched).

Methods

Participants and procedure. In Sample 1, fifty-four students from a German university (88.6% women) participated for partial fulfillment of a course requirement. The study took place at a computer pool of the university. In Sample 2, eighty-six students from a German university (79.1% women) participated in an online study. In Sample 3, one hundred and forty-eight US-American individuals (55.3% women) participated in an online study via Amazon Mechanical Turk (cf. Buhrmester, Kwang, & Gosling, 2011). Sample 1 was part of a mass test including other measures not discussed in this paper. Sample 2 and 3 were not part of a larger questionnaire.

Spotlight effect. The procedure builds on the study of Gilovich et al. (2000) who showed that individuals wearing a T-shirt depicting the pop singer Barry Manilow overestimated the number of people who would actually notice the T-shirt. We adapted this procedure. In Sample 1, we used the German pop singer Florian Silbereisen as person being portrayed on the T-shirt. In Sample 2, the well-known former leader of Al-Qaida, Osama bin Laden, was used. In Sample 3, we used the flag of the former Soviet Union. We used T-shirts depicting different targets or a flag to create variety so that findings do not depend solely on a single type of stimulus.

In each sample, we asked participants to imagine a specific situation. In Sample 1, participants read “As part of a study on ‘attention’ you were asked to wear a T-shirt with a picture of the pop singer Florian Silbereisen.” Below, a white T-shirt with a portrait of Florian Silbereisen was displayed. Next, participants read that “the second part of the study takes place at another room of the university. In order to get there, you have to go through the entrance hall of the university. There are currently 30 other people in the entrance hall. What do you think, how many
of these 30 people notice your T-shirt? Please enter your estimation in the text box below (0-30).” Participants’ estimation served as the central dependent variable in Sample 1. In Sample 2, the scenario involved a T-shirt with a picture of Osama bin Laden and participants’ estimation of how many of 50 people sitting in two train compartments notice their T-shirt. In Sample 3, we used the flag of the former Soviet Union and participants’ estimation of how many of 30 people in a waiting hall of a station would notice their T-shirt.

Eye cue. In Sample 1 and 2, participants were randomly assigned to one of two conditions. For participants exposed to the subtle cue of being watched, the page where participants should enter their estimation was headed by stylized eyes (Keller & Pfattheicher, 2011). The size of the watching eyes was 3.8 x 0.9 cm in Sample 1 (which took place at a university computer room, ensuring the size as indicated). In Sample 2 and 3, online studies were conducted using the same size watching eyes as those used in Sample 1. This size was ensured if internet users were using standard browser settings. In the neutral control condition, no eye cue was presented. In Sample 3, an additional condition was implemented. This condition was based on the work by Powell et al. (2012) and included three plain stars (in Times New Roman font) of the total same size as the subtle cue of being watched. This condition was used to address the possibility that the mere presentation of an object explains the effects in Sample 1 and 2.1

Results

Spotlight effect. In Sample 1, participants in the eye cue condition reported significantly more persons noticing their T-shirt displaying Florian Silbereisen than participants in the control condition (see Table 1 for all means, standard deviations, and statistical tests of all samples). We also applied bootstrapping (based on 1000 resamples) to test for statistical robustness and to apply a non-parametric statistical test. Analyses revealed identical results, that is, the 95% confidence interval excluded zero. Replicating the results of the first sample, in Sample 2, participants in the eye cue condition reported significantly more persons noticing their T-shirt displaying Osama bin
Laden than participants in the control condition. In Sample 3, participants’ estimations significantly differed across the three conditions, $F(2, 145) = 3.18, p = .04$. Specifically, participants in the eye cue condition reported significantly more persons noticing their T-shirt displaying the flag of the former Soviet Union than participants in each of the two control conditions.

**STUDY 2**

In Study 1 it was found that subtle cues of being watched induce a sense of being seen. Previous research has shown that there is considerable variance in individuals’ reactions to being watched and seen by others in terms of cognition (e.g., Huguet, Galvaing, Monteil, & Dumas, 1999), behavioral tendencies (e.g., van Bommel et al., 2014), and physiological responses (e.g., Dickerson & Kemeny, 2004). On this basis, we ask what individuals are particularly sensitive when being watched by others. One meaningful factor to consider is public self-awareness. Individuals with strong public self-awareness are especially concerned about their reputation and how they appear in the eyes of others (Fenigstein et al., 1975; Gervais & Norenzayan, 2012). Thus, individuals with strong chronic public self-awareness should be particularly sensitive to being watched and seen by others. Accordingly, we assume that chronic public self-awareness moderates the watching eyes phenomenon in that individuals with strong chronic public self-awareness show more prosocial behavior under conditions of subtle watching eyes. This assumption was tested in Study 2.

**Methods**

*Participants.* One hundred and twenty-seven students of the University of Ulm ($M_{age} = 23.7; 43.0\%$ women) completed measures assessing chronic levels of public self-awareness. This study was a paper-pencil study. Upon arrival in the lab, participants received a payment of €3 (six 50 cent coins) as compensation for participation in the study.
Public self-awareness. Chronic public self-awareness was assessed by a German version (Merz, 1986) of the public self-awareness scale developed by Fenigstein et al. (1975). A sample item of the 10-item scale reads “I’m concerned about what other people think of me” \( (M = 4.42, SD = 1.07, \alpha = .89) \).

Prosocial donations. Participants learned that they had the opportunity to donate some of the money they received as compensation for their participation (six 50 cent coins) to an organization providing support for HIV-positive individuals by way of putting coins in an envelope that was to be placed in a “mailbox” that was positioned in the room at the conclusion of the study. It was emphasized that donations were made anonymously and participants were instructed to put whatever amount they wished inside the envelope (and to keep the remaining coins for themselves).

Eye cue. For half of the participants the text where participants learned that they had the opportunity to donate some of the money was headed by the stylized eyes used in Study 1 (same size). The eye cue was printed on the top of the sheet of paper. No subtle cue of being watched was presented in the control group.

Results

Prosocial donations \( (M = 1.03 \, \text{€}, \, SD = 1.10) \) were regressed on public self-awareness, the experimental condition (watching eyes present vs. not present), and the interaction of public self-awareness and the experimental condition (see Table 2). While no significant main effects emerged, a significant interaction was found. Decomposing this interaction (Hayes, 2013) revealed that watching eyes significantly increased donations for those with a relatively strong chronic public self-awareness (1 \( SD \) above the mean). No significant effect emerged for those with a relatively weak chronic public self-awareness (1 \( SD \) below the mean). These findings also hold when we applied a non-parametric statistical test (i.e., bootstrapping analyses, see Table 2; the
95% confidence intervals excluded zero). In sum, Study 2 provides evidence for the notion that public self-awareness moderates the watching eyes phenomenon.

**DISCUSSION**

“Man is by nature a social animal” stated James Q. Wilson (1993, p. 121), and there is indeed long-standing knowledge that humans’ behavior is heavily influenced by the mere presence of other individuals (Markus, 1978; Zajonc et al., 1969). This hyper-sociality that can be observed in the human species (Kropotkin, 1902/1972; Ridley, 1996) is remarkably documented in research on subtle cues of being watched. This research impressively shows that individuals shape their behavior when being watched in the sense that they tend to behave less antisocially and more prosocially (Nettle et al., 2013; Sparks & Barclay, 2013). The hyper-sociality of humans is also observed in the present studies. Individuals’ behavior was influenced by a subtle cue of being watched. Specifically, building on a paradigm that was used to show that individuals tend to overestimate the extent to which they are seen by others (i.e., the spotlight effect; Gilovich et al., 2000), we document in the first study an increase in the belief that one is seen by others when a subtle cue of being watched was presented (vs. blank vs. symbol). These results were obtained in three independent samples involving three different stimuli in the spotlight effect paradigm (a pop singer, a terrorist, and a flag) and in two different situations (a lab study and two online studies). At this point it is acknowledged that we employed a hypothetical rather than a real situation. In sum, the obtained findings in the first study speak to the notion that subtle cues of being watched can indeed validly be used to induce a sense of being seen.

In the second study, we examined a boundary condition for the watching eyes phenomenon. We found that the typical effect of watching eyes depends on individuals’ chronic public self-awareness. Specifically, those individuals increased prosocial behavior under watching eyes who possess a strong chronic public self-awareness. No significant effect was found for those with weak public self-awareness. As such, we provide evidence that public self-awareness
moderates the watching eyes phenomenon. In this regard, we have addressed a remarkable gap in research on the watching eyes phenomenon and could therefore extend previous research that has neglected under what conditions the watching eyes phenomenon emerges. In fact, the present study may explain why some studies have failed to find a meaningful effect of eye cue manipulations (cf. Nettle et al., 2013, and Sparks & Barclay, 2013). In view of the fact that we found that individuals’ chronic public self-awareness functions as a moderator of the watching eyes phenomenon, we think that it is well possible that the inconsistency observed in previous research could be a consequence of variations in the degree to which individuals’ public self-awareness was chronically or situationally activated in the participants of the respective studies.

It is important to note that a sense of being watched (Study 1) and being chronically concerned about being watched (Study 2) are different concepts. Specifically, we assumed that being seen by watching eyes is particularly relevant for individuals who are generally concerned about how they appear in public (i.e., individuals who are chronically publically self-aware). Those who are not generally concerned about how they appear in public (i.e., individuals who are weakly publically self-aware) might feel watched but due to their lack of concern about how they appear in public they do not change their behavior. That is, a sense of being watched and being concerned about being watched are different concepts.

One can further relate public self-awareness and subtle cues of being watched to (social) anxiety. In fact, a meta-analysis by Mor and Winquist (2002) showed that public self-awareness is strongly associated with social anxiety. In terms of the Big Five, public self-awareness is most strongly correlated with neuroticism (Darvill et al., 1992). These findings suggest that (social) anxiety and its corresponding avoidance system (Mor & Winquist, 2002) may contribute to an explanation of the watching eye phenomenon. That is, individuals with relatively strong chronic public self-awareness behave more prosocially under watching eyes conditions because they are anxious about and motivated to avoid the negative judgments and evaluations of others. In fact, it
is an open question for future research to examine whether the avoidance system (anxiously avoiding negative evaluations) or the approach system (eagerly approaching positive evaluations) underlies the watching eyes phenomenon. The present research reflects a meaningful basis in this regard. Showing that the watching eyes phenomenon emerges specifically in individuals using anxious avoidant strategies suggests that the avoidance system is relevant.

At this point one can discuss the subtle nature of the watching eyes. At the end of Study 2 we asked participants whether they noticed anything during the study (as an open-ended question). Not a single participant mentioned the eye cue. This speaks to the subtle nature of the eye cue as well as to the notion that watching eyes are not explicitly taken into account when individuals make decisions (see also Barclay, 2013).

It is also important to consider situational conditions under which subtle cues of being watched are more likely to operate. Powell and colleagues (2012) offer a precondition. They showed that a subtle cue of being watched increased donations to a charity organization in a supermarket only if the supermarket was poorly crowded. It makes sense that when social presence is already given subtle cues of being watched cannot, on top of this, increase social presence. Moreover, other research has shown that individuals are particularly sensitive regarding social cues when they stand out (Gilovich et al., 2000). It seems reasonable to assume that under this condition, subtle cues of being watched are more likely to be noticed. Generally speaking, when individuals are concerned with how they appear in public (e.g., wearing an unusual t-shirt and being public self-aware), subtle cues of being watched (i.e., the subtle social presence of others) are more likely to guide their cognition and behavior.

Methodological benefits of subtle watching eyes

It should be noted that the application of subtle cues of being watched to manipulate a sense of being seen has several (methodological) benefits. First, compared to other possible manipulations of being watched (such as conditions where participants are confronted with actual
observers or seated in front of a one-way mirror with observers in the room next door), subtle cues of being watched are much more parsimonious regarding the information that is salient in the situation. Accordingly, possible confounding factors that may come along with other manipulations (e.g., attractiveness or group membership of observers) can be excluded. Second, demand effects are less likely to affect participants’ responses using a subtle cue of being watched compared to other more blatant types of manipulations. Third, experimenters can actually remain blind to the experimental conditions when a subtle cue of being watched is used in the materials whereas this is hardly possible using actual observers or a one way mirror setting as manipulations of being watched. Given these considerations, manipulations based on subtle cues of being watched seem a quite promising approach. However, these positive features would be largely meaningless in case the validity of the manipulation remained dubious. Accordingly, a proper validation was needed (documenting that a subtle cue of being watched actually induces an increased sense of being seen) to complement the list of positive features that can be attributed to this manipulation. Fourth, subtle cues of being watched can be used as a simple tool for testing predictions of evolutionary psychological theories that include the notion that humans (strategically) modify their behavior when being watched by others such as costly signaling theory (cf. Barclay, 2013; Van Vugt et al., 2007).

Proposals for Future Research

We further propose that subtle cues of being watched can be applied to test how social presence and an increased sense of being seen shape humans’ behavior beyond the domains of antisocial or prosocial tendencies. This claim is important because until now, research applying subtle cues of being watched exclusively focused on antisocial and prosocial behavior (Nettle et al., 2013; Sparks & Barclay, 2013). Subtle cues of being watched could be applied, for instance, in research on social facilitation. Research on social facilitation shows that the mere presence of others leads to a better performance when the task is easy and to worse performance when the task
is difficult (Bond & Titus, 1983; Cottrell, Wack, Sekerak, & Rittle, 1986). Given that watching eyes indeed reflect social presence and induce the belief that one is noticed by others, the findings obtained in research on social facilitation should also hold when individuals are watched by subtle eye cues. Basically, we propose to apply subtle cues of being watched to test predictions involving social presence.

Relating our work to previous research on the effect of subtle cues of being watched, it seems worthwhile to point to the fact that the findings regarding the effect of subtle cues of being watched are somewhat inconsistent. Whereas several studies documented a significant effect of cues of being watched on prosocial or antisocial behavior, some studies failed to find a meaningful effect of eye cue manipulations (cf. Nettle et al., 2013 and Sparks and Barclay, 2013). In view of this inconsistency, we propose to include theoretically relevant constructs that might moderate the influence of being watched on social behavior (e.g., van Rompay, Vonk, Fransen, 2009). The present research suggests that individuals’ public self-awareness should be taken into account. Generally, Fiedler and Krueger (2013) postulate that one has to take boundary conditions of associations between constructs into account in order to better understand these associations. This notion is reflected in our suggestion to include theoretically plausible moderators in studies testing effects of subtle cues of being watched.

To conclude, the present work refers to a promising approach to the study of social presence. The presented findings demonstrate that watching eyes indeed induce a sense of being seen and that public self-awareness moderates the watching eyes phenomenon. As such, the current work contributes to a new avenue of research studying (subtle) social presence.
In Sample 3 we also assessed a hypothetical scenario of prosocial behavior (i.e., hypothetical donations to a charity organization). Participants’ mean donations did not differ significantly across the three conditions in Sample 3, $F(2, 145) = 0.25, p = .78.$
References


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Table 1. Means, standard deviations, and statistical parameters of the three samples (Study 1)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean (SD)</th>
<th>95% bootstrapped CI</th>
<th>Mean (SD)</th>
<th>95% bootstrapped CI</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Condition 1</td>
<td>Condition 2</td>
<td>Condition 3</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Control condition (blank)</td>
<td>Eye cue condition</td>
<td>Control condition (three stars)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>95% bootstrapped CI</td>
<td>Mean (SD)</td>
<td>95% bootstrapped CI</td>
<td>Mean (SD)</td>
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<tr>
<td></td>
<td>(Cohen's d)</td>
<td>(Cohen's d)</td>
<td>(Cohen's d)</td>
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<tr>
<td>Sample 1(^1)</td>
<td>9.59(^a) (6.17)</td>
<td>[0.41, 7.07] (0.78)</td>
<td>16.16(^b) (7.47)</td>
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</tr>
<tr>
<td>Sample 2(^2)</td>
<td>29.84(^c) (12.35)</td>
<td>[0.41, 7.07] (0.64)</td>
<td>37.38(^b) (11.09)</td>
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</tr>
<tr>
<td>Sample 3(^1)</td>
<td>15.13(^a) (8.08)</td>
<td>[0.41, 7.07] (0.45)</td>
<td>18.88(^b) (8.39)</td>
<td>[0.47, 8.01] (0.47)</td>
<td>14.63(^a) (9.43)</td>
</tr>
</tbody>
</table>

Spotlight Effect

Note. Within each row, entries that do not share a superscript differ at \(p < .05\); bootstrapping is based on 1000 resamples; \(^1\) the dependent variable was assessed on a scale ranging from 0 to 30; \(^2\) the dependent variable was assessed on a scale ranging from 0 to 50.
Table 2. Regression coefficients of the main analyses (Study 2)

<table>
<thead>
<tr>
<th>Criterion:</th>
<th>Amount donated</th>
<th>( B )</th>
<th>( SE) B</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.06 ***</td>
<td>0.10</td>
<td>[0.87, 1.27]</td>
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</tr>
<tr>
<td>Public self-awareness</td>
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<td>0.10</td>
<td>[-0.09, 0.29]</td>
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<tr>
<td>Condition</td>
<td>0.09</td>
<td>0.09</td>
<td>[-0.02, 0.29]</td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>0.19 *</td>
<td>0.09</td>
<td>[0.03, 0.34]</td>
<td></td>
</tr>
</tbody>
</table>

-1SD Public self-awareness: -0.10, 0.14, [-0.35, 0.12]
+1SD Public self-awareness: 0.29 *, 0.14, [0.04, 0.56]

Note. * \( p < .05 \), *** \( p < .001 \); -1SD Public self-awareness refers to 1 standard deviation below mean; +1SD Public self-awareness refers to 1 standard deviation above mean; Control condition = -1, watching eyes = 1; Public self-awareness is mean centered; bootstrapping is based on 1000 resamples; \( \Delta R^2 = .03 \) (\( p < .05 \)) for entering the interaction term into the regression.