



The Physiological Response to the Feeling of Being Watched

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ABSTRACT

The current study considers the orienting response as a candidate model underlying the feeling of being watched. The study investigated if the feeling of being watched is accompanied by the orienting response. All participants designated the role of a starrer (task one) and staree (task two). The staree's skin conductance response (SCR) was assessed. Results showed a non-significant difference in the number of peaks, peak amplitude or the integral of the phasic wave skin conductance response in the time intervals that the staree felt stared compared to the time intervals that the staree indicated not to feel stared at.

Keywords

Feeling of being watched, orienting response, starrer-staree paradigm, skin conductance

INTRODUCTION

The feeling of being watched is found in all cultures and is a trait that is found in more or less all human beings. It refers to the feeling of being looked at by another person standing behind you, even though it is not possible to know "by conventional means" that one is being looked at (Braud, Shafer, & Andrews, 1993). It can either be explained by the paranormal effect of psi (Sheldrake, 2005), or by non-paranormal general psychological processes (e.g., Coover, 1913). The aim of the current research is not to investigate whether people can detect the stares of others using non-sensory means, but rather to investigate the psychological and psychophysiological mechanisms that may generate the phenomenon. To achieve the current's study's goal of gaining more insight in the underlying physiological mechanism of the feeling of being watched, this study considers the orienting response as a candidate model underlying the feeling of being watched. The orienting response may occur prior to the feeling of being watched (second hypothesis). current research is not to investigate whether people can detect the stares of others using

non-sensory means, but rather to investigate the psychological and psychophysiological mechanisms that may generate the phenomenon.

The orienting response is an innate, reflexive reaction to unexpected, novel stimuli (e.g., a loud noise or a bright flash of light; Frith & Allen, 1983). To achieve the current's study's goal of gaining more insight in the underlying physiological mechanism of the feeling of being watched, this study considers the orienting response as a candidate model underlying the feeling of being watched. The orienting response is thought to be associated with the feeling of being watched (first hypothesis), and may occur prior to the feeling of being watched (second hypothesis).

The Model

In summary, the model (an adaptation of Titchener's (1989) model) consists of the six following steps that may establish the feeling of being watched:

1. An uncertain situation creates the feeling of anxiety or self-consciousness in a person about his/her back.
2. Due to external and internal stimuli fluctuations in sensory modalities occur.
3. When the fluctuations in modulations exceed a threshold, an orienting response is elicited.
4. The orienting response automatically generates the inclination to scan the environment for the presence of an agent.
5. The person turns around and encounters the stare from someone standing behind him/her.
6. The person now believes he/she can detect when he/she is being watched.

METHODS

Forty-three participants, aged 19 to 33 years old volunteered in the study. Due to technical failures some data was not recorded. Analysis were conducted of analyses were thus conducted with a total of 26 participants. All participants provided written informed consent before participation.

Participants were sorted into pairs to complete the study, one being designated the role of the “starer” and one being designated the role of the “staree”. After a starer completed the Starer Task (ST), the starer took the place of the staree in the Stare Detection Task (SDT). The role of the very first staree of the day and the last starer of the day was designated to a confederate, so that each participant had someone to work with. The starer was instructed to look at the staree whenever he/she wanted, the staree was asked to indicate when he/she felt at. The staree’s skin conductance data was acquired with *Acknowledge* equipment of Biopac Student Lab PRO (version 3.7.7). Participants were misleadingly told the research investigated the staree’s capacity to indicate the staree’s gazes correctly.

Both tasks lasted six minutes. The beginning and end of each task was announced through the intercom in the SR by the experimenter in the SOR, so that both participants could start and stop simultaneously. After completion of both tasks, five questionnaires were filled in: the Remote Staring Detection Questionnaire (RSDQ), State Mindfulness Scale (SMS), The Australian Sheep-Goat Scale (ASGS) and an adapted version of the Adult Temperament Questionnaire (ATQ,). The reliability of all questionnaires was good or excellent (Baker, 2015, Tanay & Bernstein, 2013, Thalbourne, 1995, as cited by Thalbourne, 2010, and George & Mallery, 2003 respectively). The last questionnaire was a demographic questionnaire. Completion of all tasks took 30 minutes. Please refer to figure 1 for a schematic depiction of the rooms and task completion order. Debriefing took place via e-mail after the entire study was completed.

Statistical analysis

After adapting a low-pass filter to correct for movement noise, the skin conductance data of the phasic wave of each participant was inspected visually to identify Nonspecific- Skin Conductance Responses (NS-SCR’s, measured in μS) and Skin Conductance Level (SCL’s, measured in μS). Three phasic wave parameters quantify the NS-SCR’s: the number of peaks, the mean peak amplitude and the total peak integral. The tonic wave is quantified by the peak amplitude.

Two investigate the first hypothesis, firstly, three paired samples t-tests were conducted to compare one of the three phasic wave parameters in the intervals in which the staree indicated to feel stared at, with the

intervals in which the staree indicated to not feel stared at. Secondly, one paired-samples t-test was conducted to compare the mean peak amplitudes in the t intervals in which the staree indicated to feel stared at, with the mean peak amplitude in the intervals in which the staree indicated not to feel stared at.

To investigate the second hypothesis, the phasic wave skin conductance response in the eight second intervals prior to the onset and offset of the staree’s yes- response (i.e. where the staree indicated to feel stared at) and no-response (i.e. where staree indicated to not feel stared at) were examined. The phasic wave skin conductance data was visually inspected to determine the number of NS-SCR’s per participant, prior to the yes- and no-response. Again, three paired t-tests were conducted to compare each of the three NS-SCR’s quantifying parameters in the eight seconds prior to the yes-response of the staree, and the eight seconds prior to the no-response of the staree.

Furthermore, a correlation analysis was conducted to assess the nature of the relationship between the number of stares of a participant in the ST, with the number of times this participant indicated to feel he/she was being stared at in the SDT. In addition, A descriptive analysis was conducted to investigate the mean and standard deviation of the five total scores on the four questionnaires.

Finally, a doubly multivariate repeated measures Analysis of Covariance (RM-MANCOVA) was conducted with the Feeling of Being Watched (yes/no) as a within-subject variable and the total scores on the RSMQ measures (RSMQ (1) and RSMQ (2)), the ATQ, the ASG and the SMS formed the five covariates. The three quantifying NS-SCR’s were the three dependent variables.

RESULTS

The three paired-samples t-test that examined the NS-SCR’s were non-significant, nor were the one paired-samples t-test that examined the SCL’s of the tonic wave. Please refer to table 1 for the mean and standard deviation of all four dependent measures in the yes- and no- intervals of the NS-SCR and SCL.

The bivariate correlation analysis between the number of starers from an individual and the number of times he/she felt stared at was significant ($p < .001$; two-tailed, $n=19$) and large ($r = .884$) according to Cohen (1988).

Descriptive analysis showed higher means for the three NS-SCR parameters and

the SCL parameter in the intervals in which the staree felt stared at. The doubly multivariate repeated measures MANCOVA (RM MANCOVA) with the Feeling of Being Watched (yes/no) as a within-subjects factor, the total scores on the four questionnaires as covariates, and the three parameters describing the phasic wave skin conductance as dependent measures showed no significant main effects of Feeling of Being watched ($F(3,16) = .263, p = .851$), nor any of the four covariates (RSDQ1: $F(3,16) = 1.390, p = .207$, RSDQ2: $F(3,16) = 0.454, p = .078$, SMS: ($F(3,16) = 1.940, p = .267$), ASGS: ($F(3,16) = 1.557, p = .226$), ATQ: $F(3,16) = 1.476, p = .217$).

The Feeling of Being Watched * RSDQ (1) interaction-effect was not significant ($F(3,16) = 1.148, p = .360$), nor was the Feeling of Being Watched * SMS interaction effect ($F(3,16) = .861, p = .481$), the Feeling of Being Watched * ASGS interaction effect ($F(3,16) = .789, p = .518$), or the Feeling of Being Watched * ATQ interaction effect ($F(3,16) = .169, p = .916$). The Feeling of Being Watched * RSDQ (2) interaction effect was marginally significant ($F(3,16) = 2.801, p = 0.073$), but small ($\eta^2 = .118$).

DISCUSSION

The aim of the current study was to investigate the psychological and psychophysiological mechanisms that may generate the feeling of being watched. It was hypothesized that the feeling of being watched was accompanied by the orienting response. However, results showed that the skin conductance response in the intervals of the phasic and tonic wave in which the staree's indicated that they felt stared at, did not differ significantly from the interval in which the staree did not feel stared at. Moreover, results showed that the skin conductance response of the phasic wave in the eight second intervals prior to the staree's indication that they felt stared at is not significantly higher than in the eight second intervals prior to their indication that they did not feel stared at. Thus, results did not support the two hypotheses. However, in line with the second hypothesis, descriptive analysis showed the skin conductance was higher in the eight second intervals prior to the moments in which the participants felt stared at, compared to the eight second intervals prior to the moments in which the participants did not feel stared at.

One possible explanation for the failure to detect an increased skin conductance response prior to and during the intervals of the phasic and tonic wave in which

the starees felt stared at compared to the intervals in which they did not feel stared at (as hypothesized), is that the feeling of being watched may not have occurred in the Stare Detection Task (SDT). As reported previously, there is a strong correlation ($r = .884, n = 19$) between the number of stares a participant allocated to the staree in the Starer Task (ST), and the number of times the same participant felt stared at during the Stare Detection Task. Thus, it appears that participants in the SDT based their indications of when they felt stared at on their previous performance in the ST. To encourage participants to monitor their feelings during the SDT, and base their indications of the feeling of being watched on those feelings, future studies should mention the variability in the number and duration of stares from starrer's when instructing a staree in the SDT.

Another possibility for not detecting an increased skin conductance in, or prior to moments that the participants feel stared at, is that an orienting response did occur in those moments, but was not detected by the skin conductance apparatus. Even though skin changes in the intensity of the phasic and tonic skin conductance do seem to represent the orienting response (Bradley, 2009; Rushby & Barry, 2007), future researchers on the orienting response are advised to include complementary physiological (e.g., cardiac (Graham & Clifton, 1966)) instruments to optimize the assessment of the orienting response.

In line with the second hypothesis, the mean of all three quantifying phasic wave parameters was higher in the eight second intervals prior to the moments in which the participants felt stared at, compared to the eight second intervals prior to the moments in which the participants did not feel stared at. Notably, the p-values concerning the differences between the total number of peaks per second, the peak amplitude and the integral per second in the eight second intervals prior to the moments in which the participant did, and did not feel stared at were not close to the .05 significant level ($p = .948, p = .619, \text{ and } p = .800$ respectively). Nonetheless, the results could be cautiously interpreted as evidence in favour of the hypothesis that the orienting response precedes the feeling of being watched, rather than the orienting response following the feeling of being watched. More research is needed to confirm both hypotheses.

To the author's knowledge, the current study was the first to propose a model to gain more insight in the physiological mechanism underlying the feeling of being watched.

Although the current study did not yield any significant results, the results do encourage further research on this potential relationship.

Furthermore, future research could examine if external stimuli in sensory modalities trigger an orienting response with neuroimaging methods (i.e., step one, two and three). A temporal resolution of the method is crucial to examine whether the orienting response precedes or follows the feeling of being watched. It also fell beyond the scope of the current research to examine the potential contribution of the relative ease to detect moving stimuli (Leibowitz, 1955), and the confirmation bias (Jonas, & Sugden, 2001) to the feeling of being watched (i.e., step four and five of the model respectively). It is hoped that the current study will inspire further inquiry of the proposed candidate model on the physiological mechanisms underlying the feeling of being watched, and that it provided an example on how to test this model, so that one day we will know what makes us feel like we are being watched.

ROLE OF THE STUDENT

I was an undergraduate, Honours psychology student, and wrote the thesis myself under supervision of Dr Hein Van Schie (he gave me feedback on the sections that I send him). Dr Van Schie proposed the research question and thought of testing a model. He thought of the six steps (for example), but I developed the theoretical framework in detail, (for example) linked it to Titchener's model (1989). After Dr Hein Van Schie told me what topics to find questionnaires about and advising me one (the SMS, Tanay & Bernstein, 2013), I found the other questionnaires and adapted them. Dr Van Schie provided me the questionnaire of a previous student that I used for inspiration. I carried out the study. Dr Van Schie told me what statistical analysis had to be conducted. I visually inspected the data, analysed the results and conducted the statistical analysis. I formulated the conclusion.

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