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Dissociation and hallucinations in dyads engaged through interpersonal gazing

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ABSTRACT

Interpersonal gazing in dyads, when the two individuals in the dyad stare at each other in the eyes, is investigated in 20 healthy young individuals at low illumination for 10-min. Results indicate dissociative symptoms, dysmorphic face perceptions, and hallucination-like strange-face apparitions. Dissociative symptoms and face dysmorphia were correlated. Strange-face apparitions were non-correlated with dissociation and dysmorphia. These results indicate that dissociative symptoms and hallucinatory phenomena during interpersonal-gazing under low illumination can involve different processes. Strange-face apparitions may characterize the rebound to "reality" (perceptual reality caused by external stimulus and hallucinatory reality caused by internal input) from a dissociative state induced by sensory deprivation. These phenomena may explain psychodynamic projections of the subject's unconscious meanings into the other's face. The results indicate that interpersonal gazing in dyads can be an effective tool for studying experimentally-induced dissociative symptoms and hallucinatory-like apparitions.

1. Introduction

The dissociative disorders are characterized by a discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behaviour (Spiegel et al., 2013). Dissociative states involve symptoms of gaps in memory not caused by ordinary memory loss, out of body experiences and other distortions of the sense of one's own body, distortions in visual perception, such as seeing things as if they are in a tunnel or seeing things in black and white, and fragmentation of the sense of the self (Bremner et al., 1998; Holmes et al., 2005). Depersonalization is an experience in which the individual feels a sense of unreality and detachment from themselves. This is often accompanied by the symptom of derealisation in which the external world also appears unfamiliar (Simeon, 2009). Patients describe their experiences of unreality as if they are living in a dream, and their sense of detachment from the world as though they are viewing life from behind a glass (Hunter et al., 2003).

Systematic research in the field of dissociation has been limited by the absence of a reliable and valid setting for the experimental induction of dissociative states (Bremner et al., 1998). Experimental techniques that were used in previous studies of dissociation included the dot-staring task (Miller et al., 1994; Leonard et al., 1999; Holmes et al., 2006; Lickel et al., 2008). During these experiments, individuals stare at a black dot for between 3 and 10 min. These studies showed that the dot-staring task elicited dissociative experiences, including both depersonalization and derealisation symptoms.

A recently developed experimental tool that can induce dissociative states involves gazing at one's own face in a mirror under low illumination for at least 10 min (Caputo, 2010a, 2010b). Mirror-gazing at low illumination produces dissociative states of short-term memory for emotionally neutral stimuli (Brewin et al., 2013), and of visual memory (Brewin and Mersaditabari, 2013). Dissociative symptoms produced by mirror-gazing dissipated after 15 min (Brewin et al., 2013).

A new study showed that effects similar to mirror-gazing were obtained in dyads by gazing at another person's face instead of one's own (Caputo, 2013). However, in this previous study no standardized measures of dissociation were used. In the present article, a standard measure of dissociation is employed. The first hypothesis is that interpersonal gazing in dyads under low illumination produces dissociative symptoms, as previously found by mirror-gazing at self-face under low illumination (Brewin et al., 2013; Brewin and Mersaditabari, 2013).

Another finding of previous studies of mirror-gazing (Caputo, 2010a, 2010b) and interpersonal-gazing (Caputo, 2013) under low illumination was the perception of hallucination-like illusions. Strange-face apparitions are both hallucination-like and temporary phenomena, with a frequency of about 2 illusions per minute and their duration of about 4–7 s per illusion. In previous studies, strange-face illusions were classified into different types or

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categories. Moreover, some types of strange-face illusions could occur only once during a 10-min session. Indeed, this is often the case for those strange-face illusions that are most compelling and archetypal. Therefore, a questionnaire for subjective rating of strange-face illusions was used in this research. The study focused on the frequency of different types or categories of strange-face illusions by measuring the number of participants who had perceived (at least once) a strange-face illusion that is described by each question type. The second hypothesis of this study is that a phenomenological measure of strange-face illusions can be correlated to dissociative symptoms measured with a standardized test of dissociation.

Furthermore, strange-face apparitions can be considered from a different point of view. In studies on body dysmorphic disorder, the effect of mirror-gazing on patients is investigated (Windheim et al., 2011). However, these studies used a high level of illumination. Instead, a low illumination is needed for the mirror-gazing to produce dissociative states (Caputo, 2010b; Brewin and Mersaditabari, 2013). Therefore, in the present article, a questionnaire of dysmorphic face perception is provided on the basis of questionnaires used in past research on body dysmorphic disorder (Veale and Riley, 2001). The third hypothesis of this study is that face dysmorphia levels can be correlated to standardized measures of dissociation and phenomenological measures of strange-face illusions.

2. Method

2.1. Participants

Forty volunteers participated in the research (10 men; 30 women; mean age 21.85 years, S.D. 1.27, range=20–26 years). They were naïve observers who had no previous experience in psychological experiments and in psychological tests. Participants declared no history of psychiatric diseases.

2.2. Design

A between-group design was used with control and dissociation groups. Participants were randomly assigned to these two groups, separately for men and women in order to assign the same proportion of genders in the two groups. The dissociation group was made up of 20 participants (15 women). The control group was made up of 20 participants (15 women). Both dissociation and control groups were further organized in 10 pairs for each group through random pairing. The dependent variable was CADSS, DYFS, and SFQ scores.

2.3. Material

A very large room was chosen for the experimental setting. Eight lamps (220 V, 40 W, type incandescent bulb) placed all around on the walls of the room produced a diffused and relatively uniform illumination. The lamps were covered by dark grey curtains placed all around the walls of the room. These dark curtains strongly reduced illumination within the room. Illumination of participant faces was approx. 0.8 lx, measured by a digital photometer with a wide-angle sensor (Pantec by Carlo Gavazzi, LM-20). This level of illumination allowed detailed perception of fine face traits but attenuated colour perception.

2.4. Measures

2.4.1. State dissociation (CADSS)

The 19 subjective items from Clinician Administered Dissociative States Scale (CADSS) (Bremner et al., 1998) were used to assess dissociation (see Table 2). The response to each item is rated on a 5-point scale, from 'not at all' (0) to 'extremely' (4). The total score of CADSS can range from 0 to 76.

2.4.2. Dysmorphic-face scale (DYFS)

Three items were aimed to evaluate dysmorphic face perception (see Table 3). These items were adapted to face stimuli from a questionnaire on body dysmorphic disorder (Veale and Riley, 2001). Responses were rated on a 5-point scale, from 'not at all' (0) to 'extremely' (4). The total score of DYFS can range from 0 to 12.

Table 1
Mean scores for dissociation (CADSS), dysmorphic face perception (DYFS), and strange-face apparitions (SFQ). Standard deviations in parentheses.

Variable	Dissociation group ($n=20$)	Control group ($n=20$)
CADSS	27.00 (9.07)	7.25 (5.84)
DYFS	5.80 (3.59)	0.30 (0.66)
SFQ	15.70 (6.92)	–

2.4.3. Strange-face questionnaire (SFQ)

We were also interested in developing a questionnaire that was intended to quantify types and frequency of strange-face illusions, which are hallucination-like phenomena. Categories were designed according to previous researches both with mirror-gazing (Caputo, 2010a, 2010b) and with interpersonal-staring (Caputo, 2013). The 15 items are shown in Table 4. The response to each item is either 'no' or 'yes'; if a 'yes' response is given, then it is rated on a 4-point scale, from 'rarely' (1) to 'extremely' (4). First, a total SFQ score is calculated by adding the scores for the 15 items, with 'no' items considered to have a score of 0. Secondly, the number of 'yes' responses (which is indicated by *n* ('yes') in Table 4) is the number of participants who endorsed 'yes' responses. Finally, for each SFQ item, mean rating was calculated by averaging 1–4 ratings, relatively to *n* ('yes').

2.5. Procedure

Participants both in dissociation and control groups were introduced in pairs to the setting by saying that they will try a "*meditative experience with eyes open*" lasting 10 min. Pairs from the two groups were tested in a counterbalanced random order.

In the experimental group, the pair of participants sat in two chairs positioned one in front of the other. A distance of about a metre separated the heads of the dyad. After a few minutes of light adaptation, they receive the following (*dissociation*) instructions: "*You should maintain a neutral facial expression. Your task is to look at the other participant*; *you should keep staring into the eyes of the other participant. The session will last* 10 min."

In the control group, the pair of participants sat in two chairs that were placed side-by-side at about a metre apart, so that the two participants did *not* gaze at each other but toward the room wall. They were not required to stare at a fixed point. After a few minutes of light adaptation, they receive the following (*control*) instructions: "You should maintain a neutral facial expression. Your task is to stay with eye open. The session will last 10 min."

Immediately after the end of the 10-min session, normal light illumination of the room was turned on and participants were given a sheet of paper that contained CADSS and DYFS items. They were invited to accurately fill out their questionnaire. Then, when participants handed in the first sheet compiled, they received the second page containing SFQ items to be filled out. At the end of the experiment, participants were fully debriefed. Individuals of both control and dissociation groups received these same tests. Control individuals could easily interpret DYFS items in reference to their own faces. SFQ items were given to the control group in order to exclude the effect of suggestion.

2.6. Statistical analyses

Descriptive statistics were calculated from the ratings of CADSS, DYFS and SFQ in order to calculate total scores. Correlations were calculated with Pearson coefficients and consistency with Cronbach alpha. One-way ANOVAs were carried out with CADSS and DYFS as dependent variables. Factorial analysis on ratings to SFQ items was the principal component analysis with quartimax rotation.

3. Results

Participants belonging to the dissociation group described that they had a compelling experience that they never had before. Instead, participants belonging to the control group reported no special or unusual experience.

The mean CADSS, DYFS, and SFQ total scores are shown in Table 1. In the dissociation group, the effect of gender (two-level factor: male vs. female) was not significant on CADSS total score ($F(1,18)=0.00$; $p>0.95$), nor on DYFS total score ($F(1,18)=1.74$; $p>0.20$), nor on SFQ total score ($F(1,18)=0.86$; $p>0.36$). In the