Available online at www.sciencedirect.com
ScienceDirect
Psychiatry Research 145 (2006) 225–231
PSYCHIATRY RESEARCH
www.elsevier.com/locate/psychres

Autonomic response in the perception of disgust and happiness in depersonalization disorder

Mauricio Sierra *, Carl Senior, Mary L. Phillips, Anthony S. David

Institute of Psychiatry, Denmark Hill, London, UK

Received 29 October 2004; received in revised form 7 April 2005; accepted 28 May 2005

Abstract

Patients with depersonalization disorder have shown attenuated responses to emotional unpleasant stimuli, hence supporting the view that depersonalization is characterised by a selective inhibition on the processing of unpleasant emotions. It was the purpose of this study to establish if autonomic responses to facial emotional expressions also show the same blunting effect. The skin conductance responses (SCRs) of 16 patients with chronic DSM-IV depersonalization disorder, 15 normal controls and 15 clinical controls with DSM-IV anxiety disorders were recorded in response to facial expressions of happiness and disgust. Patients with anxiety disorders were found to have greater autonomic responses than patients with depersonalization, in spite of the fact that both groups had similarly high levels of subjective anxiety as measured by anxiety scales. SCR to happy faces did not vary across groups. The findings of this study provide further support to the idea that patients with depersonalization have a selective impairment in the processing of threatening or unpleasant emotional stimuli.

Keywords: Depersonalization; Dissociative disorders; Disgust; Emotion perception

1. Introduction

Depersonalization disorder is characterised by persistent or recurrent episodes of 'detachment or estrangement from one's self.' The individual may feel like an automaton or there may be the sensation of being an outside observer of one's own mental processes (American Psychiatric Association, 1994). Depersonalization has been shown to correlate with anxiety measures, and most patients with a diagnosis of depersonalization disorder (DPD) have been shown to have significant levels of anxiety or comorbid anxiety disorders (Simeon et al., 2003a; Baker et al., 2003). This, together with the high prevalence of depersonalization at times of life threatening situations, has been interpreted as suggesting that depersonalization represents an anxiety-triggered 'hard wired' inhibitory response intended to ensure the preservation of adaptative behaviour during situations normally associated with overwhelming and potentially disorganizing anxiety (Sierra and Berrios, 1998). In such circumstances, it has been suggested that depersonalization will result in the *inhibition* of non-functional emotional and autonomic responses whilst maintaining vigilant attention. In patients with DPD this response would become abnormally persistent and dysfunctional (Sierra and Berrios, 1998).

Recent fMRI (Phillips et al., 2001) and psychophysiological studies (Sierra et al., 2002) support the above

* Corresponding author. Depersonalization Research Unit (DRU), Psychological Medicine, Institute of Psychiatry, P.O. Box 68, Denmark Hill 103, London SE5 8AZ, UK. Tel.: +44 20 7848 0138; fax: +44 20 7848 0423.
E-mail address: M.Sierra-Siegert@iop.kcl.ac.uk (M. Sierra).

0165-1781/$ - see front matter © 2006 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.psychres.2005.05.022

model and have indicated that patients with DPD show lack of activation in limbic areas, and marked autonomic attenuation in response to pictures depicting disgusting or distressing situations. In the same vein Lanius et al. (2002) recently studied patients with sexual-abuse-related posttraumatic stress disorder and found that, while 70% of patients had increased heart rate during a traumatic script-driven symptom provocation, those patients who had a dissociative response (30%) during the experiment did not show any concomitant increase in heart rate. Also supporting an anxiety-suppressing mechanism in depersonalization, is the finding by Simeon et al. (2003b) of a striking negative correlation ($r = -0.8$) between intensity of depersonalization and urine norepinephrine levels.

In view of the fact that some facial emotional expressions can signal threatening situations to others (e.g. fear or disgust), it was hypothesised that patients with DPD would have selectively attenuated SCR to facial expressions of negative emotions as compared to facial expressions of positive emotions (e.g. happiness). In fact, given that perception of positive emotions is usually a safety signal to others, SCR responses to happy expressions was predicted to be normal in the DPD group. To test these predictions we compared event related SCRs to visual presentations of genuine (as opposed to posed) facial expressions of disgust and happiness, in patients with DPD and two control groups: normal controls, and patients with a diagnosis of an anxiety disorder.

2. Methods

2.1. Subjects

16 patients with a DSM-IV diagnosis of DPD were recruited from the Depersonalization Disorder Clinic at the Maudsley Hospital, London (Baker et al., 2003). The diagnosis of depersonalization disorder was ascertained by means of a semistructured interview using the Present State Examination (PSE; Wing et al., 1974), and scores above cut-off point (score of 70) on the Cambridge Depersonalization Scale (CDS; Sierra and Berrios, 2000). All subjects had chronic and continuous (as opposed to intermittent) depersonalization of durations ranging from 1 to 10 years. None of them was taking any medication at the time of the study and had been medication free for two weeks or more. Exclusion criteria included lifetime incidence of psychotic disorder, current substance abuse disorder, current major depression, other dissociative disorder, and history of neurological disorder.

An anxiety control group was composed by 15 patients meeting DSM-IV criteria for panic or generalised anxiety disorder were recruited from the behavioural psychotherapy unit of the Maudsley Hospital. Patients were diagnosed by experienced clinicians by means of a thorough standard clinical interview. In order to make sure that the anxiety patients did not suffer from significant depersonalization, patients providing a history of depersonalization and scores above 70 on the CDS were excluded.

Fifteen normal controls were volunteers selected from staff members and students of the Institute of Psychiatry and King's College London. All of the normal controls denied personal history of mental illness and scored below cut-off points on the administered scales.

The three groups were similar for sex and age as these two variables have been shown to affect electrodermal activity (Venables and Mitchell, 1996). All subjects were paid for their participation in the study and were asked to provide informed written consent. The study was approved by the ethics committee of the institute of psychiatry.

2.2. Stimuli

A set of stimuli previously developed and validated by one of the authors (CS) as part of his PhD dissertation (Senior, 1999), consisted of clips (or static pictures thereof) of subjects displaying spontaneous happy (laughing or smiling) or disgust expressions. Stimuli were presented in both colour and black and white versions. The rationale for using different presentation parameters, was based on recent findings, which suggest that recognition of emotional expression is affected by visual parameters of stimuli presentation such as movement and colour (Kemp et al., 1996; Lee and Perrett, 1997; Simons et al., 1999; Lander et al., 1999; Kamachi et al., 2001).

Preparation of stimuli: In order to make sure that the stimuli showed genuine, spontaneous emotional expressions, 53 volunteers were covertly recorded whilst they were shown short video excerpts previously known to elicit intense disgust (e.g. clips depicting cannibalism, urodipsia and coprophagia), or laughter (excerpts from two comedy films) (Gross and Levenson, 1995). Nineteen subjects who showed definite and distinct emotional expressions were retained. These stimuli were then piloted on a sample of normal volunteers and those identities obtaining interrater agreement >90% on emotion recognition were used for the study (Senior, 1999).