

Recognition of facial expressions in obsessive–compulsive disorder

Kathleen M. Corcoran^a, Sheila R. Woody^{a,*}, David F. Tolin^b

^a University of British Columbia, Vancouver, British Columbia, Canada

^b The Institute of Living, Hartford, CT, United States

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Abstract

Sprengelmeyer et al. [Sprengelmeyer, R., Young, A. W., Pundt, I., Sprengelmeyer, A., Calder, A. J., Berrios, G., et al. (1997). Disgust implicated in obsessive–compulsive disorder. *Proceedings of the Royal Society of London*, 264, 1767–1773] found that patients with OCD showed severely impaired recognition of facial expressions of disgust. This result has potential to provide a unique window into the psychopathology of OCD, but several published attempts to replicate this finding have failed. The current study compared OCD patients to normal controls and panic disorder patients on ability to recognize facial expressions of negative emotions. Overall, the OCD patients were impaired in their ability to recognize disgust expressions, but only 33% of patients showed this deficit. These deficits were related to OCD symptom severity and general functioning, factors that may account for the inconsistent findings observed in different laboratories.

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1. Introduction

Accurate recognition of facial expressions is a critical element of humans' social structure (Ekman, 1992), serving as a guide for social behaviour. Even toddlers gain important information from the facial expressions of others (La Barbera, Izard, Vietze, & Parisi, 1976; Sorce, Emde, Campos, & Klinnert, 1985; Young-Browne, Rosenfeld, & Horowitz, 1977). Adults across various cultures recognize six basic facial expressions of emotion: anger, disgust, fear, happiness,

sadness, and surprise (Ekman, Levenson, & Friesen, 1983; Ekman, Sorenson, & Friesen, 1969; Izard, 1971), a finding that is reliable across numerous procedural variations (Boucher & Carlson, 1980; Izard, 1971).

Despite this apparent universal ability, individuals with some forms of psychopathology are impaired in their recognition of facial expressions, although the specific quality and meaning of these deficits is still poorly understood. Researchers have documented abnormalities in facial expression recognition in alcoholism (Kornreich et al., 2001a, 2001b), Alzheimer's disease (Hargrave, Maddock, & Stone, 2002), anorexia nervosa (Zonnevijlle-Bendek, van Goozen, Cohen-Kettenis, van Elburg, & van Engeland, 2002), bipolar disorder (Ketter & Lembke, 2002), criminal psychopathy (Kosson, Suchy, Mayer, & Libby, 2002), social phobia (Simonian, Beidel, Turner, Berkes, &

* Corresponding author at: Department of Psychology, University of British Columbia, 2136 West Mall, Vancouver, BC, V6T 1Z4 Canada. Tel.: +1 604 822 2719; fax: +1 604 822 6923.

E-mail address: swoody@psych.ubc.ca (S.R. Woody).

Long, 2001), major depression (Rubinow & Post, 1992), schizophrenia (Addington & Addington, 1998; Archer, Hay, & Young, 1992; Heimberg, Gur, Erwin, Shtasel, & Gur, 1992), and obsessive–compulsive disorder (Sprengelmeyer et al., 1997), the subject of this investigation.

Even in the case of depression and schizophrenia, which have been more extensively studied, the precise nature of the deficits is unclear. Some studies report generally impaired recognition of facial expressions among those with major depression (Persad & Polivy, 1993) or schizophrenia (Lewis & Garver, 1995), which would suggest that the impairments reflect a general deficit in face processing or overall neurocognitive functioning, rather than expression recognition per se (Addington & Addington, 1998; Bryson, Bell, & Lysaker, 1997; Kerr & Neale, 1993). More typically, however, results point to problematic recognition of *specific* facial expressions in depression (Mikhailova, Vladimirova, Iznak, Tsusulkovskaya, & Sushko, 1996; Rubinow & Post, 1992) and schizophrenia (Davis & Gibson, 2000; Dougherty, Bartlett, & Izard, 1974; Kucharska-Pietura & Klimkowski, 2002; Muzekari & Bates, 1977; Walker, Marwit, & Emory, 1980). Notably, in a study with normal undergraduates, Rozin, Taylor, Ross, Bennette, and Hejmadi (2005) observed wide variability across participants in general ability to classify emotions depicted in facial expression but no evidence of individual differences in specific recognition deficits.

Although affect recognition deficits have been observed in both schizophrenia and depression, the findings show important differences with potential clinical implications. The impairments in the recognition of facial expressions are more severe in schizophrenia than in depression (Feinberg, Rifkin, Schaffer, & Walker, 1986; Heimberg et al., 1992). Impairment in affect recognition appears to improve upon symptom remission in depression (Mikhailova et al., 1996) but not in schizophrenia (Addington & Addington, 1998; Gaebel & Woelwer, 1992), although the deficits predict poor treatment outcome in depression (Geerts & Bouhuys, 1998).

In the case of obsessive–compulsive disorder (OCD), researchers have speculated that disgust may play a role in some forms of the disorder, particularly contamination-based types (Phillips, Senior, Fahy, & David, 1998a; Power & Dalgleish, 1997; Woody & Teachman, 2000). In 1997, Sprengelmeyer et al. tested 12 participants with OCD (primarily checking symptoms), 12 with Tourette's Syndrome (five of whom also showed prominent obsessive–compulsive behaviours),

8 anxiety disorder controls, and 40 normal controls on two tasks of facial expression recognition. OCD patients showed a marked deficit in recognition of disgust expressions and normal performance on expressions of anger, fear, happiness, sadness, and surprise. Intriguingly, Tourette's patients with prominent obsessive–compulsive behaviours demonstrated the disgust recognition impairment, while those without obsessive–compulsive behaviours did not. Sprengelmeyer et al. included a control task to rule out reluctance to choose the label “disgust” on the part of individuals with OCD.

The findings presented by Sprengelmeyer et al. (1997) have attracted attention not only for their pattern of results but also for their magnitude. *Every* individual with OCD was impaired in the recognition of disgust, whereas *no* participant without clinically significant obsessive–compulsive behaviours showed this impairment. Moreover, OCD patients showed specific impairment in the recognition of disgust, rather than a general pattern of poor performance on the task. Some observers have suggested that the effect may occur only among a subset of individuals with OCD—perhaps those with contamination concerns (Power & Dalgleish, 1997; Woody & Tolin, 2002). Other researchers have pointed to brain functioning in OCD, with imaging results thus far pointing toward the basal ganglia and anterior insula (Phillips, Young et al., 1998; Phillips et al., 1997; Sprengelmeyer, Rausch, Eysel, & Przuntek, 1998).

Despite the unusually strong effect observed by Sprengelmeyer and his colleagues, no other research team has replicated the result. Parker, McNally, Nakayama, and Wilhelm (2004) used procedures that were very close to those used by Sprengelmeyer, with the addition of new models for the facial expressions. They found no overall differences in performance between the OCD and normal control groups. Buhlmann, McNally, Etcoff, Tuschen-Caffier, and Wilhelm (2004) reported similar performance for individuals with OCD and normal controls on a recognition task of prototypical emotional expressions. Although Rozin et al. (2005) used a normal sample, they conducted an analysis examining 26 individuals who scored in the clinical range on the Obsessive Compulsive Inventory (Foa, Kozak, Salkovskis, Coles, & Amir, 1998). These individuals actually recognized disgust expressions better than did participants with lower scores.

The Sprengelmeyer et al. (1997) study was intriguing, but without replication it simply remains mysterious. Several of the replication attempts described above were underpowered by ordinary standards, although the initial

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