Detection and recognition of emotional expressions: Effects of traits of personality disorder and gender

Robert J. Snowden [a,*], Rebecca Craig [a], Nicola S. Gray [b]

[a] *School of Psychology, Cardiff University, Cardiff CF10 3AT, UK*
[b] *Ty Catrin, Pastoral Cymru, Cardiff, UK*

ABSTRACT

A problem in the processing of emotions has long been thought to be strongly associated with the aetiology and maintenance of personality disorders. Previous research has demonstrated a hyposensitivity to the faces expressing fear in those high on the traits of psychopathy, while patients with BPD have been shown to be hypersensitive to expressions in general. However, many previous studies could be explained by a bias in reporting particular expressions rather than a change in sensitivity to these expressions. Using two tasks, the present study examined both the detection and the recognition of four emotional expressions (anger, happy, sad, and fear) in a community sample of males and females. Measures of self-reported psychopathy and Borderline Personality traits were administered. The results showed marked gender differences. Psychopathy was negatively related to performance in both the detection and recognition of fear, but only for males. Borderline Personality traits were positively related to overall performance in the recognitions task, but only for females. The results suggest strong differences in the role that emotional processing might play between the genders.

© 2012 Elsevier Ltd. All rights reserved.

1. Introduction

A problem in the processing of emotions has long been thought to be strongly associated, or even causal, to the aetiology and maintenance of Personality Disorders. In some individuals there appears to be a hypersensitivity or over-reaction to emotional material, and this is often found in those with a diagnosis of Borderline Personality Disorder (BPD). On the other hand, some individuals appear to have a hyposensitivity or under-reaction to emotional material and are described as cold or callous. These features are often associated with a diagnosis of psychopathy (Hare, 2003).

One particular stimulus, the human face, is of obvious interest as dysfunction in the ability to read expressions would lead to problems in social interactions that are the hallmark of Personality Disorders.

1.1. Psychopathy and facial affect recognition

Several studies have suggested that psychopaths have a deficit in recognizing expressions of fear and/or sadness (e.g., Blair et al., 2004). However, many others find a more general deficit (e.g., Hastings, Tangney, & Stuewig, 2008), or find deficits for other expressions such as disgust (Kosson, Suchy, Mayer, & Libby, 2002), do not find any deficits (e.g., Glass & Newman, 2006), or even find enhanced abilities in adults (Habel, Kuhn, Salloum, Devos, & Schneider, 2002) and boys with callus/unemotional traits (Woodworth & Waschbusch, 2008). Recent attempts at meta-analysis appear to support the notion that problems in the recognition of the emotions of fear and sadness are associated with psychopathy (Marsh & Blair, 2008; Wilson, Juodis, & Porter, 2011). To date, very few studies have considered possible gender differences in psychopathy and facial affect recognition (see Eisenbarth, Alpers, Segre, Calogero, & Angrilli, 2008). Given the increasing evidence of gender differences in the expression of psychopathy (e.g., O'Leary, Taylor, & Eckel, 2010) this is an area that needs addressing.

1.2. Borderline personality and facial affect recognition

As BPD is characterised by interpersonal dysfunction, BPD may have impaired perception of emotional expressions. Levine, Marziali, and Hood (1997) showed that BPD patients were less accurate at identifying negative emotions such as anger, fear and sadness, but found no deficit for identifying positive expressions. Deficits have also been reported by Minzenberg, Poole, and Vinogradov (2006) and Bland, Williams, Scharer, and Manning (2004).

Linehan (1993) suggested that there is an increased emotional vulnerability in BPD and this produces a heightened sensitivity to emotional stimuli, especially negative emotions. Wagner and

Linehan (1999) found that individuals with BPD had a heightened sensitivity to fear compared to control participants. Lynch et al. (2006) showed that BPD patients identified emotions at reduced intensity of the expression compared to control participants. Fertuck et al. (2009) found enhanced ability to identify expressions using only the eyes for those with BPD.

The majority of people diagnosed with BPD are female. Hence, previous studies of facial expressions have used predominantly female samples. At present, therefore, there are no known gender differences between facial affect processing and BPD.

1.3. Personality and Personality Disorder

Personality Disorders are currently diagnosed by the DSM (-IV) as categorical. However, most researchers think of Personality Disorders as extremes on dimensions of personality traits rather than a taxon (e.g., Helzer, Kraemer, & Krueger, 2006), including psychopathy (Coid, Yang, Ullrich, Roberts, & Hare, 2009; Walters et al., 2007). There have, therefore, been attempts to measure particular Personality Disorder traits in community samples. Using a community sample has several advantages over patient populations. Non-patients are far more numerous and are easily accessible. Hence, issues such as gender differences, which are hard to study in clinical populations as they tend to be mainly male (psychopathy) or female (BPD) can be addressed. Levels of medication and/or substance misuse, that might influence task performance, are also far lower in non-clinical samples. Hence, there has been a rise in the number of publications that aim to provide "paralleling evidence" to Personality Disorder patients by using Personality Disorder traits questionnaires in community samples. This is the approach we have taken.

1.4. Recognition and detection of facial affect

Most experiments on facial affect present a single face and the participant has to "label" the expression from a small pool of possibilities (e.g., Kosson et al., 2002). However, this method fails to distinguish between the sensitivity to an expression and a bias in reporting it. For example, if an individual is highly fearful they may see fear in many stimuli (even if it is not there in the stimulus). In an experiment where they are asked to classify expressions they would tend to correctly classify all the 'fear' stimuli as fearful, and get a high score for detecting this emotion. However, this is misleading as they also misidentify other stimuli as fearful. What has been measured is a bias to report fearful, rather than a genuine sensitivity to it (this bias may also be of interest). In the paradigms where faces of increasing emotion are presented (e.g., Blair et al., 2004) the same biases will make the participant press earlier in the sequence.

In the domain of psychophysics the problem of bias versus sensitivity is normally tackled via either signal detection theory, or by the use of 'forced-choice' methodologies (Graham, 1989). In a forced-choice experiment a signal is always present on each trial, and the participant must make some decision about this signal (e.g., 'it occurred on the left'). By forcing a choice the participant is not able to express their bias as to 'when' or 'if' to report a signal. Further, the 'choice' to be made (e.g., left vs. right) is orthogonal to any experimental manipulation (e.g., fearful vs. neutral face).

In the present study we use both the "traditional" method of presenting a single face and having the participant choose which expression was present (Recognition of Emotional Face Task; REFT) and a new task that aims to eliminate any bias in responding to one particular emotion. In this new task, the Detection of Emotional Face Task (DEFT), four faces are presented, three with neutral expressions and one with an emotional expression (see Fig. 1) and the participant must choose which has the emotional expres-
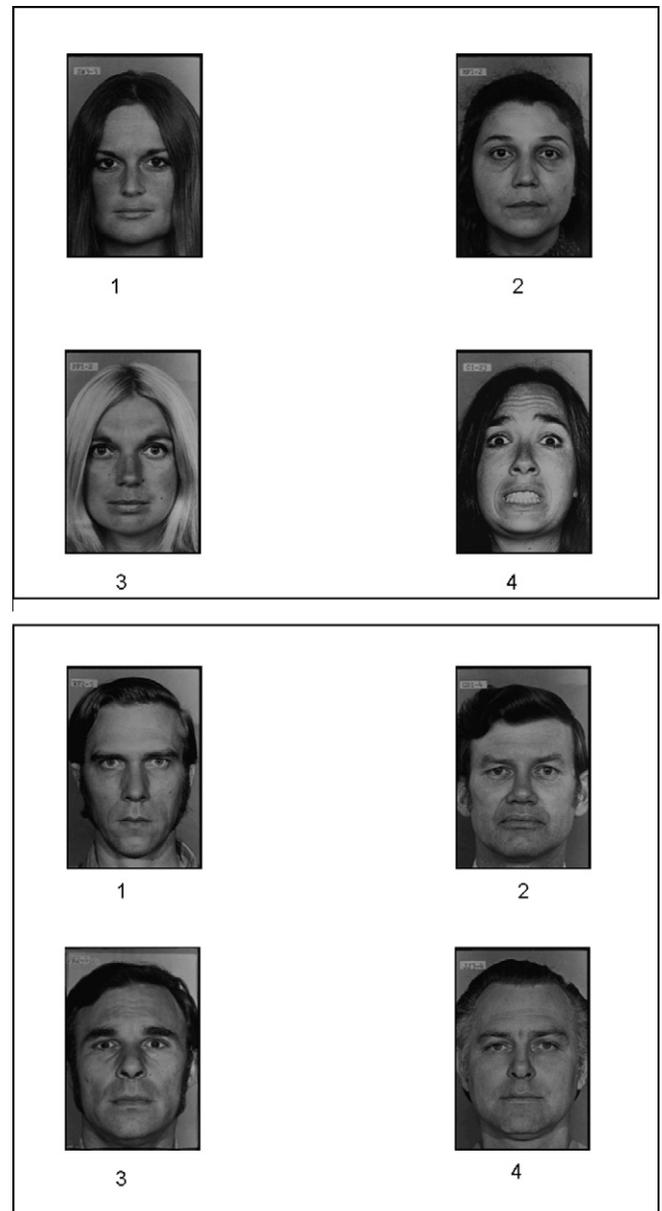

Fig. 1. Two examples of trials from the DEFT. In the upper part of the figure a practice trial is shown where the emotional expression (fear) is presented at 100% expression in image 4. The lower part of the figure shows the stimulus for a real trial, where the expression (sad) is presented at only 40% expression (image 3).

sion. The person does not have to state which expression is present, hence, biases in reporting different types of expression are eliminated.

1.5. The present study

We measured sensitivity to four types of facial expression – happy, sad, fear, and angry – using the REFT and the DEFT. We also obtained measures of traits of psychopathy using the Psychopathic Personality Inventory (PPI-R; Lilienfeld & Widows, 2005) and traits of BPD using the Borderline Personality Questionnaire (BPQ; Poreh et al., 2006). We obtained a balanced and reasonably large sample from each gender.

We hypothesised that the scores on the PPI-R would be negatively related to scores on the emotional face tasks when they depicted the expression of fear. We further hypothesised that scores on the BPQ would be positively related to scores on the face pro-