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Emotion recognition and alexithymia in females with non-clinical disordered eating

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ABSTRACT

Objectives: The aims were to determine if emotion recognition deficits observed in eating disorders generalise to non-clinical disordered eating and to establish if other psychopathological and personality factors contributed to, or accounted for, these deficits.
Design: Females with high ($n=23$) and low ($n=22$) scores on the Eating Disorder Inventory (EDI) were assessed on their ability to recognise emotion from videotaped social interactions. Participants also completed a face memory task, a Stroop task, and self-report measures of alexithymia, depression and anxiety.
Results: Relative to the low EDI group, high EDI participants exhibited a general deficit in recognition of emotion, which was related to their scores on the alexithymia measure and the bulimia subscale of the EDI. They also exhibited a specific deficit in the recognition of anger, which was related to their scores on the body dissatisfaction subscale of the EDI.
Conclusions: In line with clinical eating disorders, non-clinical disordered eating is associated with emotion recognition deficits. However, the nature of these deficits appears to be dependent upon the type of eating psychopathology and the degree of co-morbid alexithymia.

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1. Introduction

Previous research has demonstrated that patients with clinically diagnosed eating disorders exhibit impaired recognition of emotion from faces (Kucharska-Pietura, Nikolaou, Masiak, & Treasure, 2004; Zonnevijlle-Bender, van Goozen, Cohen-Kettenis, van Elburg, & van Engeland, 2002). Furthermore, Bydlowski et al. (2005) reported that a sample of patients with eating disorders were significantly impaired in their ability to interpret a series of social vignettes. Despite the apparent reliability of these findings there have been a number of studies that have failed to report impaired emotion processing in patients with eating disorders (Kessler, Schwarze, Filipic, Traue, & von Wietersheim, 2006; Mendlewicz, Linkowski, Bazelmans, & Philippot, 2005). Given the variability of these findings it is evident that further research is required to elucidate the nature of the link between eating psychopathology and emotional processing.

An important avenue that has yet to be addressed concerns the extent to which individuals exhibiting sub-clinical eating psychopathology also show deficits in their processing of facially expressed emotion. The primary aim of the current research was to address this question. Given that the ability to accurately decode the emotional expressions of others is a vital aspect of successful social functioning. The presence of an emotion recognition deficit could have significant implications for these individuals. For example, it is plausible that a reduction in sensitivity to the emotional displays of others could lead to misunderstandings during social interactions and a weakening of important social bonds, which in turn could contribute to the development of more serious eating psychopathology. In line with this notion, a recent study reported that the presence of interpersonal problems was associated with increases in eating disturbance in female college students (Jackson, Weis, Lundquist, & Soderlind, 2005). Furthermore, McClintock and Evans (2001) reported that social support and a fear of being rejected by others both emerged as important factors in the development of eating psychopathology.

Previous research has reported that eating disorders are associated with significantly elevated depression (Bydlowski et al., 2005; Gilboa-Schechtman, Avnon, Zubery, & Jeczmien, 2006; Kucharska-Pietura et al., 2004) and alexithymia (Beales & Dolton, 2000; Berthoz, Perdereau, Godart, Corcos, & Haviland, 2007). Alexithymia is a personality trait that is associated with a difficulty identifying and describing one's own feelings, with a difficulty in distinguishing between feelings and bodily sensations and with an externally focused, logical, thinking style (Sifneos, 1996). Given that both depression (Asthana, Mandal, Khurana, & Haque-Nizamie, 1998; Persad & Polivy, 1993; Surguladze et al., 2004) and alexithymia (Lane, Sechrest, Reidel, Weldon et al., 1996; Lane, Sechrest, Riedel, Shapiro, & Kaszniak, 2000; Mann, Wise, Trinidad, & Kohanski, 1994; Parker, Taylor, & Bagby, 1993) have been shown to impair emotion recognition it was considered important to examine the influence of these variables when conducting the current study.

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To date, research into the influence of eating psychopathology on facial emotion recognition has been confined to using static images of facial expressions. Whilst, this does provide a measure of control over the presented stimuli it can be argued that these studies lack ecological validity. For example, in everyday social interactions facial expressions are actually dynamic and fleeting rather than static. Thus, in order to increase the ecological validity of the present study, a series of dynamic emotional stimuli were utilised in place of the traditional static images.

The aim of present study was to determine if the facial emotion recognition deficits that have been demonstrated in patients with eating disorders are also evident in participants exhibiting sub-clinical eating psychopathology. Further, given the evidence that Anorexia Nervosa (AN) and Bulimia Nervosa (BN) may be associated with different patterns of emotion recognition deficits (Kucharska-Pietura et al., 2004) as well as differences in emotion processing generally (Beales & Dolton, 2000; Gilboa-Schechtman et al., 2006) we aimed to establish which aspects of disordered eating are important in explaining any observed deficits in facial emotion recognition. Finally, we aimed to establish if these emotion recognition deficits were related to other psychopathological or personality variables that were present in these participants. To this end, individuals with and without significant eating psychopathology were presented with a series of video clips, each featuring one of the six primary emotions (and some neutral clips that featured no strong emotion), and were asked to identify (forced choice) the emotion portrayed. The presence and severity of alexithymia, depression and anxiety were established using validated self-report measures. It was predicted that individuals with high levels of eating psychopathology would correctly identify fewer emotional displays than would participants with lower levels. Based on previous work (Kucharska-Pietura et al., 2004) it was predicted that participants with high levels of eating psychopathology would exhibit a specific deficit in recognising negative emotion. Although variations in emotional processing have been reported between the different eating disorders no formal hypotheses were formulated concerning the role of different forms of eating psychopathology. Similarly, although depression and alexithymia have both been shown to influence emotional processing no formal hypotheses were proposed concerning the influence of these variables on facial emotion recognition.

2. Methods

2.1. Participants

Forty-five female undergraduates were recruited via the student participation scheme in the Psychology Department at Aston University, Birmingham and received course credit for taking part. This study was passed by the University ethics committee and informed consent was obtained from each of the volunteers. Two groups were identified based on the participants' total score on the three eating-related subscales of the EDI-2 (Garner, 1991) using a median split of scores (median = 14). Those with a score of 13 or below were allocated to the low EDI group ($n = 22$; mean = 5.7, SD = 5.0) and those with a score of 14 or above were allocated to the high EDI group ($n = 23$; mean = 28.3, SD = 12.9). According to responses to a simple screening questionnaire, no participants were currently treated for, or had any history of, eating disorders. However, it is possible that those individuals in the current study that scored highest on the EDI could meet diagnostic criteria for a clinical eating disorder. The groups were well-matched for age (high EDI group mean = 19.6, SD = 1.7; low EDI group mean = 19.1, SD = 0.9). See Table 1 for further information regarding demographic and individual difference variables.

2.2. Assessment of emotion recognition

Emotion recognition accuracy was assessed using the Emotion Evaluation section of The Awareness of Social Inference Test (TASIT; McDonald, Flanagan, & Rollins, 2002). This task consists of 28 short (15–60 s) video clips of social interactions, each featuring one of the six primary emotions (happiness, sadness, anger, surprise, disgust and fear) or no strong emotion (neutral affect). Each emotion (including neutral affect) is represented in four different video clips, which are presented in a fixed pseudo-random order. The participants are required to identify the emotional state of the central protagonist by making a forced choice from seven emotional descriptors presented simultaneously in a random configuration on the computer screen (participants are required to point to the relevant emotional label and report their choice out loud). The clips were presented in digitised form on a 17″ PC monitor using MS PowerPoint with the sound played through a set of speakers attached to the PC. The emotion descriptors were presented on a subsequent PowerPoint slide immediately following the end of the video clip. Emotion recognition accuracy is assessed by summing the total number of each type of emotional display correctly identified by the participants. TASIT has been shown to be sensitive to emotion recognition deficits in patients with traumatic brain injury (McDonald, Flanagan, Rollins, & Kinch, 2003), patients with major depression, and patients that had undergone a neurosurgical intervention for treatment-resistant depression (Ridout et al., 2007).

Table 1
Group means ± standard deviations for demographic and individual difference data.

Variable	High EDI ($n = 23$)		Low EDI ($n = 22$)		t	p
	Mean	SD	Mean	SD		
EDI (total)	28.3	13.0	5.7	5.0	7.6	<0.001
EDI (DFT)	8.4	4.5	0.7	1.4	7.7	<0.001
EDI (bulimia)	4.1	4.3	0.5	1.1	3.8	<0.001
EDI (BD)	15.8	6.9	4.5	3.9	6.7	<0.001
Age	19.6	1.7	19.1	0.9	1.0	NS
BMI	23.0	3.6	21.8	2.7	1.3	NS
BDI	13.5	6.9	7.6	5.8	3.1	<0.01
STAI-S	38.8	8.8	33.1	10.0	2.0	NS
STAI-T	46.5	10.3	37.2	9.6	3.1	<0.01
TAS-20	49.1	10.7	37.9	10.7	3.5	<0.01
DMTS	16.9	2.0	17.3	1.5	0.07	NS
Stroop interference (%)	39.5	18.6	34.1	16.1	1.0	NS
Stroop errors	0.87	0.97	0.9	1.1	0.1	NS

Note: EDI = Eating Disorders Inventory; DFT = drive for thinness; BD = body dissatisfaction; BMI = Body Mass Index; STAI-S = state anxiety; STAI-T = trait anxiety; TAS-20 = Toronto Alexithymia Scale (20-item); DMTS = Delayed Matching to Sample.

2.3. Assessment of neuropsychological function

Given that TASIT requires the participant to make their emotion recognition judgements a few seconds after the video clips have finished, it is plausible that their judgements may rely to some extent on their memory for the video clips. Therefore, it was considered sensible to control for possible group differences in short-term/working memory. As faces arguably represent the key element of TASIT clips, we utilised a facial variant of the Delayed Matching to Sample Task (DMTS) to ensure that the high and low disordered eating groups did not differ in their memory for facial stimuli. Stimuli presented during the DMTS task were ten neutral faces (6 female, 4 male) drawn from Ekman and Friesen (1976). In order to reduce distinctiveness of the external facial features, hair was removed from all images. The DMTS consisted of 40 trials presented on a PC using MS PowerPoint. Prior to the appearance of each image, a fixed focus point (the letter X) was presented for one second in the centre of the screen. Participants were asked to maintain attention to this stimulus once it appeared. Following the protocol of Habeck et al. (2004) faces were presented for one second and the memory task took place after a seven second delay. At memory testing, four faces were presented on

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