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Emotional intelligence in anorexia nervosa: Is anxiety a missing piece of the puzzle?

David Hambrook^{a,b}, Gary Brown^b, Kate Tchanturia^{a,*}^a King's College London, Division of Psychological Medicine, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, UK^b Department of Psychology, Royal Holloway, University of London, Egham, Surrey TW20 0EX, UK

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ABSTRACT

Problematic emotional processing has been implicated in the genesis and maintenance of anorexia nervosa (AN). This study built on existing research and explored performance-based emotional intelligence (EI) in people with AN. The Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT) was administered to 32 women diagnosed with AN and 32 female healthy controls (HC). Compared to HC women, the AN group demonstrated significantly lower total EI scores and poorer ability to understand how emotions can progress and change over time. Despite scores within the broadly average range compared to published EI norms, there was a general pattern of poorer performance in the AN sample. Self-reported anxiety symptoms were the strongest predictor of EI, over and above a diagnosis of AN. This study adds to the literature documenting the socioemotional phenotype of AN, suggesting this group of individuals may find it relatively difficult to carry out accurate reasoning about emotions, and to use emotions and emotional knowledge to enhance thought. Anxiety was highlighted as a putative variable partially explaining why people with AN demonstrated lower EI compared to controls. Implications for further research are discussed, including the need to explore the specificity of EI difficulties in AN using larger samples and additional control groups.

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1. Introduction

Anorexia Nervosa (AN) is a serious mental illness, often associated with a chronic course (Robinson, 2009), having high levels of functional and social impairment (Tchanturia et al., 2012), and being widely seen by clinicians as difficult to manage and treat (Bamford and Mountford, 2012). Treatment outcomes for AN have reportedly not improved significantly in the last 60 years (Steinhausen, 2009), and there is currently no empirically supported treatment of choice for adults with the illness (Fitzpatrick and Lock, 2011; National Institute for Health and Clinical Excellence, 2004). New frameworks for understanding the development and maintenance of AN are much needed in order to build effective evidence-based therapeutic interventions. A number of recently developed theoretical models have placed significant emphasis on the role of neurocognitive and emotional factors in the genesis and continuation of AN.

Three models in particular (Hatch et al., 2010; Schmidt and Treasure, 2006; Zucker et al., 2007) have suggested that AN is maintained by a cognitive style involving rigid, inflexible (Tchanturia et al., 2011, 2012), and detail-focussed information

processing (Lopez et al., 2008), which is reinforced by starvation effects that accentuate a pre-morbid over-responsive fear network and experiential avoidance of intense affect. For example, Hatch et al. (2011) propose that emotions are fundamentally processed differently in the brains of people with AN, which is driven by a genotypic predisposition, and subsequently reinforced and maintained by a 'starvation syndrome' that accompanies AN. This model proposes that in people with AN, there is altered experience of emotion generated by abnormal temporo-limbic activity very early on in the processing of emotions (< 200 ms), in response to innately significant emotion danger-reward stimuli. Specifically, food becomes conditioned as a threatening/dangerous stimulus. As AN develops over time and weight is lost, disturbances in 'thinking' and 'feeling' manifest as executive functioning deficits (e.g., cognitive inflexibility, extreme attention to detail) and self-reported negative feelings (anxiety, depression, anhedonia). These aspects of cognition and feeling are also applied to thinking and feeling towards food specifically. That is, individuals come to apply rigid and detail-focussed routines around their eating, and will experience fear and disgust in relation to food. These intense and negative reactions to food lead to maladaptive self-regulation by avoiding food to compensate for food-related alterations in emotion, thinking and feeling. This strategy is reinforcing in the short-term by temporarily facilitating 'escape' from unpleasant internal experiences and

* Corresponding author. Tel.: +44 207 848 0134; fax: +44 207 848 0182.
E-mail address: kate.tchanturia@kcl.ac.uk (K. Tchanturia).

the individual is rewarded by a sense of perceived safety and control. However, a 'starvation syndrome' soon ensues, similar to that found in semi-starvation studies of non-clinical populations (e.g., Keys et al., 1950), where individuals experience depressed mood and/or anxiety states. Similarly, in AN, a starvation syndrome serves to create or exacerbate pre-existing levels of disturbance including low mood and obsessionality (Godart et al., 2000; Kaye et al., 2004), thereby reducing the motivation and capacity of individuals to initiate change (i.e., start eating normally again). It is argued that cognitive inefficiencies are also exacerbated or worsened by the starvation syndrome, and consequently serve to maintain the AN (e.g., executive function difficulties lead to cognitive rigidity and narrowed interests maintain eating disordered thoughts and decrease the capacity to engage in treatment).

In the neurocognitive domain, there is ample evidence to suggest that while people with AN tend to demonstrate intact or superior performance on broad-based assessments of IQ (Lopez et al., 2011), AN is nevertheless associated with a signature of specific neuropsychological deficits in the domains of set-shifting (updating or shifting cognitive strategies in response to environmental contingencies) (Tchanturia et al., 2011, 2012) and central coherence (ability to integrate incoming information into context, gestalt, and meaning) (Lopez et al., 2008).

In the socioemotional domain, the evidence is less clear. Recent data suggest that AN may be associated with a range of affective difficulties including difficulties mentalizing or inferring the emotional states of oneself and others (e.g., Oldershaw et al., 2011), problematic expression of emotions (Davies et al., 2010), and compromised ability to tolerate and manage emotions adaptively (e.g., Hambrook et al., 2011). The clinical significance of socioemotional problems in AN has been suggested by research documenting the negative impact that such problems can have on treatment outcome (Speranza et al., 2007). Patients, carers, and clinicians also agree that difficulties in processing emotions have a considerable impact on the interpersonal relationships and social experiences of individuals with AN, and that treatment should focus on these difficulties as well as addressing 'core' pathological eating symptoms (Kyriacou et al., 2009).

Despite an emerging picture suggesting disturbed emotional processing in AN, the extant literature is limited by an over-reliance on self-report methodology, the reliability, and validity of which may be particularly questionable in the AN population where insight and self-awareness are often compromised (Konstantakopoulos et al., 2011). Where experimental designs have been employed (e.g., Harrison et al., 2010a), studies have tended to make use of assessment paradigms associated with disputed ecological validity (e.g., Johnston et al., 2008). In addition, little previous attention has been paid to the cognitive processing of emotional information in people with AN; that is, how able people with AN are to think and reason about emotional information.

The current study sought to build on the existing evidence-base and explore the emotional processing abilities of people with AN using a performance-based assessment of emotional intelligence (EI). EI is defined as the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought (Salovey and Mayer, 1990; Mayer and Salovey, 1997; Mayer et al., 2001). Emotions, in this model, are defined as evolved, integrated feeling states involving physiological changes, motor-preparedness, cognitions about action, and inner experiences that emerge from an appraisal of the self or situation (Mayer et al., 2008). Mayer and colleagues' 'four-branch' model of EI assumes that EI is a cognitive ability not measured by traditional IQ tests, and which relates to reasoning and problem solving in the emotional domain. EI is seen as joining abilities from four areas or branches: (a) *Perceiving*

emotions: the ability to perceive accurately, appraise, and express emotion; (b) *Using emotions*: the ability to access and/or generate feelings when they facilitate thought; (c) *Understanding emotions*: the ability to understand emotion language and knowledge about emotions; (d) *Managing emotions*: the ability to regulate emotions to promote emotional and intellectual growth in oneself and others. Each of these EI branches has a developmental trajectory from early childhood onward.

The Four-Branch EI model has been measured by a series of instruments, the most recent of which is the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT V2; Mayer et al., 2002). A key distinguishing feature of the MSCEIT is that it is an ability- or performance-based measure of EI. Respondents are presented with a series of ecologically realistic emotion-laden problems or question items, and their answers to these questions are scored against a criterion of correctness. This is in contrast to self-report measures of emotional processing, where individuals are asked to rate their own beliefs and attitudes about various aspects of emotional processing. Self-report measures of emotional processing are inherently limited due to their reliance on memory for past events (which is fallible), and are also prone to demand characteristics (respondents reporting what they believe the researcher expects to see), and social desirability bias. The MSCEIT arguably overcomes these limitations to an extent as it is an objective measure of performance, with individuals selecting answers to verbally and visually described emotion-laden scenarios/problems, and these answers are evaluated against a criterion of correctness (see description of scoring method in Section 2.2.2.4).

Performance-based EI has not previously been examined in people with AN, and therefore this study provided an opportunity to explore whether the concept might be helpful in furthering our understanding of emotional processing in this disorder. The study also aimed to establish whether there was a relationship between EI performance and measures of symptom severity, including eating disorder (ED) specific psychopathology, and anxiety and depression, as previous research has suggested that symptomatology (including levels of anxiety and depression) may be related to emotional processing difficulties in AN and may go some way toward explaining some of the variance associated with AN versus control differences on measures of emotional processing (e.g., Bydlowski et al., 2005; Kessler et al., 2006). It was also considered interesting and important to explore whether EI was related to ED symptoms as this could elucidate the functional relationship between EI difficulties and specific ED symptoms.

It was predicted that a sample of individuals diagnosed with AN would perform significantly worse than HC participants on the MSCEIT, and that there would be a significant negative relationship between EI and symptomatology severity in people with AN.

2. Method

2.1. Participants

A cross-sectional independent-groups design was employed. Two groups of participants were recruited. One consisted of 32 females diagnosed with AN according to DSM-IV-TR criteria (American Psychiatric Association, 2000) and the other consisted of 32 female HC. Of the 32 women with current AN, 19 had restricting type AN (AN-R), 11 had binge/purging type AN (AN-BP), and two were diagnosed with ED not otherwise specified with anorexic features (EDNOS-AN). The HC comparison group ($n=32$) consisted of women of similar age and educational background with no personal or familial history of mental illness. All participants spoke fluent English and the two groups were matched regarding their ethnic composition.

The AN group were recruited through the inpatient, outpatient, and day-care services of two ED services in the South East of England and through a research volunteer register held by a UK-based ED charity (www.b-eat.co.uk). HC participants were recruited through various means including an email circular sent to the staff and students of two London-based universities, and flyers posted in public places. HC participants were screened first for personal or family history of diagnosed mental illness, traumatic head injury, and a healthy body mass index

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