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Emotions mediate the relationship between autistic traits and disordered eating: A new autistic-emotional model for eating pathology

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ABSTRACT

The aim of the study was to assess the extent of overlap between autistic traits, body dissatisfaction and disordered eating and to explore the mediating effects of negative attitudes towards emotional expression and emotion dysregulation. The sample comprised 416 university students (82% females, 17-48 years [$M=19.76$, $SD=3.85$]), who completed an online questionnaire assessing eating attitudes and behaviours (including dieting, bulimia and oral control), body dissatisfaction, and autistic traits (including the Autism Quotient [AQ] and its related subscales as well as the Empathising Quotient). Attitudes towards emotional expression and emotion regulation were also assessed. Results revealed that eating pathology correlated highly with all AQ subscales, with the exception of the attention to detail subscale. However, there was no significant relationship between empathising and eating pathology. Path-analyses indicated that emotion dysregulation, but not negative attitudes towards emotional expression, was a significant mediator of the relationship between AQ, body dissatisfaction and eating pathology. Direct relationships were also obtained for the AQ-bulimia and the AQ-oral control paths. Prevention and early intervention programs for eating pathology would likely benefit from addressing abnormalities in emotion processes in individuals who score highly on measures of autistic traits.

1. Introduction

A number of inter-related risk factors have been associated with the development of eating disorders (EDs) (Culbert et al., 2015; Hilbert et al., 2014). One theoretical model of EDs, the cognitive-interpersonal model, asserts that traits associated with autism spectrum disorders (ASD), such as problems navigating interpersonal relationships and social-emotional difficulties, may act as both risk and maintaining factors for EDs (Treasure et al., 2012). However, the majority of studies (Westwood et al., 2015) investigating the relationship between EDs and autistic traits have focused on clinical Anorexia Nervosa (AN) populations. Therefore, the question of whether this relationship holds in the general population remains largely unexplored (Carton and Smith, 2014; Coombs et al., 2011). While there have been a few studies outlining that ASD and EDs share some familial (genetic) behavioural traits (e.g. social impairment and restricted and repetitive behaviours) and intermediate phenotypes (e.g. impaired set-shifting and theory of mind as well as weak central coherence) (e.g. Caglar-Nazali et al., 2014; Westwood et al., 2016; Zucker et al., 2007), investigations into other mechanisms linking the two disorders, have been scarce. Given that deficits in emotion regulation have been found in both EDs (Meyer et al., 2010; Svaldi et al., 2012) and ASD populations (Globerson et al., 2015), it is possible that the relationship between these disorders may be mediated by emotion-related traits. The current study therefore assessed the overlap between eating pathology and a range of autistic traits in a large sample of university students, and also assessed whether emotions mediate this relationship by exploring a new autistic-emotional model of eating pathology. Although the official ED prevalence rate is around 0.5–3%, depending on the specific ED diagnosis, ED symptoms in the general population have been found to be as high as 12%, suggesting that it is meaningful to

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explore risk factors, such as ASD traits, in general population samples (Nagl et al., 2016).

1.1. Autistic traits in clinical eating disorders

Research assessing autistic traits in clinical ED populations has mainly focused on common cognitive processing styles across the two disorder groups. Current evidence points to a strong role for three particular deficits, impaired theory of mind (Caglar-Nazali et al., 2014; Davies et al., 2016), weak central coherence (Lang et al., 2014), and deficits in executive functions, including problems in set-shifting (Roberts et al., 2007; Tchanturia et al., 2012; Westwood et al., 2016). Social interaction impairments and reciprocal communication deficits, which are key symptoms of ASD, have also been reported in ED patients (Wentz et al., 2009; Zucker et al., 2007). Moreover, a recent review by Huke et al. (2013), investigating autistic traits in EDs, found that nearly 23% of individuals with an ED displayed autism spectrum traits. These findings provide support for the overlap between ASD and EDs.

1.1.1. The autism spectrum quotient

To assess specific autism-spectrum features in clinical ED patients, recent studies have applied a test of autistic traits, the Autism-Spectrum Quotient (AQ; (Baron-Cohen et al., 2001)). A recent meta-analysis (Westwood et al., 2015) reviewing seven studies, reported significantly higher AQ scores in AN patients compared to controls, with the difference largely attributable to greater social skills deficits, poorer communication skills, and greater inflexibility. Conversely, no significant differences were found between AN patients and controls on the attention to detail AQ subscale. However, it should be noted that this review was limited by the small number of studies included and substantial cross-study heterogeneity. These results are nonetheless supported by several studies that have found differences between ED patients and controls across a number of AQ scales (e.g. Anckarsater et al., 2012), although some studies have only found differences for one AQ subscale (e.g., attention to detail scale, (Iwasaki et al., 2013)). To our knowledge, only one study (Iwasaki et al., 2013) assessed the relationship between specific eating pathology facets and the AQ subscales in a clinical ED sample. Results of this study revealed that whereas communication deficits were associated with increased body dissatisfaction, social-skill difficulties were related to greater bulimic symptom scores on the Eating Disorder Inventory (EDI), indicating that autistic traits might differ depending on the ED symptoms assessed.

1.1.2. Empathising

More recently, empathising, the capacity to identify thoughts and feelings in others and to react with appropriate emotions, a commonly reported ASD symptom, has been investigated in relation to EDs. The importance of assessing empathising can be seen in the impaired theory of mind (Caglar-Nazali et al., 2014) and social interaction deficits, which are key symptoms in ED patients (Wentz et al., 2009; Zucker et al., 2007). The studies assessing empathising in EDs have mainly used two distinct measures to assess empathy, the Interpersonal Reactivity Index (Davis, 1983), a multi-dimensional assessment of empathy, and the Empathising Quotient (EQ; (Baron-Cohen and Wheelwright, 2004)), a measure of empathy used to account for the social and communication barriers commonly found in individuals with ASD. The findings of the studies using the Interpersonal Reactivity Index (Beadle et al., 2013; Calderoni et al., 2013) have been mainly inconclusive, with the study by Calderoni et al. (2013) revealing that AN patients reported less cognitive, but not affective empathy than controls, whereas the study by Beadle et al. (2013) found that AN patients demonstrated greater personal distress (a domain of affective empathy) compared to the controls. Of the few more recent studies (Baron-Cohen et al., 2013; Courty et al., 2013; Hambrook et al., 2008), that have utilized the EQ, only the study by Baron-Cohen et al. (2013) found that EQ scores were lower for AN patients compared to controls, however this finding was only obtained for the younger AN age group (aged 12–15 years). It is possible that lack of expected association between poorer empathising using the EQ and AN is due to the fact that low empathising abilities, characterized by social and communication barriers, are broadly present in both AN samples as well as the general population, therefore obscuring any group differences. However, future studies in both clinical and normal population samples are required to test this hypothesis.

1.2. Autistic traits and disordered eating in non-clinical samples

EDs and ASD are both largely conceptualised as representing continuums that account for both clinical and non-clinical populations (Baron-Cohen et al., 2001; Miller and Vaillancourt, 2011). Consequently, assessing the relationship between autistic traits and disordered eating symptoms in normal populations is necessary to obtain useful information about the clinical components of the disorders, as well as their more general manifestation across populations. Assessing the overlap in eating pathology and autistic traits in community samples might also address previous problems encountered in clinical ED studies. In particular, it may assist in disentangling the relationship between AN and ASD, which has proven problematic as autistic traits are very likely to arise as a consequence of AN and the associated low weight (Mandy and Tchanturia, 2015), however longitudinal research to confirm this claim is not yet available.

To our knowledge, only two studies have assessed the link between eating pathology and autistic traits in non-clinical samples, one assessing school children (Coombs et al., 2011) and the other one recruiting university students (Carton and Smith, 2014). Both studies reported that greater attention-to-detail, communication deficits, and attention-switching deficits assessed through the AQ, were significantly related to increased total Eating Attitudes Test (EAT-26; (Garner et al., 1982)) scores. However, only Coombs et al. (2011) observed a significant association between the EAT-26 oral control subscale and total AQ score.

There is currently only one study (Bremser and Gallup, 2012) that has assessed the role of empathising in eating pathology using a community sample. The study found that empathising was significantly related to eating pathology. Future studies using community samples are needed to verify these initial results and to clarify the discrepant findings regarding the relationship between EAT-26 scores and AQ scales (Carton and Smith, 2014; Coombs et al., 2011).

1.3. Emotions as potential mechanisms linking autistic traits and eating pathology

Despite the demonstrated link between disordered eating symptoms and ASD, the processes that connect the two disorder sets are currently unknown. Emotion dysregulation and negative attitudes towards emotional expression have been found to be entwined with both EDs (Harrison et al., 2010; Svaldi et al., 2012) and ASD (Samson et al., 2013). While research has consistently found a relationship between greater emotion regulation difficulties, including restricted access to emotion regulation strategies and lack of emotional clarity in both EDs (Meyer et al., 2010) and ASD (Globerson et al., 2015), research on negative attitudes towards emotions is more limited. The few studies assessing negative attitudes towards emotions revealed significant positive associations between eating pathology and the reduced tendency to