



# Social anhedonia and work and social functioning in the acute and recovered phases of eating disorders

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## ABSTRACT

Interpersonal difficulties are proposed to maintain eating disorders (EDs). This study explored whether social anhedonia (SA) was an additional social emotional maintenance factor which might also explain work/social problems in EDs. Additionally, the study explored SA and work and social adjustment in recovered participants. Women with anorexia nervosa (AN;  $n=105$ ), bulimia nervosa (BN;  $n=46$ ), recovered from AN (RAN;  $n=30$ ) and non-ED controls ( $n=136$ ) completed the Work and Social Adjustment Scale (WSAS) and the Revised Social Anhedonia Scale. ED participants reported greater SA and WSAS scores than non-ED controls; the RAN group reported an intermediate profile. AN participants had poorer work/social adjustment than BN participants. SA was associated with longer illness duration. SA, current severity (BMI) and lifetime severity (lowest adult BMI) significantly predicted work/social difficulties. Recovered participants scoring in the clinical range for SA experienced significantly greater work/social difficulties than recovered participants scoring outside the clinical range for SA. EDs are associated with clinical levels of SA and poor work/social functioning which reduce in recovery. SA may maintain the interpersonal functioning difficulties.

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## 1. Introduction

Eating disorders (EDs) such as anorexia nervosa (AN), and bulimia nervosa (BN) are serious mental health conditions with life threatening physical consequences, significant social debilitation and poor quality of life (Arkell and Robinson, 2008). Despite having average or above average IQ (Lopez et al., 2010), ED sufferers are more likely to be under or unemployed (Birmingham and Treasure, 2010), receive less social support (Karwautz et al., 2011) and have significantly smaller social networks than healthy peers (Tiller et al., 1997). In the early phase of adolescent EDs, involving the family to restore healthy eating is effective (Fisher et al., 2010), but EDs in adults, are 'one of the most difficult psychiatric disorders to treat' (Steinhausen, 2009). During acute episodes, individuals experience social functioning problems and unemployment levels similar to those observed in personality disorders and schizophrenia (Bland et al., 1988; Rymaszewska et al., 2007). Despite being either fully or partially recovered, individuals with past experiences of EDs also

report smaller social networks and a lower frequency of social contact (Striegel-Moore et al., 2003). Contemporary models of EDs including the Transdiagnostic model (Fairburn, 2008) and the Cognitive Interpersonal Maintenance Model (Schmidt and Treasure, 2006) posit that interpersonal difficulties contribute to causing and maintaining the illness. These interpersonal difficulties can be targeted in treatment (Treasure et al., 2012). Data highlight that alongside high levels of social anxiety (Grabhorn et al., 2005), ED sufferers may find social stimuli more threatening (Harrison et al., 2010a, 2010b) and less pleasurable than healthy peers and they show greater avoidance of social cues like female faces (Watson, et al., 2010). ED sufferers report high levels of alexithymia (Franzoni et al., 2013), have lower emotional intelligence (Hambrook et al., 2012), have difficulties recognising emotions (Harrison et al., 2009; Russell et al., 2009), expressing emotions (Davies et al., 2011) and regulating emotions both intra (Harrison et al., 2010a, 2010b) and interpersonally (Harrison et al., 2011) than those of a similar age and overall IQ. Thus, the available data indicate a profile of social emotional inefficiencies, potentially exacerbated during the acute phase of the illness (Harrison et al., 2010a, 2010b), perhaps due to the well-documented effects of starvation (Keys et al., 1950). In the absence of longitudinal studies which elucidate the exact nature of social emotional functioning in people before, during and after the

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illness, including recovered groups provides insight into these factors in the absence of acute illness. This point is perhaps even more poignant given that studies focusing on the components of successful recovery have highlighted the significant role of social relationships, social inclusion and friends (Noordenbos, 2011). Preliminary work (Deborde et al., 2006; Tchanturia et al., 2012) highlights the presence of social anhedonia, a reduced drive to seek out and experience pleasure from social contact (Brown et al., 2009) in EDs. It is possible that social anhedonia is an additional social emotional factor which might contribute to maintaining the illness and can be targeted in treatment. Whilst a cross-sectional study is limited in its ability to support such a hypothesis, such a design offers a starting point which can help to inform future longitudinal studies.

### 1.1. Aims of the study

This study therefore aimed to explore (1) whether social anhedonia is a maintaining factor of eating disorders, (2) whether social anhedonia is a significant predictor of work and social functioning difficulties in eating disorders and (3) whether work and social adjustment problems continue into the recovered phase of eating disorders.

It was predicted that ED sufferers would be more likely to be unemployed, single and report significantly higher levels of social anhedonia and work and social adjustment difficulties than non-ED controls. Furthermore, it was predicted that social anhedonia would be positively associated with years of illness and would be a significant predictor of work and social functioning problems. It was also predicted that recovered individuals might score in-between those currently ill and non-ED controls for social anhedonia and work and social functioning difficulties.

## 2. Material and methods

### 2.1. Participants

ED participants were recruited from the South London and Maudsley NHS Foundation Trust ED service, via a circular email sent to King's College London staff and students, a newsletter sent to respondents subscribed to the ED research unit's volunteer database and posters displayed in the local community. The latter three methods were also used to recruit recovered ED participants and non-ED controls. General inclusion criteria were females aged between 18 and 55 with sufficient command of the English language so as to be able to read and respond to the questionnaires and an absence of learning disability or psychotic type illness. Non-ED controls scoring in the clinical range of  $> 10$  on the Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983) were excluded. Following Bardone-Cone et al. (2010), recovered participants were required to have a BMI (weight/height<sup>2</sup>) in the healthy range (19–24.9), score outside the clinical range ( $> 2.4$ ) for the Eating Disorders Examination Questionnaire global score (EDE-Q; Fairburn and Beglin, 1994) and have regular menstruation. Following Bloss et al. (2011), these recovery criteria were required to have been met for at least the past year. Weight and height were recorded on the day of testing and the Structured Clinical Interview for DSM-IV disorders (SCID) Extended Module H (First et al., 2002) was used to confirm a current episode of an ED for the acute group, a past episode of an ED for the recovered group and to confirm the absence of an ED in non-ED controls.

### 2.2. Procedure

Ethical approval was obtained from relevant institutional review boards. Once written informed consent was collected, the National Adult Reading Test (NART; Nelson and Willison, 1991) was administered as an estimation of IQ. Participants subsequently completed the following measures.

### 2.3. Measures

#### 2.3.1. The Revised Social Anhedonia Scale (RSAS; Eckblad et al., 1982)

This 40 item self-report measure uses a true/false format and higher scores indicate higher levels of social anhedonia. A sample item is "having close friends is not as important as many people say." The Cronbach's  $\alpha$  for the RSAS has been

estimated at 0.95 (Fonseca-Pedrero et al., 2009) and it was 0.92 in this study. This measure has high internal consistency and test-retest reliability (Chapman et al., 1976). A cut-off of 12 or more on this measure indicates functionally significant social anhedonia (Pelizza and Ferrari, 2009).

#### 2.3.2. Work and Social Adjustment Scale (WSAS; Mundt et al., 2002)

This five item self-report questionnaire requires participants to respond as to how their illness affects their (1) ability to work, (2) home management, (3) social leisure, (4) private leisure and (5) ability to form and maintain close relationships using a nine point Likert scale ranging from 0 indicating no difficulties to 8 indicating very severe difficulties. The overall maximum total score is 40 and higher scores represent greater work and social functioning difficulties. The measure has good test-retest validity and internal consistency and is sensitive to change before and after treatment and a Cronbach's  $\alpha$  of internal scale consistency ranging from 0.70 to 0.94 (Mundt et al., 2002). The Cronbach's  $\alpha$  for this study was 0.95.

#### 2.3.3. Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983)

This 14 item self-report questionnaire measures the current presence and severity of anxiety and depression during the past 7 days. Participants respond on a 4 point Likert scale ranging from 0 to 4 with higher answers indicating greater severity for either depression, anxiety, or both sets of symptoms. The clinical threshold is a score of  $\geq 10$  for each subscale. The Cronbach's  $\alpha$  for this study was 0.88.

#### 2.3.4. Eating disorder Examination Questionnaire (EDE-Q; Fairburn and Beglin, 1994)

This 36 item self-report measure provides a global score of ED behaviours and cognitions over the past 28 days and has four subscales measuring dietary restraint, eating concern, weight concern, and shape concern. Subscale and global scores range from zero to six, with higher scores representing greater ED psychopathology. The EDE-Q also assesses frequency of key behavioural indicators of disordered eating, e.g. number of binges in the last 28 days. The EDE-Q has shown acceptable case detection and concurrent validity in community samples (Mond et al., 2004). The Cronbach's  $\alpha$  for this study was 0.87.

#### 2.3.5. Demographic Questionnaire

Participants provided information about their age, marital and occupational status, number of years of education, and for the clinical groups, the length of their illness in years and use of psychiatric medication.

### 2.4. Data analysis

Using NQuery software for Windows, based on self-report data provided for participants with EDs collected from the RSAS (Tchanturia et al., 2012) and WSAS (Tchanturia et al., 2013a), the power calculation suggested that for 80% power, with an alpha of  $< 0.05$ , and to obtain at least a medium effect size ( $D = 0.5$ ), a minimum sample of 30 participants would be required per group. To ensure sufficient power to conduct a regression analysis, the study aimed to recruit a larger number of clinical participants. Data were analysed using the Statistical Package for the Social Sciences Version 20. Initially, the data were explored for assumptions of normality using histograms and the Kolmogorov–Smirnov test. To explore whether there was a main effect of group for the outcome measures collected, Analysis of Variance (ANOVA) was conducted with post-hoc *t*-tests used to explore differences between groups. The Bonferroni correction was applied to reduce the likelihood of Type 1 error occurring. The Pearson Product Moment Correlation Coefficient was used to explore correlations between the variables. Cohen's *D* (Cohen, 1988) ( $\text{mean1} - \text{mean2} / \text{pooled standard deviation}$ ) was calculated to estimate effect sizes, with an effect size of 0.2 defined as small, 0.5 defined as medium and 0.8 defined as large (Cohen, 1988).

## 3. Results

Three hundred and twenty-two participants were recruited. Two (4.17%) were excluded from the BN group because they did not meet diagnostic criteria for the illness. Three (2.16%) were excluded from the non-ED control group because their scores on the EDE-Q were in the clinical range ( $> 4$ ). Therefore, the final sample consisted of 317 female participants. There were 105 participants with AN, 46 participants with BN, 30 participants recovered from AN and 136 non-ED controls. No participants who reported being recovered from BN volunteered to take part. Within the ED group ( $n = 151$ ),  $n = 27$  (17.88%) were being treated as inpatients,  $n = 58$  (38.41%) were being treated as outpatients,

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