



## An experimental exploration of social problem solving and its associated processes in anorexia nervosa

Lot Sternheim<sup>a,\*</sup>, Helen Startup<sup>a</sup>, Natalie Pretorius<sup>a</sup>, Eric Johnson-Sabine<sup>b</sup>, Ulrike Schmidt<sup>a</sup>, Shelley Channon<sup>c</sup>

<sup>a</sup> Section of Eating Disorders, Division of Psychological Medicine and Psychiatry, King's College London, Institute of Psychiatry, London, UK

<sup>b</sup> St. Ann's Eating Disorders Service, Barnet Enfield & Haringey Mental Health Trust, UK

<sup>c</sup> University College London, Department of Cognitive, Perceptual and Brain Sciences, London, UK

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### ABSTRACT

People with Anorexia Nervosa (AN) have well-documented socio-emotional and neurocognitive impairments. As yet, little is known about their ability to solve problems in social situations, although a link with cognitive avoidance has been suggested. This study explored social problem-solving (SPS), using an experimental task. Secondly, the role of cognitive avoidance in SPS was investigated. Individuals with AN ( $n=31$ ) and healthy controls (HC;  $n=39$ ) completed the Social Problem Resolution Task which consists of problem scenarios involving awkward everyday social situations. Participants were asked to generate both the optimal solution and their personal solution. Solutions were rated in terms of how socially sensitive and practically effective they were. AN patients produced relatively poorer personal solutions compared to optimal solutions than HC participants and had higher scores on a measure of cognitive avoidance than the HC group. In AN patients, cognitive avoidance was partially associated with poor SPS. These findings suggest that whilst people with AN have no difficulty in generating socially sensitive and effective solutions to problems, but may have difficulty applying this knowledge to themselves.

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### 1. Introduction

Anorexia nervosa (AN) is a serious psychiatric illness which is characterised by self-starvation, hyperactivity and being physically underweight, alongside extreme concerns about weight, shape, or eating (American Psychiatric Association, 2000). AN has the highest mortality rate of all psychiatric disorders (Hoek, 2006). Only 50–75% of those diagnosed with AN make a full recovery and around 20% become chronically ill (Steinhausen, 2009; Keel and Brown, 2010). Patients report feeling isolated and problems in the interpersonal domain are now thought central to the development and maintenance of AN (e.g. Schmidt and Treasure, 2006; Rieger et al., 2010).

Social problem solving is the process by which a person attempts to identify effective or adaptive ways of coping with everyday life problems and is an important aspect of social competence (D'Zurilla and Chang, 1995). Social problem solving is underpinned by cognitive/executive processes, such as the ability to access and manipulate prior knowledge relevant to

the problem situation in working memory, the generation of appropriate strategies, inhibition of inappropriate responses and monitoring and judging the effectiveness of solutions. It is also underpinned by social/emotional skills such as empathising, taking others' perspectives and responding to feedback during decision-making (Channon, 2004). All in all, effective social problem solving requires an intricate interplay of cognitive, emotional and behavioural skills (D'Zurilla and Nezu, 1982).

Recent research suggests that people with AN have characteristic neurocognitive impairments with poor cognitive flexibility, difficulties with global processing and integrating information into context and impaired decision making (Roberts et al., 2007; Lopez et al., 2008). They also have difficulties in the social cognitive domain, including impaired emotion recognition, impaired theory of mind (which refers to one's ability to make inferences about another person's beliefs, desires and intentions) and poor regulation of emotions (e.g. Oldershaw et al., 2010). Furthermore, a recent systematic review shows preliminary evidence for the persistence of a number of these social-cognitive impairments following recovery, such as attentional biases (towards or avoiding) threatening (social) stimuli and difficulty in facial emotion recognition (Oldershaw et al., 2011a). Taken together these findings suggest that impairments in social problem solving should be a likely consequence of these neurocognitive and socio-emotional

\* Correspondence to: Section of Eating Disorders, Department of Psychological Medicine, King's College London, P.O. Box 059, De Crespigny Park, London SE5 8AF, UK. Tel.: +44 207 848 0187; fax: +44 207 848 0182.

E-mail address: [Lot.sternheim@kcl.ac.uk](mailto:Lot.sternheim@kcl.ac.uk) (L. Sternheim).

impairments in AN sufferers. Indeed, there is preliminary evidence from self-report studies suggesting that people with AN are impaired in social problem solving (Paterson et al., 2007, 2010; Swanson et al., 2010). However, these studies explore social problem-solving processes, rather than outcomes and as yet no experimental paradigms have been employed to explore the latter.

One other factor that will be further explored in the current study is cognitive avoidance, which refers to cognitive strategies employed to avoid negative experiences and emotions. High cognitive avoidance is thought to play a role in the development and maintenance of AN (Troop and Treasure, 1997; Schmidt and Treasure, 2006). People with AN have been shown to find the experience of having negative thoughts and feelings aversive, are fearful of revealing these to others and try to avoid distressing thoughts and feelings. Higher levels of maladaptive beliefs about the experience and expression of thoughts and feelings are associated with a greater degree of eating disorder symptomatology in AN (Hambrook et al., 2011). Moreover, high cognitive avoidance has previously been found to relate to poor social problem-solving processes in Eating Disorders (ED) (Troop et al., 1994, 2003; Ghaderi and Scott, 2000; Bloks et al., 2004; Paterson et al., 2010; Swanson et al., 2010).

Channon and Crawford (1999) developed an experimental task investigating social problem solving in which participants are asked to generate effective solutions to real-life, socially awkward scenarios (Social Problem Resolution Task, SPRT; Channon and Crawford, 1999, 2010; Channon et al., 2001). The SPRT consists of a series of short scenarios of social everyday situations for which participants have to generate a course of action for the main character in the story (optimal solution), as well as identify their intended course of action (personal solution). The SPRT has demonstrated impaired social problem solving in people with acquired brain injury and neurodevelopmental disorders, such as Asperger's and Tourette's Syndrome (Channon and Crawford, 1999; Channon et al., 2001; Channon, 2004).

### 1.1. Aims

The aims of the present study were firstly to explore social problem solving in people with AN compared to that of healthy people using the SPRT, and secondly, to study the relationship between social problem solving and cognitive avoidance.

### 1.2. Hypotheses

Our main hypothesis was that individuals with AN would generate both less effective optimal and less effective personal solutions than healthy controls (HC) as measured with the SPRT. Our subsidiary hypotheses were that individuals with AN would have higher levels of cognitive avoidance compared to HCs and that cognitive avoidance would correlate with poor social problem-solving ability in the AN group.

## 2. Methods

### 2.1. Participants and procedure

Thirty-one female participants with AN and 39 female healthy control (HC) participants took part in this study. Participants from the AN group were recruited from the Eating Disorders in- and out-patient departments of the South London and Maudsley Hospital NHS Foundation Trust and the Barnet, Enfield & Haringey Mental Health NHS Trust. An AN diagnosis (following DSM-IV criteria) was confirmed by the patient's clinical team and by administering the Eating Disorder Examination version 16 (Fairburn and Cooper, 1993), a semi-structured interview widely used to assess psychopathology associated with eating disorders. HC participants were recruited from the local community using posters and internet-based advertisements and through a circular email sent out to staff and

students at King's College London. Before being included into the study HC participants were screened for the absence of lifetime anxiety disorders, clinical depression or eating disorders with a standardized screening questionnaire developed in the research unit in which this study was conducted and used for all studies including HC participants in this research unit.

Participants were given written and oral information and written consent was obtained from all participants. This study received ethical approval from the Joint Institute of Psychiatry and South London and Maudsley NHS Foundation Trust ethics committee.

### 2.2. Measures

For the purpose of this study we assessed demographic information such as age and IQ (IQ was included since an in-house study (Pretorius, personal communication) demonstrated that differences in IQ predicted SPRT scores in adolescents with AN). We furthermore assessed body mass index, levels of eating disorder symptoms, levels of anxiety and depression, cognitive avoidance strategies and social problem solving.

#### 2.2.1. Age

Participants were asked to report their age in years.

#### 2.2.2. National Adult Reading Test (NART; Nelson, 1991)

In the NART, participants are asked to read out aloud a list of non-phonetic words and the task is commonly used to estimate a premorbid IQ, with a greater number of incorrect pronunciations related to an increasingly lower estimated premorbid IQ. The NART estimated IQ scores correlate positively with IQ scores as measured using the British version of the Wechsler Adult Intelligence Scale (WAIS-R (Wechsler, 1981)).

#### 2.2.3. Body Mass Index (BMI: kg/m<sup>2</sup>)

The researcher recorded participants' height and weight and calculated their BMI. Participants were all weighed using the same, regularly calibrated, scales.

#### 2.2.4. Eating Disorder Questionnaire (EDE-Q; Fairburn and Beglin, 1994)

This widely used 36 item self-report measure focuses on eating attitudes in the past 28 days, using a 7-point scale. A global score and subscales are calculated and scores of four or higher on key items are considered to indicate clinical range scores. The questionnaire has been found to have good concurrent validity and acceptable criterion validity (Mond et al., 2004). As shown by a recent review of the psychometrics properties of the EDE-Q, for scores on the four subscales across studies test-retest correlations range from 0.66 to 0.94, there is good temporal stability for the subscales, and acceptable internal consistency with alphas ranging from 0.70 to 0.93 (Berg et al., 2011).

#### 2.2.5. Depression, Anxiety and Stress Scale short version (DASS-21; Lovibond and Lovibond, 1995)

Depression and anxiety levels were assessed with the DASS-21, a 21-item self-report measure. Items are rated on a three point scale, ranging from 0: did not apply to me over the past week to 2: applied to me very much or most of the time over the past week. A global scale or subscales can be calculated. Scores can fall into different categories of severity and although no clinical diagnosis can be derived directly from the scores, normal ranges for depression and anxiety are respectively <5 and <4 (as based on data derived from the general population by Lovibond and Lovibond (1995)).

#### 2.2.6. Cognitive Avoidance Questionnaire (CAQ; Gosselin et al., 2002; Sexton and Dugas, 2008).

The CAQ involves 25 questions assessing the use of five cognitive avoidance strategies, namely: (1) Thought Suppression (e.g. "There are things I try not to think about"), (2) Thought Substitution (e.g. "I think about trivial details so as not to think about important subjects that worry me"), (3) Distraction (e.g. "Sometimes I throw myself into an activity so as not to think about certain things"), (4) Avoidance of Threatening Stimuli (e.g. "I avoid actions that remind me of things I do not want to think about"), and (5) the Transformation of Images into Thoughts (e.g. "When I have mental images that are upsetting, I say things to myself in my head to replace the images"). The usage of these strategies are scored on a 5-point Likert scale, ranging from 1=not at all typical to 5=completely typical with higher scores indicating a greater tendency to cognitively avoid threatening internal events. The English version of this originally French measure has been validated, and all factor loadings for the English CAQ items on their respective factors were found to be statistically significant, with the strength of association ranging from  $r^2=0.13$  to  $r^2=0.71$ . The internal consistency of both the total scale and the subscales is excellent (Cronbach's alpha ranging from  $\alpha=0.73$  to  $\alpha=0.95$  (Sexton and Dugas, 2008)) and test-retest reliability was found stable, with coefficients ranging from  $r=0.70$  to  $r=0.85$  (Sexton and Dugas, 2008).

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