



Approach and avoidance motivation in eating disorders

Amy Harrison^{a,*}, Janet Treasure^a, Luke D. Smillie^b

^a Kings College London, Institute of Psychiatry, Section of Eating Disorders, London, UK

^b Department of Psychology, Goldsmiths, University of London, UK

ARTICLE INFO

Article history:

Received 5 May 2010

Received in revised form 12 April 2011

Accepted 20 April 2011

Keywords:

Eating disorders

Anorexia nervosa

Bulimia nervosa

Recovery

Reinforcement Sensitivity Theory

BIS BAS

Reward reactivity

ABSTRACT

It has been proposed that approach and avoidance processes may be critically involved in the development and maintenance of eating disorders (EDs), including anorexia nervosa (AN) and bulimia nervosa (BN). The Behavioural Inhibition System and Behavioural Activation System Scales (BIS/BAS) and Appetitive Motivation Scale (AMS) questionnaires were administered to 286 participants: 91 healthy controls (HCs), 121 participants with a current ED, either AN (restrictive and binge purge subtypes), or BN and 74 participants recovered from an ED. Individuals with EDs had higher levels of sensitivity to punishment and lower levels of reward reactivity than controls. Individuals in recovery from an ED scored the same as those in the acute group, with the exception of BAS fun seeking, for which they scored significantly higher than those with restricting AN. Discriminant analysis revealed that HCs were maximally separated from those in the acute and recovered ED groups along a dimension reflecting high punishment sensitivity and low reward sensitivity. Classification analysis demonstrated that ED and HC group membership was predicted from reward and punishment sensitivity measures; however recovered participants tended to be misclassified as ED. This study suggests high punishment sensitivity and low reward reactivity/sensitivity might form a personality cluster associated with the risk of developing an ED.

© 2011 Published by Elsevier Ireland Ltd.

1. Introduction

Processes concerning approach and avoidance motivation are a prominent feature in the landscape of personality and psychopathology research, and it has been suggested that two brain-behaviour systems regulate approach of appetitive stimuli and avoidance of aversive stimuli (e.g. Cloninger, 1987; Gray, 1991; Fowles, 1993; Zuckerman, 2005; Depue, 2006; Elliot, 2008; Carver et al., 2009; Smillie et al., 2010). The approach system, the Behavioural Activation System (BAS), is theorised to underlie personality dispositions reflecting reward-sensitivity, including Extraversion or Impulsivity (see Pickering and Smillie, 2008). The avoidance system, the Behavioural Inhibition System (BIS), is thought to relate to personality dispositions reflecting punishment-sensitivity, including anxiety and Neuroticism (see Corr et al., 1997). In this article, we refer to punishment sensitivity more broadly, as the theoretical predictions and psychometric measures employed do not distinguish between these processes (fear/anxiety).

In recent years, it has been proposed (Loxton and Dawe, 2001; Dawe and Loxton, 2004; Loxton and Dawe, 2006, 2007) that approach and avoidance processes may be critically involved in the development and maintenance of eating disorders (EDs). There are a range of reasons why

individuals may engage in disordered eating behaviours such as bingeing and purging. For example, using confirmatory factor analysis, Wedig and Nock (2010) recently reported that people binge and purge to regulate their emotional state, specifically to decrease negative emotions and increase positive emotions, or for social reasons, namely to communicate needs to others, or to escape social interaction. Claes et al. (2010), using discriminant analysis found that individual differences in BIS motivation and top-down control independently predicted bingeing/purging behaviours. However, the proposed relationship between reinforcement sensitivity theory and EDs has been necessarily speculative (Dawe and Loxton, 2004, p. 7). Nevertheless, it has been suggested that the elevated anxiety frequently found in ED populations (e.g., Vitousek and Manke, 1994; Grau and Ortet, 1999) might have a basis in dispositional punishment sensitivity. For example, Ampollini et al. (1999) report that high levels of harm avoidance (a BIS-related construct) are associated with anxiety and depression, which are core features of EDs (Godart et al., 2003; Blinder et al., 2006; Pallister and Waller, 2008).

Several authors have confirmed associations between punishment sensitivity and disordered eating (Loxton and Dawe, 2001; Kane et al., 2004; Nederkoorn et al., 2004; Claes et al., 2006). In a recent systematic review, Harrison et al. (2010) found that people with an ED had elevated scores on trait measures of punishment sensitivity (anxiety and harm avoidance measured using the Tridimensional Personality Questionnaire (TPQ) (Cloninger, 1987) and the Temperament and Character Inventory (TCI) (Cloninger, 1993) relative to healthy controls. Genetic data support the notion that such relationships reflect dispositional tendencies rather than transient states or symptoms. For instance, Wilksch and Wade

* Corresponding author at: Kings College London, Institute of Psychiatry, Department of Psychological Medicine and Psychiatry, Eating Disorders Research Unit, 5th Floor, Bermondsey Wing, Guy's Hospital, St Thomas Street, London, SE1 9RT, UK. Tel.: +44 207 188 0190; fax: +44 207 188 0167.

E-mail address: amy.harrison@kcl.ac.uk (A. Harrison).

(2009) report higher punishment sensitivity, as measured using the Sensitivity to Punishment and Sensitivity to Reward Questionnaire (Torrubia et al., 2001), in non-affected twin siblings of ED women, even after controlling for the temperament scores of the sister. This finding positively correlated with the importance of shape and weight ($r=0.44$).

Dawe and Loxton (2004) suggest that increased reward sensitivity is associated specifically with vulnerability towards developing binge-eating behaviour. Their proposal has been supported using self-report and behavioural measures of reward sensitivity (Loxton and Dawe, 2001; Kane et al., 2004), although a later study failed to confirm these findings (Loxton and Dawe, 2007). These studies assessed reward sensitivity using a reaction-time paradigm called the Card Arranging Reward Reactivity Objective Test (CARROT; Powell et al., 1996). In order to provide an alternative assessment (i.e., not based on reaction time), Farmer et al. (2001) used the Taffle Task (Taffel, 1955), in which participants are rewarded financially each time they use certain pronouns during a sentence construction task. A higher frequency of binge eating episodes was associated with increased use of rewarded pronouns. In a student sample, Franken and Muris (2005) found that sensitivity to reward, measured using the Sensitivity to Punishment and Sensitivity to Reward Questionnaire (Torrubia et al., 2001) was significantly related to food craving and BMI, highlighting reward sensitivity as a potential vulnerability factor for developing an ED. Furthermore, Davis and Fox (2008) found that BMI was a statistically significant predictor of reward sensitivity, measured using the Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ) (Torrubia et al., 2001) for normal and overweight men. In a systematic review, Harrison et al. (2010) found that individuals with bulimia nervosa (BN) or anorexia nervosa (AN) binge/purge subtypes showed elevated scores on reward-sensitivity questionnaires (Tridimensional Personality Questionnaire (TPQ), Cloninger, 1987, and the Temperament and Character Inventory (TCI), Cloninger, 1993; Behavioural Inhibition System and Behavioural Activation System Scales (BIS/BAS scales, Carver and White, 1994) in comparison to controls. Conversely, individuals with AN restricting type were less sensitive to reward than matched controls. Since this review was published, Claes et al. (2010) have reported BIS BAS data for an additional 40 patients with EDs (AN (23 with restricting AN, 6 with binge purge AN and 11 with BN) and found no difference between those with a restricting ED in comparison to those with a binge purge ED.

Wagner et al. (2007), using a monetary reward task, found that activity in the subgenual anterior cingulate cortex and its ventral striatal target were similar during positive and negative feedback, indicating that individuals with a history of AN may have difficulty discriminating between positive and negative feedback. Wagner et al. (2008) have also found that people with AN, in comparison to controls, have a reduced response to food stimuli in insular-striatal circuits, suggesting a difference in the way individuals with AN process taste stimuli. Kaye et al. (2009) have argued that in the absence of appropriate reward processing through ventral-striatal/DA paths, individuals who have recovered from AN might focus on a detailed strategy, rather than the global situation, which has important implications for informing clinicians regarding treatment.

It is useful to look to recovered populations to understand more about the potential role of punishment and reward sensitivity in the aetiology of EDs, particularly considering the chronic nature of the illness. The systematic review by Harrison et al. (2010) found that novelty seeking did not alter in the recovered form of BN, although there was some evidence that the high levels of harm avoidance were less pronounced in the recovered form of AN, albeit with a high level of variability between studies. Using functional magnetic resonance imaging paradigms, Wagner et al. (2007) found altered reward processing in women who had recovered from AN with a monetary reward task, and Frank et al. (2006) found women recovered from BN had a reduced reward response to glucose in comparison to artificial saliva. Using positron emission tomography, Frank et al. (2005) also

found participants recovered from AN had reduced D2/D3 receptor binding in the ventral striatum, a region involved in the modulation of responses to reward stimuli. Wagner et al. (2006, p276), using latent profile analysis, identified “inhibited” and “disinhibited” personality clusters in individuals recovered from both AN and BN, and Klump et al. (2004, p. 1407) commented that higher levels of harm avoidance and lower self-directedness and cooperativeness found in individuals with EDs compared to controls “may be trait-related disturbances and contribute to the disorders’ pathogenesis.” This finding is supported by the review of Kaye et al. (2009). Taken together, the findings suggest that reward and punishment sensitivity may play an important role in the development and maintenance of EDs and it would be beneficial to expand on these interesting data.

1.1. Aims

This study therefore aimed to expand the available data on reward and punishment sensitivity measured using the BIS BAS scales in individuals with EDs and those who had recovered in comparison to healthy controls.

1.2. Hypotheses

It was predicted that transdiagnostically, people with an ED would have elevated sensitivity to punishment, as measured by the BIS, relative to healthy controls. The second hypothesis was that people with BN and not those with restricting AN would have a higher sensitivity to reward, as measured by the BAS scale and AMS. Finally, we predicted similar levels of reward and punishment sensitivity in a recovered sample as in the acutely ill group.

2. Method

2.1. Participants

Female participants with EDs and those in recovery from an ED were recruited from the Eating Disorder Unit, Institute of Psychiatry’s volunteer database. The HC group was recruited from the local community and from Surrey and Loughborough Universities. Recovered individuals were recruited using posters and flyers and from the aforementioned volunteer database.

Those with EDs were required to meet DSM-IV (American Psychiatric Association, 1994) criteria for either AN or BN. This diagnosis was made based on information provided regarding weight and height, number of binges per week, presence of compensatory behaviours such as self-induced vomiting and excessive exercise, duration of symptoms, food restriction and existence of undue influence of shape and weight on self-evaluation. This information was gathered using the Eating Disorder Diagnostic Scale (EDDS) (Stice et al., 2000), a 22-item self-report measure.

Bardone-Cone et al. (2010) stated that a definition of recovery from an ED should have physical, behavioural, and psychological components. Therefore, recovered participants were required to have a body mass index >18.5 , restored menstruation for at least the past year, and an absence of ED behaviours such as restriction or binge-purge symptoms during this period. These data were self-reported by participants. The presence of recovered participants’ past episode(s) of an ED was supported by the lifetime history component of the EDDS.

HC participants were excluded if they reported a history of disordered eating, also assessed using the EDDS. They were also screened for the presence of substance abuse using the General Addiction Inventory (Greenberg et al., 1999), as were the ED and recovered groups.

The research was conducted in accordance with institutional and international standards. Prior to participation, participants received written information about the study and written informed consent was collected from all participants. The study was approved by the Kings College London research ethics committee.

2.2. Measures and procedure

2.2.1. Behavioural Inhibition System and Behavioural Activation System Scales (BIS/BAS Scales; Carver and White, 1994)

This self-report questionnaire comprises two scales measuring trait conceptualisations of reward and punishment sensitivity. The behavioural inhibition (BIS) scale items concern reactions to negative events (e.g., ‘Criticism or scolding hurts me quite a bit’). The three BAS scales (BAS-Drive (BAS-D), BAS fun seeking (BAS-FS), and BAS reward responsiveness (BAS-RR)) provide differing conceptualisations of sensitivity to rewarding stimuli (e.g., ‘I go out of my way to get things I want’). The BIS/BAS questionnaire has 20

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات