Psychiatry Research 225 (2015) 452–457

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Temperament and emotional eating: A crucial relationship in eating disorders

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ARTICLE INFO

Article history:
Received 20 March 2014
Received in revised form
28 August 2014
Accepted 29 November 2014
Available online 11 December 2014

Keywords:
Temperament
Emotional eating
Binge eating
Eating disorder
Psychopathology

ABSTRACT

Specific personality traits are related to Eating Disorders (EDs) specific and general psychopathology. Recent studies suggested that Emotional Eating (EE) is a common dimension in all EDs, irrespective of binge eating. The present study was aimed to explore the relationship of temperamental features with EE and eating symptomatology in a sample of EDs patients, adjusting for general psychopathology. One hundred and sixty six female patients were enrolled at the Eating Disorders Outpatient Clinic of the Careggi Teaching-Hospital of Florence. Participants completed the emotional eating scale, the temperament and character inventory, the eating disorder examination questionnaire and the symptom checklist 90-revised. Novelty seeking and self directedness showed significant correlations with EE after adjustment for general psychopathology. Patients with binge eating displayed significant associations between EE and novelty seeking and self directedness. Among patients without binge eating, no significant correlation between EE and temperamental features was observed. Specific temperamental features are associated to EE in EDs. A clear, different pattern of association in patients with different eating attitudes and behavior was found. Considering that treatments of EDs are largely based on psychotherapeutic interventions, focused on emotions and cognitions, the present data provide some hints which could be helpful for the development of more appropriate psychotherapeutic strategies.

1. Introduction

Temperament has been defined as the individual differences in emotional, motor, and attentional reactivity measured by latency, intensity, and recovery of response, and self-regulation processes such as effortful control that modulate reactivity (Rothbart and Derryberry, 1981), or, more briefly, as the individual differences in a person's emotional reactivity and regulation (Goldsmith et al., 1987).

Cloninger et al. (1993) proposed a distinction between temperament and character. In his view, temperament refers to emotional responses that are moderately heritable, stable throughout life, and mediated by neurotransmitter functioning, whereas character refers to self-concepts and individual differences in goals and values that develop through experience (Cloninger et al., 1993). The Temperament and Character Inventory (TCI; Cloninger, 1994) was developed within this conceptual framework.

Temperamental features seem to have an important role in the development, clinical expression, course, and treatment response in psychiatric disorders (e.g. Fassino et al., 2013; Miettunen and Raevuori, 2012). A recent meta-analysis using Cloninger temperamental dimensions (Miettunen and Raevuori, 2012) showed that patients with psychiatric disorders have elevated harm avoidance scores compared with control subjects, suggesting a heightened tendency to worry, to be fearful, to be shy, and to be easily fatigable, among people with mental illness. Furthermore, compared with controls, novelty seeking was significantly lower in individuals with major depression, whereas in those with schizophrenia, reward dependence was significantly lower and persistence was significantly higher. However, Fassino et al. (2013) recently suggested that high harm avoidance and low self directedness scores are recurrent in all psychiatric disorders and can be considered as a "personality core", regardless of diagnosis. These temperamental features may be risk factors and relapse-related; they can indicate incomplete remission or chronic course of mental disorders, consistently influencing patients' functioning; furthermore, they may even represent predictors of treatment outcome (Fassino et al., 2013). In accordance with this perspective, several studies indicated that these specific personality traits (mainly elevated

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http://dx.doi.org/10.1016/j.psychres.2014.11.068
0165-1781/

harm avoidance and low self directedness and cooperativeness) are also related to Eating Disorders (EDs) (Fassino et al., 2002a, 2002b; Klump et al., 2000).

A recent survey on a large sample of patients with EDs showed that different temperamental profiles are associated with specific eating attitudes and behaviors (Krug et al., 2011), such as binge eating, restrained eating, and severe concerns over body weight and shape. Other studies suggested that engaging in binge eating or vomiting seems in general explained by high levels of novelty seeking and low levels of self directedness (Peñas-Lledó et al., 2010; Reba et al., 2005).

Emotional Eating (EE) has been defined as "the tendency to eat in response to a range of negative emotions such as anxiety, depression, anger and loneliness, to cope with negative affect" (Arnow et al., 1995). This construct is not merely focused on eating behavior and overeating, but it specifically addresses the feelings that lead persons to experience an urge to eat and the desire to assume food in response to different emotions. EE has been identified as a possible trigger for binge eating in Bulimia Nervosa (BN) (Engelberg et al., 2007) and Binge Eating Disorder (BED) (Masheb and Grilo, 2006; Ricca et al., 2009; Stein et al., 2007; Zeeck et al., 2011). Recent studies suggested that EE is a common dimension in all EDs, irrespective of binge eating (Courbasson et al., 2008; Torres et al., 2011; Ricca et al., 2012).

In summary, available evidences suggest that at least two temperamental features (high harm avoidance and low self directedness) are recurrent in all EDs, as well as in almost all psychiatric disorders (e.g. Fassino et al., 2013). Moreover, some studies reported an association between temperamental traits and eating psychopathological features/behaviors (Peñas-Lledó et al., 2010; Reba et al., 2005). However, despite the fact that EE is present and clinically significant in all EDs diagnostic groups, the association between temperamental features and EE has not been investigated to date.

Given the exploratory nature of this study, no specific hypothesis could be formulated. The present study is therefore aimed at exploring the relationship of temperamental features with emotional eating and eating symptomatology in a sample of patients with EDs, adjusting for general psychopathology.

2. Methods

2.1. Procedures

The study was performed at the Eating Disorders Outpatient Clinic of the Psychiatric Unit of Careggi teaching hospital of Florence, Italy. The diagnostic procedures and the psychometric questionnaires were part of the routine clinical assessment for patients with EDs, conducted at the clinic. The protocol was approved by the Ethics Committee of the Institution. During the first routine visit, a written informed consent was obtained from each patient after the procedures of the study were fully explained.

2.2. Participants

The participants were 200 female patients with EDs who consecutively attended the Outpatient Clinic between March 1st, 2012 and June 30th, 2013. Inclusion criteria were the diagnosis of full blown Anorexia Nervosa (AN), BN, or BED and age $\geq$ 18 years. Exclusion criteria were illiteracy, comorbidity with schizophrenia or bipolar disorder, mental retardation, and refusal of consent.

Patients enrolled attended a specialist Outpatient Clinic, based in a University hospital, for the diagnosis and treatment of EDs. In this clinic, after the completion of the assessment during the first visit, patients with AN and BN follow a nine-month multidisciplinary treatment program. This program includes: visits with a dietician (every week for the first month, then once per month); individual cognitive-behavioral therapy, consisting of about 40 h-long manual-based sessions conducted over a minimum of 40 weeks; and control visits with a psychiatrist (after 1, 3, 6 and 9 months form the first contact). Patients with BED follow a six-month multidisciplinary program consisting of 16 h-long manual-based group sessions, conducted by a dietician, a psychologist and a psychiatrist.

2.3. Measures

Sociodemographic data, as well as anthropometric measures and main medical comorbidities, were evaluated by a psychiatrist, who also performed the categorical diagnoses of EDs (AN Restricter – ANR; AN Binge/Purge – ANBP; BN; BED) with DSM-IV criteria. Anthropometric measurements (height and weight) were assessed using standard calibrated instruments.

In order to collect data on eating and general psychopathology, participants completed the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn and Beglin, 1994) and the Symptom Checklist 90-Revised (SCL-90-R; Derogatis et al., 1973). The self-reported EDE-Q consists of 38 items, assessing the core psychopathological features of eating disorders, and contains 4 subscales: dietary restraint, eating concern, weight concern, and shape concern. The dietary restraint subscale is a combination of cognitions and behaviors pertaining to dietary restriction. The three other subscales evaluate the dysfunctional attitudes with respect to eating, and overvalued thoughts on weight and shape. The global score represents the mean of the four subscale scores (Fairburn and Beglin, 1994). The EDE-Q has good concurrent validity (Mond et al., 2004) and reliability (Berg et al., 2012). The SCL90-R (Derogatis et al., 1973) is a psychometric instrument devoted to the identification of the psychopathologic distress.

In addition, participants completed the TCI (Cloninger, 1994) and the Emotional Eating Scale (EES) (Arnow et al., 1995). The TCI is a self-report questionnaire used to evaluate the individual differences on each of the seven independent dimensions of personality (Cloninger, 1994) and it is composed by 240 items with true-false answer (0/1). The inventory specifies four dimensions of temperament: novelty seeking, which reflects the tendency to respond with intense excitement to a novel stimulus; harm avoidance, which is the tendency to respond intensively to signals of aversive stimuli, thereby inhibiting behavior; reward dependence, which represents the tendency to respond intensely to signals of reward, thus maintaining rewarded behaviors; and persistence which is the perseverance in behaviors associated with reward or relief from punishment. The character dimensions are cooperativeness, which refers to the degree to which the self is viewed as a part of society; self directedness, which is the degree to which the self is viewed as autonomous and integrated; and self transcendence, which reflects the degree to which the self is viewed as an integral part of the universe. The score is calculated for each temperamental or character trait by combining of the relative subscale scores. The TCI has good internal consistency, inter-tester reliability and test-retest reliability (Cloninger, 1994).

The Emotional Eating Scale (EES) (Arnow et al., 1995) is a 25-item-self-report questionnaire that evaluates the extent to which specific feelings lead a subject to feel an urge to eat. Each item consists of an emotion term (e.g., loneliness, angry, helpless), and the individual is asked to indicate the level to which experiencing that emotion makes her/him likely to eat using the 5-point scale: "no desire to eat", "a small desire to eat," "a moderate desire to eat," and "a strong desire to eat," "an overwhelming urge to eat". The 25 items form 3 subscales, reflecting eating in response to anger (anger/frustration), anxiety (anxiety), and depressed mood (depression). The EES has demonstrated good internal consistency, construct validity, discriminant validity, and criterion-related validity (Arnow et al., 1995).

The questionnaires were considered valid when at least 85% of the answers were completed.

2.4. Data analysis

The values of normally distributed variables were expressed as mean $\pm$ SD, whereas the values of skewed variables were expressed as median values [quartiles].

The relationship between temperament and character traits and EE, EDE-Q and SCL-90 scores was assessed with Spearman bivariate correlations. Multiple linear regression models, with TCI subscales as predictors, and EES and EDE-Q scores as dependent variables, adjusting for general psychopathology (SCL-90 global severity index), were performed in the whole sample. Separate analyses were performed in patients with binge eating behaviors (binge; i.e., those with BED, BN, or ANBP), and in those without such behaviors (non-binge; i.e., those with ANR).

The Statistical Package for the Social Sciences (SPSS; SPSS Inc., Chicago, IL) for windows 18.0 was used for data analysis.

3. Results

Of the 200 patients invited, 34 (17.0%) denied participation or failed to complete the questionnaires; the final sample therefore consisted of 166 patients (37, 11, 36 and 82 – 22.3%, 6.6%, 21.7%, and 49.4%, with ANR, ANBP, BN and BED, respectively).

All the patients included in the study were at their first contact with the clinic. The mean age of the sample was (mean $\pm$ SD) 37.9 $\pm$ 14.4 years, and years of education were (median [quartiles]) 13 [9.5; 14.0]. As far as the previous use of psychotropic drugs are