Cognitive-Affective Status in Anorexia Nervosa: Self-image and Absence of Positive Emotions

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Abstract

The relationships between eating disorder patterns (Eating Disorders Examination Questionnaire; EDE-Q), alexithymia (Toronto Alexithymia Scale; TAS) and cognitive-affective (Positive Affect Negative Affect Schedule; PANAS) status in forty-nine patients presenting anorexia (AN) in an age- and education-matched comparison with thirty-four healthy controls were investigated. AN patients expressed higher levels of restraint, eating concern, shape concern, weight concern and a higher global score on the Eating Disorders Examination Questionnaire. These responses were linked to higher scores on Emotional identifying, Emotional describing, Emotional orientation and Total scoring on the Toronto Alexithymia Scale. AN patients expressed also less positive affect (PA) and more negative affect (NA) than the healthy matched controls. Linear regression analysis indicated that three factors predicted the AN condition, namely Shape concern ($\beta = 0.689$) and Weight concern ($\beta = 0.570$) whereas PA was counter-predictive ($\beta = -0.291$), whereas for the Control condition, only PA was predictive ($\beta = 0.350$). The present findings are discussed from a perspective of documented regional brain dysfunctions underlying cognitive and emotional domains that have been obtained from neuro-imaging studies of anorexia.

Keywords: Anorexia; Eating disorder; Alexithymia; Affect healthy controls patients

Introduction

The anorexia nervosa (AN) condition presents a serious and potentially life-threatening eating disorder (ED) that is characterized by episodes of self-starvation and excessive weight loss that may be accompanied by excessive exercise [1]. The trans-diagnostic model of EDs is a conceptualisation of factors maintaining EDs across different diagnoses (Anorexia Nervosa, Bulimia Nervosa, EDNOS etc.). The model proposes that central to these disorders is a dysfunctional system of self-evaluation of self-worth, where self-worth is determined from perceived shape and weight and also by what extent individuals deem themselves to be in control of their shape and weight. This need for control and a specific body shape and weight is in its turn which that motivates dietary restraint and the consequent operationalization of this into various behavioural strategies and dietary rules that can either be successful (resulting in weight loss) or fail in implementation (subjective or objective binge eating episodes for example, often follow from failure to abide by dietary rules) [2,3]. Support for this model showing the centrality of over-evaluation of weight and shape and that this cognitive mind-set in its turn influences Eating restraint [4]. Studies have also shown that low self-esteem is a general influence on over-evaluation of weight and shape [5]. Since low self-esteem in its turn has been shown to be associated with higher negative affect as measured with Positive Affect and Negative Affect Schedule [6], it would therefore seem conceivable that individuals suffering from ED psychopathology experience less positive and more negative affect, as a consequence of low self-esteem.

The incidence of alexithymia in AN is about 77% with accompanying emotional problems [7], compared to a 13% incidence in the general population [8]. Clinical evidence implies that AN patients present major problems with attachment anxiety and negative affect [9,10]. The notion of AN as an anxiety-related disorder seems warranted in view of the evidence implicating anxiety, stress, fear, and avoidance learning factors in the persistence of abnormal eating habits [11,12]. It has been observed that AN patients showed significantly greater implicit positive affect toward pleasant images and significantly greater implicit negative affect toward unpleasant, high-calorie food and overweight body type images [13]. Depressiveness among these patients was found to exert much influence too in alexithymia [7], although it did not account for all the cognitive-affective disturbances in the disorder. There appears to be a strong relationship between alexithymia and Intolerance of Uncertainty in AN patients [14]. Regional brain changes were shown to bear some relationship to alexithymia in AN; for example [15] obtained fluctuations in subcallosal cingulate connectivity that correlated with the degree of alexithymia.

The purpose of the present study was to ascertain the relationships between eating disorder patterns, alexithymia and cognitive-affective status in patients presenting AN in an age- and education-matched comparison with healthy controls.

Method and Materials

Participants

Forty-nine female patients (age range: 24 to 42 years) presenting eating disorders at diagnosis, but here limited to those presenting AN, with a history of unsuccessful treatment interventions and referred from the Department of General Psychiatry, Sahlgrenska University Hospital

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The ethics protocol of the University Hospital Sahlgrenska was applied and maintained. The regional ethical review board in Gothenburg approved of the study design. All the patients who were contacted agreed to participate (N = 49). Upon arrival at the clinic, each patient described her type of eating disorder and completed the Eating Disorder Inventory-2 to obtain an estimation of eating disorder and each patient was allowed to complete the questionnaire. Specifically, Eating Disorders Examination (EDE) questionnaire was applied and maintained. The regional ethical review board in Gothenburg, Sweden) participated in the study. All the patients were ethnic Scandinavians from higher socioeconomic groups and well-educated. They had all undergone further education at university level, following high-school graduation, for at least three years. They originated from an affluent-level economic status and upper-middle social-family backgrounds. They had all been afflicted with the AN symptoms for over five years at the time of arrival at the Anorexia & Bulimia Clinic for Adults (Sahlgrenska University Hospital), and described themselves as "well-behaved girls". The thirty-four healthy volunteer participants (i.e. control subjects) were a group of age-matched and education-level-matched female subjects.

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Results

Pillai's MANOVA (2 x 4) was applied with AN-patient/Healthy control and Affective personality as independent variables and with EDE-Q-Restraint, -Eating concerns, -Shape concerns, -Weight concerns, -Global score, TAS-20-Total score, -Identifying emotions, -Difficulty describing emotions, -Externally-oriented thoughts, Alexithymia, PANAS-PA and PANAS-NA as dependent variables indicated a significant main effect for AN-patient/Healthy control (F(10, 67) = 2.57, p < 0.02, eta = 0.269, observed power = 0.918). One-way ANOVA with AN-patient/Healthy control as independent variable indicated significant effects upon EDE-Q-Restraint, -Eating concerns, -Shape concerns, -Weight concerns, -Global score, TAS-20-Total score, -Identifying emotions, -Difficulty describing emotions, -Externally-oriented thoughts, Alexithymia, PANAS-PA and PANAS-NA (as dependent variables). Table 1 presents the means and standard deviations (as well as ANOVA F-values) for participants' responses (AN patients versus Healthy controls) with regard to the dependent variables.

Regression Analysis

Separate regression analyses were performed on the AN patients and healthy controls in order to ascertain which of the above variables were predictive for either the anorexic or the healthy condition, respectively. The analysis indicated that AN patient condition could be predicted (F(9, 83) = 9.14, p < 0.001, adjusted R² = 0.625). The significant predictors were shape concern and weight concern whereas positive affect was counter-predictive (Table 2). Restraint, eating concern, global score, TAS total, TAS-Emotional Identifying, TAS-Emotional Describing, TAS-External Orientation, and negative affect were nonsignificant. The analysis indicated also that the healthy control condition could be predicted (F(9, 50) = 9.14, p < 0.001, adjusted R² = 0.625). The significant predictors were shape concern and weight concern whereas positive affect was counter-predictive (Table 2). Restraint, eating concern, global score, TAS total, TAS-Emotional Identifying, TAS-Emotional Describing, TAS-External Orientation, and negative affect were nonsignificant.
Discussion

Several important aspects associated with eating disorders were presented by the AN patients: they expressed higher levels of restraint, eating concern, shape concern, weight concern and a higher global score on the Eating Disorders Examination Questionnaire (Table 1). These responses were accompanied by higher scores on Emotional identifying, Emotional describing, Emotional orientation and Total scoring on the Toronto Alexithymia Scale, which was confirmed by significantly more affirmative responses to the question regarding alexithymia. AN patients expressed also less PA and more NA than healthy matched controls. This pattern of results confirms and extends the findings obtained different sets of AN patients [27,28]. In another study (Garcia et al., under preparation) it was lower in AN patients. Taken together, it was concluded that the AN condition a linear regression analysis was performed: three factors predicted the AN condition, namely Shape concern (β = 0.689) and Weight concern (β = 0.570) whereas PA was negatively related to the AN diagnosis a linear regression analysis was performed: three factors predicted the AN condition, namely Shape concern (β = 0.689) and Weight concern (β = 0.570) whereas PA was negatively related to the AN diagnosis. AN patients displayed widespread alterations in executive functioning and associated tissue damage [49-52]. For example, in a functional magnetic resonance imaging (fMRI) study, reduced activation in the frontostriatal network of AN patients when performing behavioural shifts, independent of the cognitive control condition as dependent variable and EDE-Q-Restraint, -Eating concern, -Shape concern, -Weight concern, -Global score, -Total score. - Problems identifying emotions, Problems describing emotions, - Externally-oriented thinking, Alexithymia, positive and negative affect as independent variables. 

Table 3: Standardized weights from linear regression analysis with the healthy control condition as dependent variable and EDE-Q-Restraint, -Eating concern, -Shape concern, -Weight concern, -Global score, -Total score. - Problems identifying emotions, Problems describing emotions, - Externally-oriented thinking, Alexithymia, positive and negative affect as independent variables.

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Limitations

From a 'trait or state' perspective the current study's sample may contribute to or bolster the disorder. Certainly, any need for control and a specific body shape and weight may influence their cognitive-emotions or selective attentional processing. The significance of such an influence on over-evaluation of weight and shape remains to be determined. In this study, reduced activation in the frontostriatal network of AN patients when performing behavioural shifts, independent of the cognitive control condition as dependent variable and EDE-Q-Restraint, -Eating concern, -Shape concern, -Weight concern, -Global score, -Total score. - Problems identifying emotions, Problems describing emotions, - Externally-oriented thinking, Alexithymia, positive and negative affect as independent variables. 

Table 4: Standardized weights from linear regression analysis with the healthy control condition as dependent variable and EDE-Q-Restraint, -Eating concern, -Shape concern, -Weight concern, -Global score, -Total score. - Problems identifying emotions, Problems describing emotions, - Externally-oriented thinking, Alexithymia, positive and negative affect as independent variables.

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Values present Means ± SD; *p < 0.001.

Table 1: Self-reported EDE-Q-Restraint, -Eating concern, -Shape concern, -Weight concern, -Global score, -Total score. - Problems identifying emotions, Problems describing emotions, - Externally-oriented thinking, Alexithymia, positive and negative affect.

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be deemed as lacking in generalizability. The large effects of positive and negative affectivity/shape concern and weight concern raises questions regarding state dependent differences between the two groups participating in this study. It is feasible that the present results might to some extent be a product of differing contexts; the participant’s experiences of their inner emotional life might have been influenced by the specifics of their situation [55]. The patient sample consisted mostly of newly received patients just having started treatment, but also of patients that already had received psychotherapy for some time. The new patients were asked to participate after having received general information regarding eating disorders, which most certainly meant that many of them were in distress regarding their psychopathology and it’s effect on their lives. This distressed state might have led to the participants experiencing and subsequently reporting greater levels of negative feelings. Information received regarding the nature of ED’s might also have led to greater awareness of their own preoccupation with body shape and weight. A somewhat similar process might be relevant in the case of the patients who already had started treatment. A psychodynamic psychotherapeutic process (which is the main therapeutic modality these patients were receiving) is to be expected to raise awareness of ones emotional states [56] which might make negative emotions more salient, and arguably also awareness of ones eating disordered behaviours which is the major object of change and discussion in treatment. The control group in contrast was recruited at an evening lecture at a part time course in sexology held at Gothenburg University. The lecture was about an unrelated subject and the participants participating in this study. It is feasible that the present results and negative affectivity/shape concern and weight concern raises the features of eating disorders in patients with binge eating disorder: a replication. Obes Res 9: 418-422.


