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Objective: This study aimed to investigate different dimensions of the Theory of Mind (ToM), i.e first vs. third person, first vs. second order ToM, egocentric vs. allocentric perspective, and psychosocial functioning in Bulimia nervosa (BN) and Eating Disorder Not Otherwise Specified BN-type (EDNOS-BN) subjects. **Method**: ToM and psychosocial functioning were assessed in 10 BN and 14 EDNOS-BN outpatients and 15 healthy controls (HCs) using the Theory of Mind Assessment Scale, a semi-structured interview aimed at assessing a person's different dimensions of ToM; the Eating Disorder Inventory-*Symptom Checklist-2*, for evaluating psychological traits associated with eating disorders, and the Symptom Checklist-90-Revised for evaluating negative functioning. **Results**: BN and EDNOS-BN groups presented significantly higher scores on all dimensions of SCL-90 than control group, and on all dimensions of EDI-2 SC, except with Perfectionism. Our results also showed an higher impaired third person and second order ToM in patients with bulimia (ENDOS-BN and BN) with respect control subjects. Our results also showed that EDNOS-BN, compared to BN patients, are more impaired in these ToM dimensions. **Discussion**: The present study has important implications for future empirical investigation, because it has provided valuable information regarding the strong association between theory of the mind and eating disorders.

Keywords: bulimia nervosa; eating disorder not otherwise specified BN-type; theory of mind; allocentric perspective; egocentric perspective.

Bulimic Symptomatology: Associations with Psychosocial Functioning and Theory of Mind

1. Introduction

Aim of the study was to describe the phenomenological and psychological aspects of bulimic pathology in a clinic sample of young adults with BN and EDNOS-BN presentation, looking for the identification of possible diagnostic criteria for the latter clinical population.

Bulimic behaviors are common symptoms of eating disorders that can lead to medical complications such as, dehydration, acute gastric dilatation, electrolyte disturbance, elevated abdominal pressure and increase risk for dental complications, liver damage, gastrointestinal illnesses, obesity, insulin resistance, e.g. Ref. 1-4.

According to the DSM-IV-TR eating disorders of clinical severity are further specified in bulimia nervosa, defined as the sequential symmetry requirement of objectively large binge eating episodes followed by compensatory behaviors; Anorexia nervosa (AN), and Eating disorder Not Otherwise Specified (EDNOS), a category reserved for that do not meet diagnostic criteria for the previous categories. Bulimic behaviors are characteristic symptoms of Bulimia nervosa (BN) and EDNOS.

According to Day et al., it is possible to identify diagnostic criteria for EDNOS of the bulimic-type (EDNOS-BN): 1-Regular (at least one month) binging or self-induced vomiting and/or the misuse laxatives, diuretics, exercise; 2-Weight loss of 5 kg or more in the context of weight of shape control; 3- the Onset of Amenorrhea (absence of three consecutive menstrual cycles).[5] Although both bulimia nervosa and EDNOS-BN patients presented compensatory behaviors, they differ a little with respect psychological features: psychological disease, impulse of control, affect regulation, e.g. Ref. 6-7.

The epidemiological information available about EDNOS is still limited and controversial. Some authors affirmed that EDNOS is quantitatively limited and a clinically less relevant group of subjects in relation to the two main diagnostic entities, anorexia and bulimia.[8]

In a recent study, Fairburn et al. found that EDNOS patients were symptomatically quite similar to full-syndrome eating disorder, i.e bulimia nervosa, but they had higher level of general psychiatric symptoms: half of eating disorders reported recurrent bulimic episodes and a similar proportions reported self-induced vomiting; a quarter misused laxatives, forty-two engaged in regular "purging" but did not meet diagnostic criteria for BN.[9]

Several recent studies suggest that Theory of Mind plays a significant role because it facilitates positive outcome for patient with AN. Theory of mind is the specific human ability to attribute mental states to themselves and others in order to explain and predict behaviour.[10] Mental abilities could facilitate actions undertaken to the subsequent positive emotions would also be experienced or understood; many researchers have claimed that the understanding of mind could have a stronger weight on social behaviour, e.g. Ref. 11-12.

The understanding of mind is one of the most important attainments in childhood which allows children to function socially and to distinguish accidental and intended behaviour, wishes and reality, truth and deception. Thus, theory of mind is fundamental for the understanding of the social world and engaging human interactions (Mull & Evans, 2010).[13] Over the past two decades, a large amount of research has highlighted that mind reading abilities underpin particular aspects of subject's social functioning.[14]

Only few studies have examined the relation between Eating Disorders and ToM, using Happé's cartoon and story tasks, e.g. Ref. 11-12. These studies focusing specifically on anorexia nervosa patients.[15] The Happé's Cartoon Task, consists of 12 single frame cartoons: 6 cartoons make up the mental state inference condition, requiring an understandings of the character's mental state/beliefs or intentions in order to provide an accurate explanation of the humor. The 6 physical state cartoons rely on recognizing physical anomalies. In both tasks, participants asked to generate an explanation for cartoons or stories that require either the understanding of physical (control condition) or mental (experimental condition) states. Deficits on mental state items with no difficulties on physical items are indicative of a specific ToM

impairment. Both studies demonstrated a specific ToM impairment in patients with anorexia nervosa, e.g.Ref. 11-12.

Only one study have demonstrated that in Bulimia Nervosa there is an impairment in understanding other mental states, intentions and the motivations that submit the behavior shown by other people, while a recent study did not find an overall difference in Theory of Mind between BN, EDNOS-BN patients, and healthy control, although subjects with BN had enhanced negative emotion recognition on the Reading the Mind in the Eyes task, that investigates complex emotion recognition, e.g. Ref. 16-17.

Although the majority of studies regarding ToM have highlighted that the theory of mind is a complex activity with different abilities and it is also the retrospective reconsideration of one's own or another individuals ways or ability to cope with mentalistic social cognition, no studies have analyzed the different facets of ToM, in people with eating disorders, e.g. Ref. 18-23.

A well established distinction in the literature is between first and second order ToM, e.g. Ref. 24-25. The first ability requires to understand a persons's belief about a state of the world, while the latter requires to ascribe nested mental states, that is to understand apersons's belief about the beliefs of another person. Empirical data showed that in children and clinical populations second order ToM tasks are more difficult than first order ones, e.g. Ref. 26-27.

Another established distinction in the literature is between first person, i.e. the ability to reason about one' owns' mental stets, and third person ToM, i.e. the ability to reasons about another's person mental states.[28] Nichols and Stich argued that understanding the first- and the third-persons are different activities that are mediated by different processes.[29]

Another distinction, orthogonal to that between first- and third-person ToM, is that between egocentrism and allocentrism.[30] In the egocentric perspective, the others are represented in relation to the self, while in the allocentric perspective the others' mental states are represented independently from the self.

To summarize the purpose of the study was to describe the phenomenological aspects of bulimic pathology in a clinic sample of young adults with BN and EDNOS-BN presentation. More specifically, this study was to provide a complete assessment of Theory of mind abilities of these patients. Due to the contradictory empirical evidence regarding the ability to perform theory of mind (ToM) tasks for BN and EDNOS-BN subjects, we want to explore whether subjects with BN were qualitatively distinct from those who EDNOS-BN regarding psychological functioning and Theory of the Mind. In particular we want to assess different facets of the Theory of Mind ability, i.e. first and second order ToM, first vs. third person ToM, allocentric vs. egocentric perspective, for possible differences between EDNOS-BN and BN patients.

2. Method

2.1. Participants

Participants were 24 individuals with eating disorder, diagnosis based on criteria of DSM-IV-TR; in particular took part in the experiment 10 female patients with BN (M Body Mass Index; BMI, kg/m^2 = 19.37; SD= 2.04; BMI range 16-22), 14 females with EDNOS-BN (M BMI= 21.28, SD= 2.54; BMI range 17-25), and 20 females non eating-disorders control (M BMI= 20.2, SD= 2.63; BMI range 18-23).[1] Five subjects of control group were excluded because they reported symptoms characteristic of a diagnosis of an eating disorder, as indicated by EDI-2.

The mean age of the participants was 24.50 (SD= 6.33) for BN subjects, 23.50 (SD=4.47) for participants with EDNOS-BN, and 23.21 (SD= 4.56) for control groups.

A series of ANOVA tests did not reveal differences between the three groups in age, F (2,36)=2.48, p=.74, or years of schooling, F (2,36)=1.33, p=.88.

The mean duration of their illness was 9.18 (SD= 4.68), and the mean age of the first episode of eating disorder was 17.36 (SD=2.06). For participants with BN, the mean duration of illness was 9 years

(SD= 5.04), and the mean age of the first episode of eating disorder was 18.50 (SD=8.19). The two groups did not differ with respect to these variables.

Self-induced vomiting and driven exercise were the most frequently reported compensatory behaviors (n=12), followed by laxatives (n =3), and diuretics (n =3). Comparatively few patients (n =2) utilized only one compensatory measure, and the majority of the EDNOS-BN subjects used two compensatory behaviors (n =10). Only 2 subjects used three compensatory mechanisms.

Participants with EDNOS were not conforming to the diagnostic criteria of anorexia nervosa or bulimia nervosa but they were similar to Bulimia Nervosa in few aspects. As suggested by Watson et al., two modifications to DSM-IV were adopted to define EDNOS group in the form of subthreshold BN: a) reduced threshold frequency of one per week over a three-month period for binge eating and purging, and b) loss of control when consuming either moderate or large amounts of food (rather than just unusually large amounts of food) that have shown clinical significance.[4]

2.2. Material and Procedure

Each patient was evaluated by one of the two senior clinicians who established whether the patient met the inclusion criteria listed below and obtained the history of the eating disorder. Control participants completed the questionnaires in a laboratory as part of their psychology course requested.

2.2.1. Psychological traits. The Eating Disorder Inventory-*Symptom Checklist-2* (EDI-2 SC) was used as a measure of psychological traits associated with eating disorders.[31]

As suggested by Moor et al., four of the 11 subscales were selected because they were most closely representative of the core psychological features of such disorders.[6] These included: (a) Drive for Thinness,

(b) Body Dissatisfaction, (c) Ineffectiveness, and (d) Perfectionism. These dimensions have exhibited acceptable levels of internal consistency (Cronbach's α in the present study ranged from 0.85 to 0.88).

The EDI-2 was used as a screening instrument for identifying eating disorders in the control group, and also to verify the diagnosis given to eating disorder patients.

2.2.2. Mental health variables. The Symptom Checklist-90-Revised was used to measure negative functioning.[32] This instrument consists of 90 items, including items associated with either personal discomfort of physical status, and mental health status. The respondents answered items choosing among five alternatives for symptom occurrence (0= *no symptoms at all* to 4= *extremely often)*. The number was referred to the level of impact of the symptom in the last 2 weeks. The score of each item contributes one of the nine symptom dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, Psychoticism. The main global indices of the inventory include General Symptomatic Index (GSI) which is the sum of scores of all items divided by 90 (corresponding to the total number of items). Miotto, De Coppi, Frezza, and Preti evaluated the SCL-90-R in Italian Version and approved its use with Italian adolescents. Internal reliability of the SCL-90-R in the present study ranged from 0.84 to 0.90.[33]

2.2.3.Theory of Mind. The Theory of Mind Assessment Scale (Th.o.m.a.s.) is a semi-structured interview aimed at assessing a subject's theory of the mind.[34] It consists of 39 open-ended questions that leave the interviewee free to express and articulate her thought. It is composed by four scales:

Scale A, I–Me, that investigates the interviewee's knowledge of her own mental states. The viewpoint of the questions is centered on the interviewee (I) re flecting on her own mental states (Me). This scale investigates first-person ToM in an egocentric perspective; Scale B, Other–Self, that analyzes the knowledge that, according to the interviewee, the other persons have of their own mental states, independently of the subject's perspective. The viewpoint of the questions is centered on the other persons (Other) reflecting on their own mental states (Self), it investigates third person ToM in an egocentric perspective;

Scale C, I–Other, that investigates the interviewee's knowledge of the mental states of other persons. The viewpoint of the questions is centered on the interviewee (I) reflecting on the others' mental states (Other); it investigates third person ToM in an egocentric perspective;

Scale D, Other–Me, that investigates the knowledge that, from the interviewee's point of view, the others have of her mental states. The viewpoint of the questions is centered on the other persons (Other) reflecting on the mental states of the interviewee (Me). This scale can be compared with a second-order ToM task, because the abstract form of the questions is: ''What do you think that the others think that you think?''.

Each scale is divided into three subscales that, respectively, explore the dimensions of Awareness, Relation and Realization of mental states:

Awareness. It investigates the interviewee's ability to perceive and differentiate beliefs, desires and emotions in herself and in the others. Recognizing different types of mental states is a necessary precondition of understanding their links and causal relations with one another and with the external world.

Relation. It investigates the interviewee's ability to recognize causal relations between different mental states and between them and the resulting behaviors. For example: ''When you feel bad, do you feel you understand why?". Being capable to connect and to integrate different mental states and to understand their reciprocal relations and bi-directional connections with perceptions and actions is necessary to draw up an explanatory theory of the mind and of the social world.

Realization. It investigates the interviewee's ability to adopt effective strategies to achieve a desired state. For example: ''Do you succeed in getting what you want? How?". To act adaptively requires not only to have a theory of the causal relations between mental states and between the mental states and the world, but also to know how to use this knowledge to appropriately and successfully affect the mental states and the behavior of one's own and of the others.

All the Th.o.m.a.s. interviews were tape-recorded and then transcribed, with the written authorization of the interviewees. The transcripts were rated by two independent judges, who had not participated in the interviewing phase, and were blind as to whether the participants were in the offender or comparison group.

Before beginning the data collection, the two coders took part in a thirty hour training on coding of qualitative interviews, and, using guidelines reported by Bosco et al., became familiar with the items of the interview and with coding procedures. Each judge assigned each answer a score from 0 to 4, according to the rating criteria, and then inserted the score in the relevant cell of the correction grid.[34]

Co-score reliability on the theory of mind assessment was established at 90% before data collection began. Reliability for two coders was calculated by correlating their scores on four scales for each interview. Range reliability was .86-.89, and it was calculated by using the Spearman Brown correction formula. Disagreements were resolved by conferencing. The Th.o.m.as. has been used in a number of studies, and its reliability and validity have been shown to be satisfactory, e.g.Ref. 34-35.

2.4. Data Analysis

The Statistical Package for the Social Sciences (SPSS 18.0) was used to conduct bivariate and multivariate analyses relating to independent variables. The internal consistency of the overall scale and subscales of EDI-2 and SCL-90-R were measured by Cronbach's alpha coefficient. To investigate diagnostic status differences, we conducted MANOVA on psychological traits, and mental health variables, and ANOVA for theory of mind dimensions.

3. Results

3.1. Psychological Traits and Mental Health Variables

To investigate differences between three groups BN, EDNOS- BN, and CON=non-eating disorder control, we conducted MANOVA on EDI-2 dimensions. The MANOVA revealed main effect for group, *Wilks's Lambda*= .41, *F* (10,66) = 3.62, *p*<.001. Results from the univariate tests and and post hoc test (Tukey test; p<.001) revealed that groups differed on the subscale of Drive for thinness, *F*(2,36) =8.25, *p*<.001, Body Dissatisfaction, *F(2,36)* =4.18, *p*<.001, and Ineffectiveness, *F* (2,36) =3.98, *p*<.001, where BN and EDNOS –BN groups, that did not differ, showed a higher mean score than control groups. Regarding Perfectionism BN and EDNOS –BN groups showed a higher mean score than control group. In particular BN group obtained higher mean score than EDNOS-BN group, *F* (2,36) =3.38; *p*<.001.

----------*Insert Table1 about here*----------

Regarding mental health variables, the MANOVA showed a significant group effect, Wilks's Lambda= .21, *F* (20,54) = 3.15, *p*<.001. Results from the univariate tests, and post hoc test (Tukey test; *p*<.001) revealed that BN and EDNOS-BN groups presented significantly higher scores on all dimensions of SCL-90 than control group. No significant difference emerged between BN and EDNOS-BN groups.

----------*Insert Table2 about here*----------

3.2. Patients with eating disorders and control group' performance at Th.o.m.a.s.

The MANOVA showed a significant group effect on Theory of the Mind dimensions (Wilks's Lambda= 0.22; *F* (20,54)= 4.23; *P*<.001). Results from the univariate tests, and post hoc test (Tukey test; p<.001) revealed a significant effect for scale B Other-Self, which assesses third person ToM from an egocentric perspective, *F*(2, 36)=4.24, p<.001, and scale D-Other-Me, which assess second order ToM *F*(2,36)=3.50, *p*<.001, and for Awareness, *F*(2,36)=7.37, *p*<.001, and

Realization subscales, $F(2,36)=7.39$, $p<.001$. The analysis revealed that control group had significantly higher mean scores than BN group, and this latter obtained higher scores than EDNOS-BN group for all dimensions, except with Realization subscale where Control group obtained higher mean scores than BN and EDNOS-BN that did not differ significantly from either.

Focusing on the BN group' performance at Th.o.m.a.s., we conducted a within subjects ANOVA with four levels on within subjects factors (scale type: A, I–Me; B, Other–Self; C, Me–Other; D, Other–Me). We found significant differences within the bulimic subjects' mean scores at the four individual scales, $F(3,6) = 4.36$, $p < .01$. In particular, post hoc pairwise comparison (Bonferroni corrected; p<.01) revealed that the subjects scored higher at scale A (I–Me), which assesses first-person ToM, than at all the other three scales: B (Other–Self) and C (Me–Other), both of which assess third-person ToM, and D (Other–Me), which assesses ToM with a second-level inference. No significant differences existed between the latter three scales.

Regarding Th.o.m.a.s. subscales (Awareness, Relation, and Realization) we did not find significant differences between the bulimic subjects' mean scores at the three individual subscales, $F(2,7) = 1.22$, $p = .76$.

Focusing on the EDNOS-BN group' performance at Th.o.m.a.s., we found significant differences within the EDNOS-BN subjects' mean scores at the four individual scales, $F(3,10) = 6.42$, $p < .01$. In particular, post hoc pairwise comparison (Bonferroni corrected; p<.01) revealed that the subjects scored higher at scale A (I–Me), which assess first person ToM and C (Me–Other) which assesses third person ToM in an allocentric perspective than B (Other–Self), which assess third person ToM from an egocentric perspective and D (Other–Me), assessing second order ToM. No differences emerged between performances in Scale A and D and between the others comparisons.

Regarding Th.o.m.a.s. subscales, we found significant differences within the EDNOS-BN subjects' mean scores at the three individual scales, $F(2,12) = 6.22$, $p < .01$. In particular, post hoc pairwise comparison (Bonferroni corrected; p<.01) revealed that the subjects scored higher at subscale Awareness

and Relation than Realization. No difference emerged between the performance on subscale Awarness and Relation.

Focusing on the control group' performance at Th.o.m.a.s., we found significant differences within the control group subjects' mean scores at the four individual scales, $F(3,11) = 7.29$, $p < .01$. In particular, post hoc pairwise comparison (Bonferroni corrected; p<.01) revealed that the subjects scored higher at scale A (I–Me) than B, C, and D. No significant differences existed between the latter three scales.

Regarding Th.o.m.a.s. subscales (Awareness, Relation, and Realization) we did not find significant differences between the control subjects' mean scores at the three individual subscales, $F(3,11) = 1.09$, $p = .84$.

----------*Insert Table3 about here*----------

4. Discussion

This study describes the phenomenological aspects of bulimic pathology in a clinic sample of young adults with BN and EDNOS disorders. As suggested by Watson et al., we considered in the EDNOS group the participants with a bulimic core who share the eating habits and attitudes that characterize bulimia nervosa but did not meet the DSM-IV TR diagnostic criteria for full diagnosis.[4, 1] Given the increasing number of disease that not meet the diagnostic criteria for full diagnosis, the identification of criteria for EDNOS-BN or EDNOS-AN is necessary.[9, 36]

Furthermore, the relationship between eating disorders and theory of mind has not been sufficiently investigated so far in research proposals, indicating a serious gap in our knowledge. The Theory of Mind Assessment Scale (Th.o.m.a.s.) can result a tool very useful in this area because it provides specific and comparable measures of ToM within a unitary framework, taking into account the distinctions between first and second-order, between the first and the third-person, between the egocentric and the allocentric perspective.[34]

Firstly, accordingly with findings of earlier studies subjects with Bulimia Nervosa (BN) showed higher level of perfectionism compared to subjects with subthreshold disorder, e.g. Ref. 37-38. Elevated adaptive perfectionism preceded development of bulimic symptoms in undergraduate university females and adaptive rather than maladaptive perfectionism shared latent risk factors with anorexia nervosa.[4] Regarding psychological disease, our results are congruent with Fairburn et al.: EDNOS-BN patients were symptomatically quite similar to full-syndrome eating disorder but they had higher levels of general psychiatric symptoms.[9]

Secondly, we found an impaired ToM to be associated with eating disorders: the performance at scales B (Other-Self= Third person, egocentric), D (Other-Me=second order ToM), and at subscales Awareness and Realization of the EDNOS-BN and BN subjects we examined was worse than the control group. In particular EDNOS-BN group, obtained worse scores than BN group for all dimensions, except with Realization subscale where mean scores obtened by the two clinical sample did not differ significantly.

The subscale Awareness evaluates the abilities to perceive and differentiate beliefs, desires and emotions in herself and in the others. Recognizing different types of mental states is a necessary precondition of understanding their links and causal relations with one another and with the external world, while the Realization subscale measures the ability to adopt affective strategies to achieve a desired state.

Globally, our results are aligned with the literature, showing a higher impaired ToM in EDNOS-BN, who have more difficult to distinguish between emotions and physical sensations and to establish the casual link between an action and a possible reaction, compared to BN patients.[39, 40, 16] This supports the ideas that first-person ToM is better preserved in subjects with eating disorders than third-person ToM.

Furthermore, focusing on the clinical sample separately, we found that EDNOS-BN patients, but not BN or control group found easier to reason about third person ToM from and allocentric with respect an egocentric perspective. Although subjects with eating disorders show a deficit of Theory of Mind they differ

in their full and subthreshold syndromes, showing different levels of introspection, intuition of epistemic and non epistemic mental states in allocentric terms.

Clearly, the current results need to be replicated with larger samples. Should future research confirm the clear social, cognitive, and mental health vulnerabilities recorded in this clinical sample, this would have significant implications for the design of specific policies, and the establishment of tailored supportive services to address the risks faced by these patients.

The present results should be interpreted in light of several important limitations. First, the design of the research and the small size of the sample did not permit to investigate directionality in the relationships that we examined restricting the casual inferences that might be drawn from the results. Secondly, the study relied only on self-report data, and may be subject to standard criticism with self-report bias. Further research thus appears to be needed regarding first- vs. third-person ToM in EDNOS-AN patients. Despite these limitations, the present study has important implications for future empirical investigation, because it has provided valuable information regarding the strong association between theory of the mind and eating disorders.

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Table 1

Sociodemographic and clinical background of patients and control subjects

	1. BN (N=16) M (SD)	2. EDNOS-BN (N=16) M (SD)	3. HC (N=16) M (SD)	F(2,45)	p
Age (years)	26.25 (6.12)	26.72 (4.32)	26 (5.16)	.35	.71
Years of education	16.27 (.88)	16.47 (1.45)	16.33 (1.54)	.08	.92
BMI	24.07 (1.16)	24.53 (1.73)	23.13 (2.23)	2.45	.09
Illness duration (years)	8.53 (.64)	8.67 (.48)	-	.41	.52
Age of onset	17.47 (.64)	17.73 (.46)	-	1.72	.20

Note: 1. BN= Bulimia Nervosa; 2. EDNOS-BN= Eating Disorder not otherwise specified in the form of subthreshold BN; 3. HC= Healthy controls. Standard deviations are in parentheses.

Table 2

Descriptive Statistics and Significant Group Effects on the EDI-2 SC and SCL-90-R *subscales*

	1. BN (N=16)	2. EDNOS-BN (N=16)	3. HC (N=16)	F (2,45)	Partial Eta-	Significant Post Hoc Differences
Eating Disorder Inventory-*Symptom Checklist-2* (EDI-2 SC)						
Drive for thinness	14.13 (6.75)	12.86 (7.09)	6.83 (5.97)	5.35*	.20	(1=2)>3
Body Dissatisfaction	14.67 (7.14)	16.94 (8.92)	11.50 (5.99)	4.22*	.19	(1=2)>3
Ineffectiveness	10.20 (6.67)	11.06 (6.15)	6.53 (4.25)	4.75*	.19	(1=2)>3
Perfectionism	7.47 (4.91)	6.53 (3.62)	4.22 (2.07)	2.76*	.15	1>2>3
Symptom Checklist-90-Revised (SCL-90-R)						
Somatisation	1.41 (1.00)	1.52 (.84)	.73 (.64)	3.47*	.14	(1=2)>3
Obsessive-Compulsive	1.64 (1.03)	1.79 (.76)	1.05 (.65)	3.43*	.14	(1=2)>3
Interpersonal Sensitivity	1.65 (1.03)	1.75 (.93)	.94 (.79)	3.41*	.15	(1=2)>3
Depression	1.79 (1.00)	1.95 (.72)	.91 (.75)	6.71*	.25	(1=2)>3
Anxiety	1.70 (1.08)	1.67 (.80)	.66 (.46)	7.82*	.28	(1=2)>3
Hostility	1.41 (1.07)	1.28 (.60)	.63 (.58)	5.23*	.20	(1=2)>3
Phobic Anxiety	1.05 (.92)	.88 (.76)	.25 (.50)	4.71*	.19	(1=2)>3
Paranoid Ideation	1.25 (.60)	1.43 (.75)	.66 (.70)	5.24*	.20	(1=2)>3
Psychoticism	1.16 (.78)	1.25 (.55)	.88 (.45)	3.19*	.12	(1=2)>3
General Symptomatic Index	1.53 (.86)	1.50 (.60)	1.19 (.22)	22.22*	.52	(1=2)>3

Note: 1. BN= Bulimia Nervosa; 2. EDNOS-BN= Eating Disorder not otherwise specified in the form of subthreshold BN; 3. HC= Healthy controls. Standard deviations are in parentheses. Post Hoc Tukey test: *p < .05

Table 3

Descriptive Statistics and Significant Group Effects on the Th.o.m.a.s scales and subscales

	1.BN (N=16) Mean (SD)	2. EDNOS-BN (N=16)	3. HC (N=16)	F (2,45)	Partial Eta-	Significant Post Hoc Differences
Th.om.as Scales						
A I-Me	3.47 (.68)	3.20 (.45)	3.54 (.64)	1.35	.06	
B Other-Self	2.81 (.51)	2.72 (.60)	3.27 (.53)	4.48*	.17	(1=2)<3
C Me-Other B Other-Self	2.95 (.52)	2.75 (.62)	3.15 (.94)	2.11	.08	
D Other-Me (second order ToM)	2.69 (.48)	2.43 (.49)	3.22 (.48)	10.79*	.32	(1=2)<3
Th.om.as Subscales						
Awareness	2.69 (.50)	2.56 (.62)	3.58 (.76)	11.94*	.34	(1=2)<3
Relation	3.05 (.39)	3.42 (.52)	3.48 (.25)	.39	.01	
Realization	2.64 (.42)	2.47 (.53)	3.09 (.42)	9.98*	.25	(1=2)<3
Total score	2.70 (.71)	2.41 (.70)	3.10 (.77)	5.93*	.19	(1=2)<3

Note: 1. BN= Bulimia Nervosa; 2. EDNOS-BN= Eating Disorder not otherwise specified in the form of subthreshold BN; 3. HC= Healthy controls. Standard deviations are in parentheses. Ai-Me= First Person, egocentric; B Other-Self= Third person, egocentric; C Me-Other= First person, egocentric; D Other-Me= Second order ToM task