

PSYCHOTIC SYMPTOMS IN ANOREXIA NERVOSA

Anastasia Grazia Chieppa, Francesca Bellucci, Patrizia Moretti, Veronica Raspa & Alfonso Tortorella
Section of Psychiatry, Department of Medicine and Surgery, University of Perugia, Perugia, Italy

SUMMARY

Background: Recent studies suggest an overlap and mutual influence between Anorexia Nervosa (AN) and psychotic symptoms, with the anorexic voice proposed as a clinically significant marker within this spectrum. This cross-sectional observational study aimed to assess the prevalence and characteristics of psychotic symptoms, focusing on the anorexic voice, in patients with AN. Secondary objectives included exploring associations with dissociation, body image disturbance (BID), sociodemographic and clinical factors.

Subjects and methods: Forty-three patients were recruited from specialized outpatient and inpatient Services. Anamnestic history was collected, participants completed psychometric assessments, including Positive and Negative Syndrome Scale (PANSS), Brown Assessment of Beliefs Scale (BABS/BABS-A), Eating Disorder Examination (EDE-Q), Eating Disorder Inventory (EDI-3), Body Uneasiness Test (BUT), Body Shape Questionnaire (BSQ), Symptom Checklist-90 Revised (SCL-90-R), Dissociative Experience Scale (DES/A-DES), Community Assessment of Psychic Experiences (CAPE-42), Multidimensional Assessment of Interoceptive Awareness (MAIA).

Descriptive analyses reported categorical variables as frequencies or percentages, continuous variables as means, medians, standard deviations or interquartile ranges. Bivariate analyses were performed using chi-square or Fisher's exact test for categorical variables and the Mann-Whitney U test for continuous variables, with significance set at $p < 0.05$.

Results: The anorexic voice was significantly associated with clinically relevant dissociation, not with BID. Subthreshold psychotic symptoms were common and significantly linked to body dissatisfaction, eating psychopathology and dissociation. Psychoticism was associated with BID, higher psychiatric comorbidity (especially personality and anxiety disorders), lower ideal BMI and greater general psychopathology. Adolescents showed higher levels of persecutory ideation, interpersonal alienation and general psychopathology.

Conclusions: Psychotic-like symptoms are highly prevalent in AN. The anorexic voice appears more closely related to dissociative processes than psychotic phenomena. Conversely, BID may play a significant role in the onset of predominant ideation about body shape and weight. Larger longitudinal studies are needed to clarify these relationships and their prognostic implications.

Key words: anorexia nervosa - psychotic symptoms - anorexic voice - socio-demographic - psychiatric comorbidity

Abbreviations: AN - Anorexia Nervosa; PLEs - psychotic-like experiences; BID - body image disturbance; PANSS - Positive and Negative Syndrome Scale; BABS/BABS-A - Brown Assessment of Beliefs Scale; EDE-Q - Eating Disorder Examination; EDI-3 - Eating Disorder Inventory; BUT - Body Uneasiness Test; BSQ - Body Shape Questionnaire; SCL-90-R - Symptom Checklist-90 Revised; DES/A-DES - Dissociative Experience Scale; CAPE-42 - Community Assessment of Psychic Experiences; MAIA - Multidimensional Assessment of Interoceptive Awareness; UHR - Ultra High Risk

* * * * *

INTRODUCTION

Psychotic symptoms are frequently observed among individuals with Anorexia Nervosa (AN), including altered perceptual phenomena such as the anorexic voice (Longden et al. 2020; Perona-Garcelán et al. 2013), reported in up to 95% of cases (Noordenbos & Van Geest, 2017). Delusional beliefs regarding body shape and weight - reflecting a Body Image Disturbance (BID) - are present in approximately 25% of AN patients (Konstantakopoulos et al. 2012; Hartmann et al. 2013). Many phenomena observed in AN patients appear to reside in the continuum between psychosis and dissociative experiences (Poletti & Raballo 2023; Moskowitz & Corstens 2007), which may be central in the pathogenesis of AN and may contribute to the emergence of the anorexic voice (Morrison et al. 2022), while body dissatisfaction - the core component of BID - may serve as a substrate for the development of overvalued ideas and delusional beliefs (Kesting & Lincoln, 2013; Tiernan et al. 2014; Collett et al. 2016;

Freeman 2016; Waite & Freeman 2017). This study presents the preliminary findings of a cross-sectional observational study investigating the prevalence and characteristics of psychotic symptoms, particularly the anorexic voice, in a sample of AN patients, and explores their association with dissociative phenomena and BID. Secondary aims include exploring links with socio-demographic and clinical variables, and correlations with body dissatisfaction and interoceptive awareness.

SUBJECTS AND METHODS

This study was conducted within the multidisciplinary eating disorder outpatient and inpatient Services of USL Umbria 1, Italy. Participants were patients, aged between 13 and 65 years, diagnosed with AN according to DSM-5 criteria (APA 2013); all were receiving active specialized treatment. Exclusion criteria included intellectual disability, the presence of a language barrier and a comorbid diagnosis of neurological illness. The following psychometric tools were administered: Positive

and Negative Syndrome Scale (PANSS), 3TRE, Brown Assessment of Beliefs Scale (BABS/BABS-A), Eating Disorder Examination (EDE-Q), Eating Disorder Inventory (EDI-3), Body Uneasiness Test (BUT), Body Shape Questionnaire (BSQ), Symptom Checklist-90 Revised (SCL-90-R), Dissociative Experience Scale (DES/A-DES), Community Assessment of Psychic Experiences (CAPE-42), Multidimensional Assessment of Interoceptive Awareness (MAIA). Participants provided written informed consent after being informed of the study procedures and aims; for minors, parental consent was also obtained.

A descriptive analysis of the entire sample was performed, reporting categorical variables as frequencies/percentages and continuous variables as means, medians, SD, and IQR. The sample was then divided into two subgroups based on elevated age-corrected T-scores on the SCL-90-R Psychoticism subscale. Bivariate analyses were conducted using chi-square or Fisher's exact test for categorical variables, and Mann-Whitney U test for continuous variables. Non-parametric tests were used due to the small sample size ($n < 30$), with significance set at $p < 0.05$.

RESULTS

Our study included 43 Italian patients, predominantly females (95.3%), aged between 13 and 50 years, with a mean age of 20.5 ± 7.6 years. 41.9% of the patients were younger than 18 years old, 55.8% had a positive family history of psychiatric disorders, mainly depressive disorders. Psychiatric comorbidities were present in 51.2% of the sample. No comorbidities with psychotic disorders were identified. The age of onset for the pathology in the sample is depicted in Figure 1. The mean age of onset of AN was 14.7 ± 2.9 years, 41.8% of the patients required at least one hospitalization for

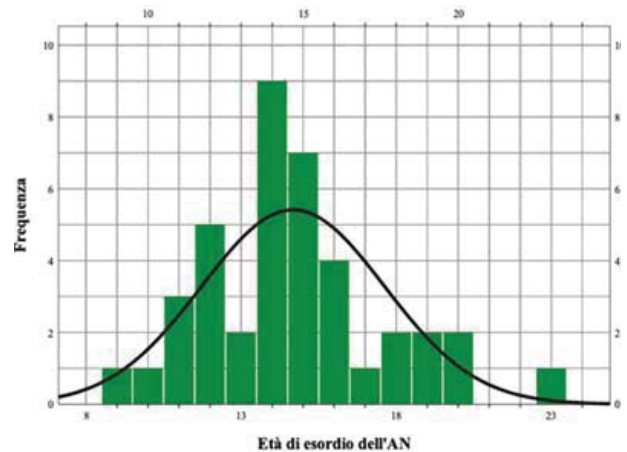


Figure 1. Age distribution histogram of Anorexia Nervosa onset

AN during their lifetime. 53.3% of the sample was diagnosed with the restricting subtype of AN; the remaining participants – excluding 3 with missing data – had the binge-purging subtype. The clinical characteristics of the sample were notable for a mean BMI of 17 ± 2.3 kg/m^2 , with 19.35% having a BMI < 15 .

79.1% of the sample experienced the anorexic voice, often punitive (70.6%) but sometimes helpful (44.1%). The voice was intense enough to dominate thoughts in 85.3% of cases, with 76.5% obeying it. Clinically relevant dissociation (DES, A-DES) was significantly associated with the anorexic voice ($p = 0.015$), whereas no association was found with body image concerns ($\text{BSQ} > 140$) or body discomfort ($\text{BUT-A GSI} \geq 1.2$).

The mean score for body shape dissatisfaction was 143.9 ± 40.7 , indicating marked concern. Furthermore, 86% of the sample exceeded the cut-off for clinically significant body discomfort ($\text{BUT-A GSI} \geq 1.2$), with a mean value of 3.3 ± 1.2 . The same percentage of subjects

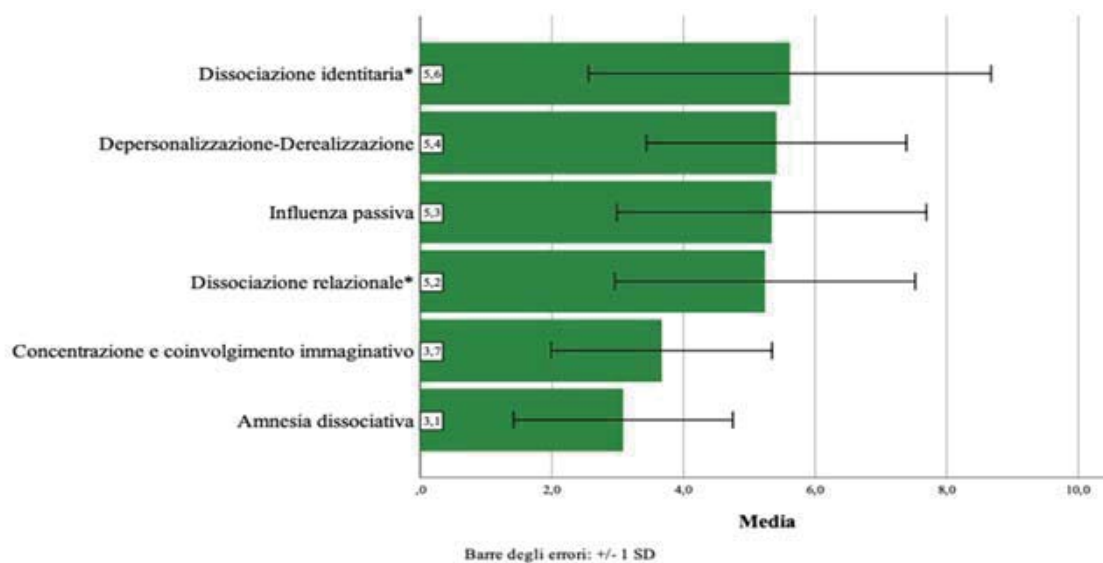


Figure 2. Mean and SD of the dimensions of the A-DES scale. Domains marked with * indicate subdomains of the Depersonalization-Derealization domain

exceeded the predictive cut-off for AN identified by Cuzzolaro et al. (Cuzzolaro et al. 2006). The mean total DES score was 26.6 ± 16.4 in adults, with 32% exceeding the cut-off. In minors, the mean total A-DES score was 4.5 ± 1.6 , with 55.6% exceeding the cut-off. In adolescents, the depersonalization-derealization domain and its subcomponent, identity dissociation, have the highest mean scores, as shown in Figure 2.

From a psychotic symptomatology perspective, the results showed a mean score on the BABS/A-BABS interview of 11.5 ± 6.5 for adolescents and 9.3 ± 4.7 for adults, indicating fair insight. However, 62.8% of the sample had poor or delusional insight. The study also found that 81.4% of the sample exceeded the cut-off for the severity-weighted score for the positive dimension, and 72.1% exceeded the cut-off for frequency, while 76.7% exceeded the cut-off for distress. The PANSS results showed that 32.6% of the subjects were classified as "mildly ill", 30.2% as "not ill", and 27.9% as "moderately ill". PANSS scores are represented in Table 1. Finally, the SCL-90-R results showed a mean GSI score of 1.9 ± 0.7 , a mean PST score of 66.2 ± 17.6 , and a mean PSDI score of 2.5 ± 0.6 . The distribution of the sample in severity categories based on age-corrected T scores for each domain of the SCL-90-R scale is shown in Table 2.

Given the high prevalence of the anorexic voice, the sample was not dichotomized by its presence. No significant difference in illness duration was found between those perceiving the voice as helpful and those who did not; however, current BMI was significantly

lower in subjects perceiving the voice as helpful ($p = 0.009$). The sample ($n=40$) was divided into psychotic ($n=22$) and non-psychotic subgroups based on SCL-90-R psychoticism scores ($T \geq 65$). No significant differences were found in demographics, AN subtype, anorexic voice presence, smoking, or family psychiatric history. Psychotic subjects showed higher rates of psychiatric comorbidities, especially personality and anxiety disorders, and a greater prevalence of clinically significant dissociation (63.6% vs. 11.1%, $p = 0.001$). Ideal BMI was lower in the psychotic group ($p = 0.049$), and psychotic subjects scored higher on several psychometric scales (3TRE, PANSS, BSQ, BUT-A, EDE-Q, EDI-3, CAPE, SCL-90-R) and lower on the MAIA Trusting subscale, indicating reduced body trust. Patients with higher psychoticism scores had significantly higher scores on measures of body dissatisfaction ($p = 0.000$), eating pathology ($p = 0.029$), and dissociative symptoms ($p = 0.001$). Table 3 reports the mean, median, SD, and IQR of the scores for continuous variables that were significantly different in bivariate analyses for the two subgroups.

Significant differences emerged between the minor and the adult subpopulation in several domains: adults showed higher interoceptive awareness in self-regulation ($p = 0.007$), attention regulation ($p = 0.031$), and noticing ($p = 0.038$). Minors exhibited greater depersonalization (BUT-A domain D, $p = 0.034$) and higher PST scores (BUT-B, $p = 0.009$), as well as elevated interpersonal alienation ($p = 0.037$) and asceticism ($p = 0.013$) on the EDI-3. Persecutory ideation measured by

Table 1. Total scores and symptom dimension scores of the PANSS

	Positive symptoms	Negative symptoms	General psychopathology	Total score	Composite score
N	42	43	43	42	42
Missing	1	0	1	0	1
Mean	9.4	15.1	44.5	68.6	-5.6
DS	3.7	8	15	24	6.6
Median	8	13	44	65.5	-3
IQR	2.8	10	20	28.5	10.25

Table 2. Distribution into severity categories based on age-corrected T scores for each domain of the SCL-90-R scale

	No distress factors T<45	Average 45≤T<55	Higher than average 55≤T<65	Far above average 65≤T≤75
Depression (DEP)	2 (4.7 %)	5 (11.6 %)	3 (7 %)	30 (69.8 %)
Interpersonal Hypersensitivity (SENS)	3 (7 %)	3 (7 %)	4 (9.3 %)	30 (69.8 %)
Obsessive- Compulsive (OC)	2 (4.7 %)	5 (11.6 %)	9 (20.9 %)	24 (55.8 %)
Anxiety (ANX)	1 (2.3 %)	4 (9.3 %)	5 (11.6 %)	30 (69.8 %)
Paranoid Ideation (PAR)	3 (7 %)	12 (27.9 %)	13 (30.2 %)	12 (27.9 %)
Somatization (SOM)	7 (16.3 %)	6 (14 %)	8 (18.6 %)	19 (44.2 %)
Psychoticism (PSI)	2 (4.7 %)	4 (9.3 %)	12 (27.9 %)	22 (51.2 %)
Phobic anxiety (FOB)	3 (7 %)	5 (11.6 %)	6 (14 %)	26 (60.5 %)
Anger- Hostility (HOS)	9 (20.9 %)	17 (39.5 %)	8 (18.6 %)	6 (14%)
GSI	3 (7 %)	3 (7 %)	6 (14 %)	28 (65.1 %)
PST	2 (4.7 %)	3 (7 %)	8 (18.6 %)	27 (62.8 %)
PSDI	3 (7 %)	5 (11.6 %)	11 (25.6 %)	21 (48.8 %)

Table 3. Significant differences were found in continuous variable scores between psychotic and non-psychotic subgroups in bivariate analyses

	Psychotic group (N = 22)			Non-Psychotic group (N = 18)		
	n	Mean (DS)	Median (IQR)	n	Mean (DS)	Median (IQR)
Ideal BMI	12	12.8 (6.4)	14.4 (6.3)	11	17.6 (3.3)	18.1 (3.5)
3TRE – Behavioral symptoms	22	6.1 (2.4)	6 (4)	18	4.4 (1.5)	4 (3)
3TRE – Total score	22	16.8 (5.7)	16 (8)	18	12.8 (3.1)	12 (6)
PANSS – Negative symptoms	22	18.1 (9.2)	17.5 (12)	18	11.9 (5.4)	9 (11)
PANSS – Psychopathology	22	50.5 (15.5)	48 (17)	18	38.1 (10.8)	40 (13)
PANSS – Total score	22	79 (25.9)	75.5 (28)	17	56.7 (14.7)	58 (19)
BSQ Total score	22	163.6 (22.4)	167.5 (30)	18	119.8 (45.4)	133.5 (68)
BUT-A - WP	22	4.2 (0.4)	4.4 (0.6)	18	3.2 (1.6)	3.9 (2.1)
BUT-A - A	22	3.1 (0.9)	3.2 (1.2)	18	2.1 (1.2)	2.1 (1.9)
BUT-A - BIC	22	4.1 (0.7)	4.2 (1.1)	18	3 (1.5)	3.4 (2.3)
BUT-A - CSM	22	3.9 (1)	3.9 (1)	18	2.5 (1.4)	3 (2.5)
BUT-A - D	22	3.7 (1.1)	3.8 (1)	18	2.4 (1.3)	2.4 (1.8)
BUT-A - GSI	22	3.9 (0.7)	3.9 (0.6)	18	2.7 (1.3)	3.1 (1.7)
BUT-A - Total score	22	131 (21.9)	132.5 (22.8)	18	89.9 (44.3)	103 (57)
EDE-Q - Shape Concerns	19	5.6 (0.7)	5.9 (0.7)	17	4.2 (1.9)	4.5 (2.5)
EDE-Q - Weight Concerns	19	5 (0.9)	5.2 (1.4)	17	3.6 (1.8)	3.8 (2.8)
EDE-Q - Total score	19	4.4 (0.8)	4.8 (1)	16	3.2 (1.8)	3.7 (2.8)
EDI-3 - DT	15	26.8 (2)	28 (2)	16	17.2 (10.6)	22 (21)
EDI-3 - BD	16	33.9 (5.8)	34.5 (11)	16	24.8 (11.8)	29 (17)
EDI-3 - PA	16	19.6 (5.8)	21 (11)	16	11.2 (6)	14 (11)
EDI-3 - ID	16	24.3 (7.5)	24.5 (13)	15	16.8 (8.2)	18 (15)
EDI-3 - ED	17	14.4 (5.8)	14 (9)	15	7.7 (5)	9 (11)
EDI-3 - EDRC	16	65.5 (12.8)	64 (17)	16	47.4 (25.2)	52 (43)
EDI-3 - IC	16	37.8 (10.1)	37.5 (19)	16	24.4 (13.3)	26.5 (22)
EDI-3 - APC	16	39.3 (11.6)	36.5 (19)	15	24.5 (12.2)	28 (18)
EDI-3 - GPMC	16	153.2 (31.7)	154 (30)	15	111.8 (51.5)	122 (100)
CAPE - Depressive dimension						
Frequency	22	3.4 (0.4)	3.5 (0.7)	17	2.6 (0.6)	2.5 (1)
Freq. + Dist.	21	6.8 (0.7)	7 (0.8)	17	5.6 (1.3)	5.9 (1.9)
Freq x Dist.	21	11.9 (2.2)	12.3 (2.9)	17	9.2 (4.2)	9.3 (5.3)
CAPE - Negative dimension						
Frequency	22	3 (0.5)	3.1 (0.9)	17	2.4 (0.5)	2.5 (0.8)
Freq. + Dist.	21	6.1 (1)	6.3 (1.6)	17	5.1 (1.1)	5.4 (1.8)
Freq x Dist.	21	10 (2.8)	10.1 (4.9)	17	7 (2.6)	6.4 (4.6)
CAPE - Positive dimension						
Frequency	22	2.1 (0.5)	2.1 (0.5)	17	1.7 (0.3)	1.6 (0.3)
Total Freq.	22	40.7 (9.9)	41 (15)	17	32.3 (6.2)	31 (7)
Distress	21	2.1 (0.5)	2.1 (0.7)	17	1.7 (0.4)	1.6 (0.5)
Total Dist.	21	41.5 (10.1)	41 (14)	17	32.1 (7.4)	31 (11)
Freq. + Dist.	21	4.2 (0.9)	4.1 (1.4)	17	3.3 (0.6)	3.3 (0.8)
Freq x Dist.	21	5.3 (2.2)	5.1 (3)	17	3.4 (1.4)	3.2 (1.8)
CAPE-15 Freq.	22	2.2 (0.6)	2.3 (0.9)	17	1.7 (0.4)	1.6 (0.6)
CAPE-15 Dist.	21	2.4 (0.6)	2.4 (0.8)	17	1.8 (0.5)	1.6 (0.7)
BE Freq.	22	2.1 (0.7)	2 (0.8)	17	1.5 (0.4)	1.3 (0.5)
BE Dist.	21	2.2 (0.8)	2.3 (1.2)	17	1.5 (0.5)	1.5 (0.9)
CAPE – Total score						
Frequency	22	2.6 (0.4)	2.6 (0.7)	17	2.1 (0.4)	2.1 (0.5)
Distress	21	2.7 (0.4)	2.5 (0.6)	17	2.2 (0.5)	2.4 (0.8)
Freq. + Dist.	21	5.3 (0.7)	5.1 (1.1)	17	4.3 (0.8)	4.5 (1.1)
Freq x Dist.	21	8.1 (1.9)	8.1 (2.7)	17	5.6 (1.8)	5.9 (3)

Table 3. Continues

	Psychotic group (N = 22)			Non-Psychotic group (N = 18)		
	n	Mean (DS)	Median (IQR)	n	Mean (DS)	Median (IQR)
SCL-90-R - SOM	22	2.3 (0.9)	2.7 (1.4)	18	1.1 (0.9)	0.8 (1.7)
SCL-90-R - OC	22	2.7 (0.6)	2.8 (1)	18	1.7 (0.9)	1.6 (1.1)
SCL-90-R - SENS	22	2.7 (0.5)	2.8 (0.7)	18	1.8 (1)	2.2 (1.5)
SCL-90-R - DEP	22	3 (0.5)	3 (0.8)	18	1.8 (0.9)	1.7 (1.7)
SCL-90-R - ANX	22	2.6 (0.6)	2.6 (0.9)	18	1.5 (0.8)	1.5 (1.2)
SCL-90-R - FOB	22	1.7 (0.8)	1.6 (1.3)	18	0.7 (0.6)	0.6 (0.9)
SCL-90-R - HOS	22	1.5 (0.7)	1.2 (1)	18	0.8 (0.5)	0.7 (1)
SCL-90-R - PAR	22	2.2 (0.7)	2.1 (1)	18	1.4 (0.8)	1.4 (1)
SCL-90-R - GSI	22	2.4 (0.4)	2.3 (0.6)	18	1.4 (0.7)	1.5 (1.2)
SCL-90-R - PST	22	75.6 (7.9)	76 (14.8)	18	54.7 (19.4)	58.5 (27)
SCL-90-R - PSDI	22	2.8 (0.4)	2.8 (0.6)	18	2.1 (0.5)	2.1 (1)
MAIA - Trusting	16	0.5 (0.9)	0 (1)	14	1.6 (1.4)	1.3 (2.3)

Table 4. Significant differences were found in continuous variables between adult and minor subgroups in bivariate analyses

	Minors (N = 18)			Adults (N = 25)		
	n	Mean (DS)	Median (IQR)	n	Mean (DS)	Median (IQR)
MAIA – Self-regulation	15	0.5 (0.5)	0.3 (1)	16	1.7 (1.3)	1.8 (2.7)
MAIA – Attention-regulation	15	1.2 (0.8)	1 (0.9)	15	1.9 (1)	2 (1.4)
MAIA - Noticing	15	2.5 (0.6)	2.5 (0.7)	16	3.2 (1)	3.2 (1.9)
BUT-A - D	18	3.6 (0.9)	3.7 (1.1)	22	2.7 (1.5)	3 (2.3)
BUT-B - PST	18	30.4 (6.1)	32 (12)	22	22.4 (10.6)	26 (13)
EDI-3 - A	16	17.7 (3.5)	18 (6)	16	12.4 (7.1)	14 (10)
EDI-3 - IA	15	15.5 (4.9)	16 (7)	16	11.6 (6)	11 (8)
CAPE-IP Freq.	18	2.7 (0.7)	2.7 (0.9)	21	2.3 (0.6)	2.2 (1)
CAPE-IP Dist.	18	3 (0.7)	3.2 (0.9)	20	2.5 (0.7)	2.6 (1.1)
PANSS – Psychopathology	28	50.6 (14.5)	48 (14)	25	40.1 (13.2)	40 (19)

CAPE was more frequent ($p = 0.039$) and distressing ($p = 0.030$) in minors, which also showed higher general psychopathology scores on the PANSS ($p = 0.0032$). No significant differences were found between groups in clinically significant dissociation (DES/A-DES cut-offs). Mean, median, SD, and IQR values for the variables just described are reported in Table 4.

DISCUSSION

At the study’s midpoint, the sample size was insufficient to assess the prevalence of the anorexic voice and psychotic symptoms in AN. Our preliminary findings elucidated that 70.6% of patients reported experiencing the anorexic voice, which did not demonstrate any correlations with psychoticism. The preliminary evidence of this study suggests a statistically significant association between the presence of the anorexic voice and clinically relevant dissociative symptoms, but not with BID, supporting its likely non-psychotic nature (Morrison et al. 2022). Subthreshold psychotic symptoms were highly prevalent in our sample, highlighting the sensitivity - but limited specificity - of dimensional tools like the CAPE-42.

They were also linked to anamnestic comorbidity with anxiety disorders and borderline personality traits, consistently with Ultra High Risk (UHR) profiles. Psychoticism was associated with significantly higher scores on dimensions related to the typical symptomatology of DNA, including BID (BSQ, BUT-A, EDE-Q, EDI-3), but not with differences in BMI values, although the psychotic subgroup reported a lower ideal BMI. BABS analysis confirmed typical thought patterns seen in the literature, but bizarre thoughts (e.g., about calories in water or saliva) showed qualitative differences. Our study suggests that patients with AN and psychotic symptoms have a more complex psychopathological profile, with higher scores on the SCL-90-R and PANSS. However, the study has limitations, including a small sample size and lack of standardized assessment for the anorexic voice.

CONCLUSIONS

This study highlights the significance of psychotic and psychotic-like symptoms in AN, even in the absence of formal comorbidity. The anorexic voice appears more closely linked to dissociative processes

than to true psychotic phenomena, while BID may contribute to delusional beliefs about body shape and weight. These symptoms are particularly relevant in adolescents and young adults, aligning with the concept of an At-Risk Mental State. Further longitudinal research with larger samples is needed to better define these features and their impact on prognosis and treatment.

Acknowledgements: None.

Conflict of interest: None to declare.

Contribution of individual authors:

Anastasia Grazia Chieppa & Francesca Bellucci: manuscript writing, data collection, literature research and analysis;

Patrizia Moretti: design of the study, data analysis and interpretation, drafting and revision of the manuscript;

Veronica Raspa: design of the study, data analysis;

Alfonso Tortorella: drafting and revision of the manuscript.

All authors approved the final manuscript.

References

1. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*.
2. Collett, N., Pugh, K., Waite, F., & Freeman, D. (2016). Negative cognitions about the self in patients with persecutory delusions: An empirical study of self-compassion, self-stigma, schematic beliefs, self-esteem, fear of madness, and suicidal ideation. *Psychiatry research*, 239, 79–84.
3. Cuzzolaro, M., Vetrone, G., Marano, G., & Garfinkel, P. E. (2006). The Body Uneasiness Test (BUT): development and validation of a new body image assessment scale. *Eating and weight disorders: EWD*, 11(1), 1–13.
4. Freeman D. (2016). Persecutory delusions: a cognitive perspective on understanding and treatment. *The Lancet. Psychiatry*, 3(7), 685–692.
5. Hartmann, A. S., Thomas, J. J., Wilson, A. C., & Wilhelm, S. (2013). Insight impairment in body image disorders: delusionality and overvalued ideas in anorexia nervosa versus body dysmorphic disorder. *Psychiatry research*, 210(3), 1129–1135.
6. Kesting, M. L., & Lincoln, T. M. (2013). The relevance of self-esteem and self-schemas to persecutory delusions: a systematic review. *Comprehensive psychiatry*, 54(7), 766–789.
7. Konstantakopoulos, G., Varsou, E., Dikeos, D., Ioannidi, N., Gonidakis, F., Papadimitriou, G., & Oulis, P. (2012). Delusionality of body image beliefs in eating disorders. *Psychiatry research*, 200(2-3), 482–488.
8. Longden, E., Madill, A., & Waterman, M. G. (2020). Dissociation, trauma, and voice hearing: A critical review. *Psychology and Psychotherapy*, 93(4), 663–687.
9. Morrison, J., Williams, M. O., & Fox, J. R. E. (2022). Negative childhood events and the development of the anorexic voice: A grounded theory. *Psychology and psychotherapy*, 95(4), 1018–1035.
10. Moskowitz, A., & Corstens, D. (2007). Auditory hallucinations: Psychotic symptom or dissociative experience? *Journal of Psychological Trauma*, 6(2–3), 35–63.
11. Noordenbos, G. & Van Geest, Z. (2017). Self-Criticism and Critical Voices in Eating Disorder Patients and Healthy Controls. *JSM Nutritional Disorders*, 1(1), 1003.
12. Perona-Garcelán, S., García-Montes, J. M., Rodríguez-Testal, J. F., Ruiz-Veguilla, M., Benítez-Hernández, M.delM., López-Jiménez, A. M., Arias-Velarde, M. Á., Ductor-Recuerda, M. J., Gómez-Gómez, M. T., & Pérez-Álvarez, M. (2013). Relationship of absorption, depersonalisation, and self-focused attention in subjects with and without hallucination proneness. *Cognitive neuropsychiatry*, 18(5), 422–436.
13. Poletti, M., & Raballo, A. (2023). From trauma to psychosis: Revisiting the continuum model. *Schizophrenia Research*, 251, 110–116.
14. Tiernan, B., Tracey, R., & Shannon, C. (2014). Paranoia and self-concepts in psychosis: a systematic review of the literature. *Psychiatry research*, 216(3), 303–313.
15. Waite, F. & Freeman, D. (2017). Body image and paranoia. *Psychiatry research*, 258, 136–140.

Correspondence:

Patrizia Moretti, MD

Section of Psychiatry, Department of Medicine and Surgery, University of Perugia

Piazzale Lucio Severi, 1, 06132, S. Andrea delle Fratte, 06132, Perugia (PG), Italy

E-mail: moretticampi@gmail.com