Anorexia Nervosa and Somatoform Dissociation: A Neglected Body-Centered Perspective

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Abstract

Dissociation in anorexia nervosa (AN) is common (literature re

ported 29% of dissociative disorders in eating disorders) and higher in patients with binge-purging AN (BP-AN) than in those with restricter AN (R-AN). However, the distinction between somatoform (SomD) and psychoform dissociation (PsyD) is understudied. We aimed to assess the differences in PsyD and SomD, eating-related, general, and body-related psychopathology, and childhood trauma between subtypes of AN. Then, we attempted to describe a subgroup of patients with AN with marked SomD comparing them to patients without SomD, also controlling the results for PsyD and AN subtypes. Inpatients with AN (n = 111; 109 women and 2 men) completed self-reported questionnaires evaluating dissociation, eating-related, body-related, and general psychopathology, and childhood abuses. Patients with BP-AN reported higher SomD and PsyD and a more severe clinical picture than those with R-AN. The SomD-group (n = 41) showed higher eating concerns, trait-anxiety, body-related variables, and sexual/physical abuse compared to the no-SomD group (n = 70), independently of AN subtype and PsyD symptoms. Results described particular features of patients with AN and SomD. Data, clinically, suggest a careful assessment, for both SomD and PsyD, especially when a history of bodily-impacting trauma is present, potentially fostering dissociation-informed interventions.

Introduction

Dissociation is a complex organismic condition "whereby certain mental functions which are ordinarily integrated with other functions presumably operate in a more compartmentalized or automatic way usually outside the sphere of conscious awareness or memory recall" (Ludwig, 1983, p. 93). Dissociation could be also associated with different patterns of behavior and neurophysiological activation (Van der Hart, 2000). In this context, literature described two types of dissociation. The first one, psychoform dissociation (PsyD), is the most studied and reported; it refers to the detachment of mental contents from consciousness, resulting in an impairment of awareness, memory, identity, and emotion (American Psychiatric Association, 2013). The second type, somatoform dissociation (SomD), regards body functions and leads to symptoms impacting on body movements and sensations, such as anesthesia, paralysis, and pain, without a known medical cause (Van der Hart et al., 2006). Relatedly, it was hypothesized that body-related components of an experience (i.e., body sensations and reactions related to an event such as pain, freezing, motor alterations), often potentially traumatic, are not properly integrated into the personality (e.g., Van der Hart et al., 2006).

Beyond dissociative disorders, dissociation is an important transdiagnostic feature in psychiatry; in particular, the highest rate of dissociation was found in dissociative disorders, followed by post-traumatic stress disorder and borderline personality disorder (e.g., Lyssenko et al., 2018). Moreover, an association between emotion dysregulation and somatization was found (e.g., Waller & Scheidt, 2006); in particular, authors described a link between under-regulation of emotions and somatoform dissociative experiences (e.g., Van Dijke et al., 2010). Additionally, dissociation was commonly described also in schizophrenia, and anxiety disorders (e.g., Lyssenko et al., 2018), and in a study on eating disorders in which the prevalence of dissociative disorders was 29% (e.g., McCallum et al., 1992).

Relatedly, individuals with Anorexia Nervosa (AN) frequently present dissociative symptoms, especially depersonalization, including distortion of body schema (e.g., Lyssenko et al.,

2018). AN is a severe eating disorder with the highest rate of mortality among psychiatric disorders (e.g., Chidiac, 2019). Patients with AN can be diagnosed with restricting AN (R-AN) when the loss of weight is reached mostly through caloric restriction, and binge-purging AN (BP-AN), when episodes of binge eating followed by purging behaviors occur. A hallmark of AN is the alteration of body image (i.e., despite the extreme thinness, frequently patients keep on perceiving themselves as fat; American Psychiatric Association, 2013). Body image disturbance is so important in AN to be described as a causal factor involved in the onset, maintenance, and relapse of the illness (Phillipou et al., 2018; Williamson et al., 2004). Body image alteration in AN is pervasive and three components have been described: a) cognitive-affective (e.g., overestimation of weight and shape, body dissatisfaction), b) perceptual (e.g., alterations in visual perception or tactile processing), and c) behavioral (e.g., body checking and body avoidance; Glashouwer et al., 2019). As a result, from a psychopathological perspective, it was described an overall state of body alienation in which patients perceive the body as stranger and frightening, leading to a need to control it (Stanghellini et al., 2021; Svenaeus, 2013).

An important, although understudied, research field regards the presence of dissociation in AN. The literature showed that, compared to healthy individuals and patients with other psychiatric disorders, those with AN not only report a higher level of dissociation (Lyssenko et al., 2018; Nilsson et al., 2020), but also more severe eating-related symptoms, and remarkable body shape concerns when dissociation is present (Gailledrat et al., 2016; Nilsson et al., 2020). Importantly, dissociation is often a post-traumatic sequela (American Psychiatric Association, 2013); since trauma is one of the risk and maintaining factors of AN (Longo et al., 2019; Palmisano et al., 2018), some researchers proposed dissociation, mostly PsyD, as a mediator between a potentially traumatizing event, especially occurred during childhood, and the onset of AN (Grave et al., 1997; Pugh et al., 2018). Finally, PsyD, as well as potentially traumatic experiences, was reported more in patients with BP-AN than in those with R-AN (Beato et al., 2003; Palmisano et al., 2018).

With that said, literature on dissociation mainly refers to PsyD or an undefined construct; therefore, surprisingly, SomD has been much less studied so far in AN, notwithstanding the aforementioned centrality of the body, and the link with emotion dysregulation, a core feature of EDs (e.g., Van Dijke et al., 2010). The state-of-the-art reports higher SomD in patients with BP-AN than in those with R-AN (e.g., Waller et al., 2003), and a relationship between somatic aspects of dissociation and body dissatisfaction (Fuller-Tyszkiewicz & Mussap, 2008; Oliosi & Dalle Grave, 2003); however, data are too few to conclude. Several questions, thus, remain unanswered, including the comparison of SomD between AN subtypes or the investigation of the eventual impact of PsyD and SomD, taken separately, on eating-related and general psychopathology in patients with AN. Therefore, we focused on the eventual differences in both PsyD and SomD between subtypes of AN and on the identification of a subgroup of patients with AN characterized by marked SomD.

Given the overarching goal of investigating dissociation in AN, with a focus on SomD, we set three specific aims: a) to investigate differences between patients with R-AN and BP-AN in SomD and PsyD, as well as in clinical variables, eating-related and general psychopathology, body-related variables and childhood abuses; b) to explore differences between patients with and without SomD with particular focus on body-related measures; c) to investigate differences between patients with and without SomD also statistically controlling for the role of AN subtype and PsyD. We hypothesized that patients with BP-AN would report higher scores in SomD than those with R-AN and that patients with SomD would be more clinically severe than patients without SomD. Finally, we expected that differences between individuals with and without SomD would be independent of AN subtype and PsyD.

Materials and Methods

Participants

Patients recruitment lasted from January 2019 to April 2021. We consecutively recruited 119 inpatients with AN, both R-AN and BP-AN, at the Eating Disorders Centre of the 'Città della Salute

e della Scienza' hospital of the University of Turin, Italy. Patients are admitted to our center in a very acute and life-threatening phase of AN. Multidisciplinary treatment is delivered following international guidelines. According to our previous work, patients with AN stay in the hospital on average 35.7 days (Marzola et al., 2021).

Three patients refused to participate in the study, while five participants did not complete the assessment. The final sample was composed of 111 inpatients. Inclusion criteria were: a) diagnosis of AN according to the Structured and Clinical Interview for the DSM-5 (SCID-5; First et al., 2015); b) age >18 years. Exclusion criteria were: a) medical problems (e.g., diabetes); b) history of cranial trauma with loss of consciousness; c) psychotic disorders and/or bipolar disorders; d) current substance and/or alcohol use.

Participants were divided into two groups according to their Somatoform Dissociation Questionnaire (SDQ) total score. In keeping with previous literature (Brunner et al., 2000; Nilsson et al., 2020; Vanderlinden et al., 1993), participants with a SDQ global score >30 were included in the group with SomD (i.e., SomD group), while individuals with a SDQ score below 30 constituted the No-SomD group.

Patients signed a written informed consent following the Ethical Committee of our University that approved the present study (registration number CS2/840).

Procedure

An experienced psychiatrist interviewed patients upon admission to collect clinical and demographic data. In this context, AN diagnosis was confirmed with a structured clinical interview based on DSM-5 criteria (First et al., 2015); moreover, the interviewer checked for the presence of psychiatric comorbidities. Trained nurses calculated Body Mass Index (BMI) by measuring height and weight.

Materials

Participants were asked to complete the following self-report questionnaires during the first days of hospitalization:

- Eating Disorder Examination Questionnaire, Italian validation (EDE-Q; Calugi et al., 2017): 28 items assess features and behaviors typical of eating disorders: dietary restrain, eating concerns, weight concerns, and shape concerns. The questionnaire has a good internal consistency (Cronbach's alpha values ≥ 0.90; Calugi et al., 2017).

- Body Shape Questionnaire (BSQ: Cooper et al., 1987): it evaluates body dissatisfaction. Higher scores indicate higher body dissatisfaction. Internal consistency is acceptable (Cronbach's alpha 0.82–0.89; Franko et al., 2012).

- Beck Depression Inventory (BDI; Beck et al., 1961): it measures the severity of depressive symptoms. A higher value means more depressive symptomatology. Internal consistency is high (Cronbach's alpha = 0.86; Wang & Gorenstein, 2013).

- State-Trait Anxiety Inventory (STAI-Y; Spielberger, 2010): anxiety, both currently and as a stable trait, is assessed by two sets of questions with answers ranging on a scale from 1 to 4. Cronbach's alpha values range from 0.86 to 0.95 (Spielberger, 2010).

- Dissociative Experience Scale (DES; E. M. Bernstein & Putnam, 1986): it investigates dissociative symptoms. A dissociative disorder is suspected with a global score above 30 (Demitrack et al., 1990). The Italian version has a good internal consistency (Cronbach's alpha values between 0.81 and 0.94; Bombi et al., 1996).

- Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis et al., 1996): it explores somatoform dissociative symptoms (i.e., blindness, anesthesia, and analgesia). A cutoff score of $\geq$30 was set according to previous research (Brunner et al., 2000; Nilsson et al., 2015; Vanderlinden et al., 1993). The Italian version has a high internal consistency with Cronbach's alpha value of 0.96 (E. R. S. Nijenhuis, 2004).

- Body Checking Questionnaire, Italian validation (BCQ; Calugi): it measures the body checking behavior with good internal consistency (Cronbach's alpha from 0.84 to 0.92; Calugi et al., 2006).

- Body Image Avoidance Questionnaire (BIAQ; Rosen et al., 1991): it assesses the tendencies to avoid body image contents. The internal consistency is good, with Cronbach's alpha values from 0.64 to 0.80 (Maïano et al., 2009).

- Childhood Trauma Questionnaire (CTQ; D. D. Bernstein et al., 1994): it investigates the severity of five types of childhood abuse: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Internal consistency is good (Cronbach's alpha value = 0.91; Scher et al., 2001).

Statistical analysis

The SPSS 27.0 statistical software package (IBM SPSS Statistics for Windows) was used. We run an independent sample t-test to assess differences in continuous variables between R-AN and BP-AN and between patients with and without SomD.

When differences were significant, analysis of covariance (ANCOVA) was conducted to control for the AN subtype and score of PsyD. Effect sizes in t-test were evaluated with Cohen's d as follows: negligible effect: d = −.15 – .15; small effect: d = .15–.40; medium effect: d = .40–.75; large effect: d = .75–1.10; very large effect: d = 1.10–1.45; huge effect: d = 1.45.

As regards ANCOVA, we calculated effect sizes with partial eta squared, estimating differences as small $\eta p2$ = .01-.06; moderate $\eta p2$ = .06-.14; large $\eta p2$ > .14 (Cohen, 1988).

Results

All patients were Caucasian; the majority of participants were female (n = 109, 98.2%). Those diagnosed with R-AN were 69 (62.2%) while those with BP-AN were 42 (37.8%).

Comparison of patients with R-AN and BP-AN on dissociation and clinical variables

Patients with BP-AN reported similar age but more severe clinical variables compared to those with R-AN. Dissociation, both PsyD and SomD, was higher in the BP-AN group compared to the R-AN one.

Individuals with BP-AN scored higher than the R-AN group on all EDE-Q subscales as well as on BDI and STAI, measuring depressive and anxiety symptoms, respectively (Supplementary Table).

Concerning body-related variables, a significant difference was found in the BSQ, with patients with BP-AN scoring higher than those with R-AN.

Finally, patients with BP-AN reported higher severity of emotional abuse, physical abuse, emotional neglect, and CTQ total score, compared to individuals with R-AN (Supplementary Table).

Comparison of patients with and without somatoform dissociation

Patients with SomD (SDQ-20 ≥ 30; Brunner et al., 2000; Nilsson et al., 2020; Vanderlinden et al., 1993) did not report clinical differences compared to those without SomD; in contrast, patients with SomD showed higher scores than the no-SomD group on all EDE-Q subscales, as well as on PsyD, depression and state anxiety, all body-related aspects, and childhood trauma.

After statistical control for AN subtype, the differences in the EDE-Q between SomD and no-SomD groups remained significant except for dietary restraint.

In contrast, PsyD impacted more the differences between SomD and no-SomD groups: only the discrepancy in the eating concerns subscale of EDE-Q remained significant. As regards PsyD, the SomD group reported higher scores compared to the no-SomD one, even after controlling for AN subtype. Concerning anxiety, STAI-state survived, while the difference in depression did not.

Patients with SomD reported significantly higher scores on all body-related variables compared to those in the no-SomD group; such differences survived independently of AN subtype and PsyD.

Finally, patients with SomD scored higher in emotional abuse, physical abuse, sexual abuse, and CTQ total score than the no-SomD group; after statistical control, the differences in physical and sexual abuse remained significant (Table 1).

Table 1. Differences between patients with and without somatoform dissociation (SomD).

	No-SomD (n = 70) Mean (SD)	SomD (n = 41) Mean (SD)	t	P	Cohen's d	p*	η_p^2	P**	η_p^2
Clinical variables									
Age	23.8 (7.8)	25.3 (8.3)	−.954	.342	.19	-	-	-	-
Years of illness	5.8 (6.0)	6.0 (6.2)	−.197	.845	.03	-	-	-	-
BMI	14.9 (3.1)	15.7 (2.8)	−1.238	.219	.27	-	-	-	-
Binge-eating episodes per week	2.9 (9.9)	5.1 (13.2)	−1.011	.314	.2	-	-	-	-
Vomit episodes per week	3.6 (11.0)	5.1 (13.1)	−.669	.505	.13	-	-	-	-
Number of previous AN-related hospitalizations	2.1 (2.3)	2.7 (3.6)	−1.006	.317	.21	-	-	-	-
Eating-related pathology EDE-Q									
Dietary restraint	2.8 (2.0)	3.9 (2.2)	−2.339	**.022**	.53	.068	.038	-	-
Eating concerns	2.7 (1.6)	3.8 (1.3)	−3.267	**.002**	.74	**.007**	.082	**.048**	.045
Shape concerns	3.8 (1.6)	4.7 (1.5)	−2.643	**.010**	.58	**.038**	.049	.213	.018
Weight concerns	3.3 (1.9)	4.4 (1.5)	−3.055	**.003**	.63	**.012**	.070	.109	.030
Total score	3.2 (1.6)	4.2 (1.5)	−3.028	**.003**	.65	**.017**	.064	.147	.025
General psychopathology									
DES	15.4 (13.0)	35.5 (21.2)	−6.134	**<.001**	1.26	**.019**	.053	-	-
BDI	15.6 (7.8)	20.3 (7.6)	−2.871	**.005**	.61	**.012**	.067	.299	.012
STAI-state anxiety	54.2 (13.2)	64.1 (9.6)	−3.793	**<.001**	.83	**.001**	.121	**.016**	.064
STAI-trait anxiety	57.8 (12.3)	63.0 (14.8)	−1.838	.069	.39	-	-	-	-
Body-related variables									
BSQ	105.9 (40.9)	147.8 (35.2)	−4.432	**<.001**	1.09	**<.001**	.249	**<.001**	.259
BCQ	51.7 (22.7)	74.2 (24.6)	−3.924	**<.001**	.97	**<.001**	.255	**<.001**	.224
BAQ	40.0 (15.3)	51.0 (13.0)	−3.157	**.003**	.77	**<.001**	.198	**.001**	.179
Childhood Trauma									
Emotional abuse	9.2 (4.1)	12.6 (4.6)	−3.926	**<.001**	.80	**.001**	.100	.077	.029
Physical abuse	5.3 (1.1)	7.1 (3.5)	−3.897	**<.001**	.79	**.001**	.105	**.038**	.040
Sexual abuse	5.9 (2.9)	9.0 (6.6)	−3.323	**.001**	.68	**.002**	.082	**.045**	.038
Emotional neglect	11.3 (4.5)	12.3 (4.7)	−1.038	.302	.22	-	-	-	-
Physical neglect	6.2 (2.1)	6.7 (2.1)	−1.260	.210	.24	-	-	-	-
CTQ total score	7.6 (2.2)	9.3 (3.2)	−3.318	**.001**	.66	**.004**	.074	.063	.032

Legend: BMI = body mass index; EDE-Q = Eating Disorder Examination Questionnaire; BDI = Beck Depression Inventory; STAI = State-Trait Anxiety Inventory; SDQ-20 = Somatoform Dissociation Questionnaire;; BSQ = Body Shape Questionnaire; BCQ = Body Checking Questionnaire; BIAQ = Body Image Avoidance Questionnaire; CTQ = Childhood Trauma Questionnaire.

p* = model adjusted for AN subtype.

p** = model adjusted for psychoform dissociation.

Cohen's d effect size: negligible effect: d = −.15 − .15; small effect: d = .15 − .40; medium effect: d = .40 − .75; large effect: d = .75–1.10; very large effect: d = 1.10–1.45; huge effect: d = 1.45.

η^2_p = partial eta − squared; Cohen's effect size: 0.01–0.06 = small effect; 0.06–0.14 = moderate effect; >0.14 = large effect.

Discussion

The present study aimed to explore somatoform dissociation (SomD) in AN focusing on its relationship with AN subtype, clinical variables, eating-related and general psychopathology, bodily aspects, childhood trauma, and psychoform dissociation (PsyD). Three main findings emerged: first, individuals with BP-AN showed the highest PsyD and SomD; second, patients with SomD reported significantly higher scores on the majority of the variables than those without SomD; third, the differences between patients with and without SomD were largely independent of AN subtype and PsyD.

Regarding the comparison between AN subtypes, our results confirmed the a priori hypotheses. Indeed, the BP-AN group reported higher PsyD and SomD than the R-AN group, in line with studies describing higher levels of both types of dissociation in patients with bulimic variants of Eating Disorders (Lewis et al., 2021; Longo et al., 2020). Moreover, patients with BP-AN presented a longer duration of illness, and a higher number of previous AN-related hospitalizations compared to those with R-AN. Furthermore, those with BP-AN reported higher severity in eating-related and general psychopathology, in keeping with previous studies (Deborah Lynn Fernandez-Aranda et al., 2007; Reas & Rø, 2018; Salbach-Andrae et al., 2008), and in body shape concerns, in line with earlier research (e.g., Marzola et al., 2020). Taking these data together, patients with BP-AN showed a more severe clinical picture than those with R-AN. We could speculate that emotion dysregulation may contribute to this difference. Previous studies, indeed, demonstrated higher levels of emotion dysregulation, central in the maintenance of EDs (e.g., Haynos et al., 2014), in patients with BP-AN compared to those with R-AN (e.g., Longo et al., 2019); this could be particularly relevant regarding the differences between AN subtypes in dissociation, given the well-known link between emotion dysregulation and dissociation (e.g., Nester et al., 2022). Finally, results on childhood abuses confirmed previous findings showing a higher prevalence of potentially traumatic experiences and

childhood trauma in those with BP-AN than in those with R-AN (Longo et al., 2019; Palmisano et al., 2018).

Focusing on the somatic components in such a body-suffering disorder as AN, we performed a fine-grained analysis of SomD garnering innovative data on this understudied topic. No significant differences in clinical variables emerged between patients with and without SomD. However, the SomD group scored higher on all EDE-Q subscales. Moreover, the majority of the differences on the EDE-Q (excluding the restraint subscale) were independent of the AN subtype; nonetheless, adding PsyD to the model, only the difference in eating concerns remained significant. The first round of data is in line with the few existing evidence on SomD in EDs (e.g., Beato et al., 2003). In the present study, the statistical control isolated a specific contribution of SomD on marked eating concerns, independently of diagnostic subtype and PsyD score. Future studies should replicate this finding. In addition, since the subscale eating concerns investigates feelings of embarrassment, and fear of losing control, further researchers could verify the hypothesis of a link between symptoms of somatic dissociation and the concerns about food as a source of distress and unease. Relatedly, 90% of patients with AN endorse gastrointestinal symptoms, and abdominal pain and nausea persisting after treatment (Salvioli et al., 2013; Zucker et al., 2020). Moreover, the speculation and future interest could be extended to the field of somatoform disorders. Indeed, eating disorders and somatic symptoms are often intertwined, as shown by Valente and colleagues (2017) who found high rates of somatoform disorders among female patients with eating disorders. It could be intriguing to explore the role of somatoform dissociation in this entangled picture.

Mirroring the eating psychopathology data, symptoms of PsyD, anxiety, and depression were higher in the SomD than in the no-SomD group. Concerning PsyD, the datum highlights that individuals with SomD report globally more dissociation compared to the no-SomD group, independently of AN subtype. It also confirms the concept of dissociation as an organismic condition affecting both body and mind and involving different psychophysiological systems (E. Nijenhuis et

al., 2010). These data, moreover, expand knowledge on the specific role of SomD as characterizing a subgroup of patients with a more severe pattern of anxious and depressive symptoms, as previously described with more generic measures of dissociation (Lyssenko et al., 2018). However, only the difference in state-anxiety was independent of AN subtype and PsyD score. Although the literature on dissociation and symptoms of both anxiety and depression is far from being conclusive (e.g., Černis et al., 2021), our data preliminarily support a more specific relationship between SomD and state-anxiety while PsyD and AN subtype contributed to partially explain the heightened depressive symptoms. In fact, although not differentiating PsyD and SomD, previous research described a co-occurrence of anxiety and dissociation (Cartmill et al., 2014; Myers & Llera, 2020) in line with our results. Putting the data together, since eating concerns and anxiety could be related, further studies may deepen the role of SomD in this relationship. If confirmed, the presence of SomD in patients with AN could boost anxiety levels and subsequently patients' preoccupation with eating eventually leading to a maintaining circle.

Concerning body-related variables, patients with SomD reported higher levels than no-SomD patients on body shape, avoidance, and checking. Our data are in line with the sparse literature reporting an association between SomD and body dissatisfaction (Beato et al., 2003; Fuller-Tyszkiewicz & Mussap, 2008). However, it is important to note that such differences in all body-centered variables remained significant independently of AN subtypes and PsyD score. On one hand, this finding confirms the centrality of the body in AN but, on the other hand, it could be hypothesized that SomD could, in turn, strengthen the severity of the body-related symptoms of AN, potentially identifying a specific treatment target. Moreover, it should be considered that, in line with earlier data (Beato et al., 2003; Fuller-Tyszkiewicz & Mussap, 2008), SomD could alter body sensations and perception, also leading to a more impaired body image. This condition could result either in avoidance or compulsion toward the body also as grounding and anxiety-relieving techniques; therefore, the measurement of body-related variables could offer a clinically useful perspective on the body. Moreover, it is remarkable that the EDE-Q could be less proper to measure body-related

aspects compared to specific questionnaires (e.g., Body Shape Questionnaire); relatedly, Peterson and colleagues (2007) highlighted that EDE-Q is not always able to distinguish between the different body-related variables taken into account (e.g., shape concerns and weight concerns).

Since dissociation was described as a mediator between childhood trauma and eating disorders (e.g., Palmisano et al., 2018), we also considered differences in reported childhood trauma between the groups with and without SomD. Results showed higher scores in emotional abuse, physical abuse, sexual abuse, and CTQ global score in SomD group compared to the group without it. These findings are in keeping with the literature on dissociation available so far (e.g., Palmisano et al., 2018); however, our results additionally showed that such data were maintained even after controlling for AN subtype. Therefore, although the binge-purging subtype consistently reported greater potentially traumatic events in childhood than the restricting one (e.g., Longo et al., 2019), the differences found in the SomD group survived; this could have a role in designing individualized treatments. Introducing the PsyD score to the model, only the differences in physical and sexual abuse remained significant. It is of interest since these types of abuses, more markedly reported by patients with SomD, are specifically related to a direct traumatic impact on the body; so this subgroup of patients should be carefully considered in the therapeutic process. Currently, the debate on this matter is open since only one study described a strong association between SomD and physical abuse, but not with sexual abuse. However, that study recruited a non-clinical sample (Maaranen et al., 2004) so no reliable comparisons are allowed. Notwithstanding, patients with SomD significantly reported greater physical and sexual abuse than those not in this group, suggesting the presence of a violent childhood trauma directly impacting the body. This relationship, indeed, has been deepened since E. R. S. Nijenhuis et al. (1998) described that somatoform responses are strongly connected to potentially traumatizing events threatening body and life, especially in childhood, when the psychobiologic integrative abilities are not fully developed. In these cases, "the body keeps the score" of an experience not properly integrated in the personality (e.g., Van Der Kolk, 2014, p. 1).

In closing, we investigated the differences between patients with and without SomD in AN, also considering AN subtype and PsyD. Despite the strength of expanding knowledge on dissociation in AN, some limitations exist: firstly, the cross-sectional design prevents causal relationships; secondly, self-report measures were adopted, increasing the risk of recall bias, especially with data on dissociation and potential childhood trauma; thirdly, although we tried to statistically disentangle the constructs, SomD and PsyD are intertwined and their isolation is not always feasible in clinical practice. Lastly, no standardized assessment for dissociative disorders and somatoform disorders full-blown diagnosis was conducted; future studies should mind this gap. Relatedly, SomD group includes patients with SDQ score above or equal to 30, which, according to the literature, may indicate a dissociative disorder (Brunner et al., 2000; E. Nijenhuis, 2017; Nilsson et al., 2020; Vanderlinden et al., 1993); this could be a critical point requiring a specific treatment protocol for both eating and dissociative disorders. Moreover, patients with somatoform disorders could be an interesting benchmark since they, as opposed to individuals with dissociation, tend to focus on the body instead of on psychological symptoms. However, these data could entail interesting clinical implications. Results, indeed, support the identification of a subgroup of patients with AN, characterized by SomD, who show marked levels of eating concerns, state-anxiety, body-related aspects, and body-related childhood abuses, independently of their diagnostic subtype and the presence of PsyD. This could inform the development of treatments aiming to help patients modulate their suffering relationship with the body potentially also improving somatoform dissociative symptoms. Moreover, integrated treatment protocols including trauma-focused interventions should be offered in clinical practice with patients with dissociation and AN (e.g., Brewerton et al., 2018).

Data availability statement: anonymized data are available upon motivated request to the corresponding author.

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