



# Emotional dysregulation and eating symptoms in gender dysphoria and eating disorders: the mediating role of body uneasiness

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Accepted: 13 January 2024  
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## Abstract

Emotional dysregulation is a key transdiagnostic dimension of several clinical conditions, including eating disorders (EDs) and gender dysphoria (GD). Not only is there frequent comorbidity between EDs and GD, but GD individuals also commonly experience ED symptoms and body-image disturbances. However, more research is needed to understand how specific body-related experiences may differently interact with difficulties in emotion regulation and dysfunctional eating behaviors in EDs and GD. Thus, the present study aimed at exploring potential associations between emotional dysregulation and ED symptomatology in individuals diagnosed with anorexia nervosa (AN), bulimia nervosa (BN), or gender dysphoria (GD), also considering the mediating role of specific dimensions of body uneasiness. A national sample of  $N=96$  help-seekers assigned female at birth ( $n=32$  with AN,  $n=32$  with BN,  $n=32$  with GD) was recruited from two specialized care centers. Participants completed the Eating Disorder Inventory-3 (EDI-3) and the Body Uneasiness Test (BUT), while the Shedler-Westen Assessment Procedure-200 (SWAP-200) was used to evaluate emotional dysregulation. Findings showed that several body uneasiness dimensions mediated the relationship between emotional dysregulation and ED symptoms, in both AN-BN and GD participants. In GD individuals, body avoidance emerged as a significant mediator of the relationship between emotional dysregulation and ED symptoms, whereas in both AN-BN patients and GD individuals, depersonalization toward the body emerged as a significant mediator. The results suggest that the interplay between emotional dysregulation, body uneasiness, and ED symptoms may be crucial for the development of comprehensive and tailored prevention strategies.

**Keywords** Eating disorders · Gender dysphoria · Personality · Body image · Mediation analysis

## Introduction

Emotional dysregulation is a multidimensional concept that describes difficulties identifying, understanding, and adaptively responding to one's emotional responses (Monell et al., 2018), as well as the tendency to express emotions out of context and change emotional states either too quickly or too slowly (Gratz & Roemer, 2004). While the precise definition is debated in the developmental psychology and personality literature (Sloan et al., 2017), researchers have hypothesized that it may play a central role in the development and maintenance of psychopathology. In this vein, it is thought to give rise to affective instability (i.e., mood intensity, reactivity, and variability) and other symptoms, including identity disturbance, interpersonal dysfunction, and self-harm (Carpenter & Trull, 2013). Several studies have found that trait-like emotional dysregulation is related to a

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broad range of both clinical and subclinical conditions, such as anxiety, depression, self-harm, substance use, personality disorders, and—importantly for the present research—mental health issues and distress in individuals with gender dysphoria and eating pathologies (Kapatais et al., 2023; Sloan et al., 2017; Trompeter et al., 2022). Several diagnostic models also suggest that this variable may be a core underlying dimension and transdiagnostic feature of certain pathological conditions. For instance, the *Psychodynamic Diagnostic Manual* (PDM-2; Mirabella et al., 2023) places the capacity to experience, communicate, and regulate emotions within the basic domain of overall mental functioning, which contributes to giving shape and meaning to patients' personality functioning and symptomatic patterns. Furthermore, the recently established Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov et al., 2017) includes both internalized (i.e., negative affectivity) and externalized spectra as higher-order constructs encompassing features shared by most forms of psychopathology.

Specifically, studies investigating both eating disorders (EDs) and gender dysphoria (GD) samples have shown the presence of unthinkable, negative emotions that cannot be adaptively modulated, and are therefore experienced and expressed through the body, which becomes the primary tool for managing these feelings (Mirabella et al., 2020; Monell et al., 2018). EDs have been widely associated with significant impairments in affective functioning, including heightened negative emotionality, lack of acceptance of emotions, difficulties controlling emotion-based impulses, and decreased access to emotion regulation strategies. In this vein, efforts to control and modify one's body weight and shape may be understood as dysfunctional attempts to modulate and regulate intense emotional outbursts (Monell et al., 2018). On the other hand, individuals with GD often report high levels of psychological distress and strong negative affects related to a perceived gender incongruence, which frequently manifest in body avoidance, non-acceptance, and self-loathing. Such patterns may underlie ED-related behaviors aimed at modifying one's body weight and shape in this population (Mirabella et al., 2020).

These findings build a compelling argument that emotional dysregulation may play a central role within EDs and GD, contributing to the complex patterns of comorbidity between them. Additionally, they suggest that feelings about the body may play a significant role in determining dysfunctional eating behaviors. However, to the best of our knowledge, no prior study has specifically compared ED patients and GD individuals with respect to emotional dysregulation and ED-related symptoms, while also considering different components of bodily self-experience—a pivotal domain of functioning in both of these populations.

## Emotional dysregulation within eating disorders and gender dysphoria

EDs are severe mental illnesses associated with significant clinical impairment, high psychiatric and medical comorbidity, elevated mortality, decreased quality of life, and significant recidivism (APA, 2022). The literature suggests that difficulty regulating emotions may contribute to the development and maintenance of ED symptoms, as well as overall symptomatic impairment. From a theoretical standpoint, ED symptoms (e.g., weight phobia, body checking, control of food intake, impulsive food behaviors) may represent dysfunctional attempts to inhibit, avoid, or shift attention away from certain emotions (Christensen & Haynos, 2020; Stice & Shaw, 2002). Research has also shown that emotional dysregulation may influence the severity and clinical course of ED symptoms (Monell et al., 2018; Racine & Wildes, 2013). In this regard, Selby et al. (2008) found that ED patients tended to experience both negative and positive emotions more intensely than controls. Thus, the authors hypothesized that overwhelming, unmodulated emotions may trigger ED behaviors. Furthermore, emotional dysregulation may differ according to the main ED patterns, especially among cisgender females (e.g., Monell et al., 2018). Specifically, cisgender female patients with more restrictive ED symptoms tend to experience difficulties forming mental representations of emotions and acknowledging and expressing their emotional needs; these deficits, in turn, predict greater ED symptomatic impairment (Oldershaw et al., 2015; Racine & Wildes, 2013). On the other hand, studies involving cisgender female patients with more binge eating and purging symptoms have indicated that these patients tend to engage in reckless and impulsive behaviors in an attempt to escape from negative emotions, and this, in turn, may influence their body image and ED symptoms (Berner et al., 2017).

Previous research has aimed at subtyping ED patients using a wide range of assessment measures, including the Shedler-Westen Assessment Procedure-200 (SWAP-200; Westen & Shedler, 1999). Out of the three personality profiles that have been identified (considering both adult and adolescent ED samples), the *emotionally dysregulated* group has been shown to demonstrate the highest levels of impairment. Emotionally dysregulated ED patients are characterized by: intense emotions that tend to be out of control; impulsive behaviors; difficulties dealing with anger, sadness, anxiety, or hostility; and a tendency to desperately seek relationships in order to self-soothe (Westen & Harnden-Fisher, 2001). Compared to other personality profiles, dysregulated personality profiles show worse adaptive functioning, distinctive patterns of comorbidity (e.g., with post-traumatic stress disorder, addiction, and borderline personality disorder), traumatic histories and externalizing disorders in first-degree relatives, a painful sense of identity

incoherence, and worse treatment outcomes (Thompson-Brenner et al., 2008). Thus, there is sufficient evidence to suggest that emotional dysregulation is associated with ED behaviors and symptoms, and that the subgroup of ED patients with features of emotional dysregulation are at particular risk of developing negative mental health outcomes (Muzi et al., 2021; Trompeter et al., 2022).

Despite considerable evidence of an association between emotional dysregulation and several psychopathological conditions (e.g., EDs), and the role of emotional dysregulation as a transdiagnostic factor, there remain significant gaps in the literature. In particular, little is known about how emotional dysregulation may affect certain psychopathological conditions such as GD, and whether it operates differently in GD versus EDs.

Descriptive diagnostic systems define GD<sup>1</sup> as a perceived incongruence between one's experienced or expressed gender and one's gender assigned at birth, resulting in significant psychological distress and impairment in important areas of functioning (APA, 2022). Research has shown that the inner process that leads to an awareness of gender incongruity may be accompanied by broader difficulties regulating and managing negative emotions, as well as negative emotional investment in one's body (e.g., Cusack et al., 2022). Indeed, theoretical models of GD outline the presence of intense and often overwhelming affective states, characterized by anxiety, depression (sometimes marked by self-harm and suicidal ideation), and anger directed toward one's body, external factors, or individuals seen to oppose the expression of one's perceived gender (Lingiardi et al., 2017). While GD has become more visible in recent years, GD individuals still experience stigma, discrimination and/or rejection due to their gender identity, across a range of social situations and contexts, including healthcare settings (Mirabella et al., 2020). Such experiences may give rise to emotional distress (Cusack et al., 2022) that is difficult to regulate and process, which may lead to impulsive and under-regulated behaviors, such as non-suicidal self-harm, suicidality, and uncontrolled eating (Kapatais et al., 2023; Mirabella et al., 2020).

While empirical evidence is still scarce, research has suggested that emotional dysregulation may play a key role in GD. Specifically, several studies have underlined the prevalence of Cluster B personality patterns (e.g., borderline and narcissistic disorders) among GD individuals. Madeddu et al. (2009) found a 22% prevalence of Cluster B personality disorders, characterized by outbursts of anger and impulsivity. Moreover, a recent study on adolescents with GD described a link between

negative emotional investment in the body and broader difficulties regulating and managing negative emotions (Petruzzelli et al., 2022). Of note, a study by Lingardi et al. (2017), which applied the SWAP-200 to a sample of GD individuals, identified a *histrionic/extroverted* personality subtype characterized by emotional impulsivity, theatrical behavior, and lack of empathy, while also linking this personality profile to self-image stability, identity coherence, and body satisfaction. Specifically, this subgroup exhibited emotional instability, an overwhelming fear of being rejected, apprehension towards engaging in intimate relationships, an overly sexualized use of the body, and limited psychological insight and awareness of their emotional responses and motivations—aspects that closely resemble emotional dysregulation in ED patients (Westen & Harnden-Fisher, 2001). These findings suggest that emotional dysregulation may represent an underlying factor in both GD and EDs, potentially highlighting a common mechanism.

### **Eating symptomatology in anorexia nervosa, bulimia nervosa, and gender dysphoria**

Diagnostic conceptualizations describe EDs as disordered eating behaviors characterized by an excessive emphasis on food, weight, and body appearance, with a profound influence on self-esteem and self-awareness. Specifically, anorexia nervosa (AN) is defined by an intense fear of weight gain and/or fatness, despite an actual underweight physical condition, and distorted perceptions related to weight and shape (e.g., the patient does not recognize that they are severely underweight, and shape/weight has a disproportionate influence on their mood and self-evaluation). There are two subtypes of AN: *binge eating* (i.e., a perceived loss of control while eating, resulting in the consumption of an objectively large quantity of food) and/or *purging* (i.e., self-induced vomiting or use of laxatives/diuretics); and *restricting* (no regular enactment of binge eating or purging) (APA, 2022). Conversely, bulimia nervosa (BN) is characterized by regular binge eating episodes followed by a range of inappropriate compensatory behaviors to prevent weight gain. Despite the categorical distinction between AN and BN, these diagnoses share primary symptomatic behaviors (e.g., compensatory behaviors in BN and AN-purging), impaired interpersonal functioning, and comorbidities (Thompson-Brenner et al., 2008), while also showing a common “diagnostic migration” during the course of the illness (Castellini et al., 2011). Accordingly, the associations between ED behaviors (e.g., restrictive eating, fasting, self-induced vomiting, laxative use, binge eating) and a wide range of body symptoms (e.g., body image dissatisfaction, desire to lose weight) may vary greatly and produce highly heterogeneous psychopathological profiles.

<sup>1</sup> In this paper, we use the term GD, in line with the DSM-5-TR (APA, 2022) diagnostic framework. However, while previous clinical research has primarily investigated the experiences of transgender individuals through this lens, it should be noted that the label of GD does not apply universally to all transgender individuals.

An extensive body of research has explored the occurrence of ED symptoms in GD individuals. Specifically, numerous studies have examined and reported the recurrent and higher manifestation of disordered eating patterns within the GD population, compared to cisgender samples (Witcomb et al., 2015). Of note, among GD individuals with high emotional distress and affective instability, specific ED symptoms may serve as coping mechanisms aimed at aligning their body with their gender identity (Cusack et al., 2022; Mirabella et al., 2020). In this vein, studies with GD individuals have described the use of extreme dieting, restrictive eating, binge eating, and bulimic behaviors (e.g., laxative use, self-induced vomiting) as strategies to conceal the characteristics of their assigned gender at birth and/or to accentuate the characteristics of their identified gender (Hartman-Munick et al., 2021). For instance, individuals who are assigned female at birth (AFAB) may practice restrictive ED behaviors to suppress curves and stop menstruation; or they may engage in overeating patterns to gain weight and muscles and assume a more masculine body shape (Cusack et al., 2022; Kapatais et al., 2023). Qualitative studies have also suggested that ED symptoms may function as (dysfunctional) strategies for coping with the distress associated with proximal stressors related to one's transgender identity, including internalized transphobia (Cusack et al., 2022). Moreover, research has found that individuals may engage in overeating behaviors in an attempt to achieve relief from feelings of irritability and self-distress related to their gender identity (Mirabella et al., 2020).

### **The body we live in: the potential role of body uneasiness in eating disorders and gender dysphoria**

Perceptions, feelings, and thoughts about one's body may have a significant impact on symptoms and severity in several clinical conditions. Specifically, research has consistently suggested that body-image disturbances (e.g., body dissatisfaction) may play a key role in the development and maintenance of EDs (Mirabella et al., 2023) and GD (Mirabella et al., 2020; Pulice-Farrow et al., 2020). Additionally, *body uneasiness*, which includes not only dissatisfaction with particular body parts, shapes, or functions, but also a general feeling and self-experience of apprehension and embarrassment relating to one's body, can lead to avoidance behaviors, compulsive checking behaviors, and detachment and/or estrangement feelings towards the body (Cuzzolaro et al., 2006; Muzi et al., 2023).

Body image disturbances and a low self-evaluation influenced by body shape and weight are core diagnostic criteria of AN and BN (APA, 2022). However, among AN and BN patients, specific dimensions of body uneasiness may serve as

dysfunctional strategies for gaining mastery and control over one's feelings and expressing emotional suffering (Mancini et al., 2021; Stice & Shaw, 2002), with the result that painful emotions and negative affect states are primarily expressed through extreme ED-related behaviors (Mirabella et al., 2023; Trompeter et al., 2022). For instance, Nikodijevic et al. (2018) showed that body checking behaviors (e.g., ritualistic weighing, compulsive mirror checking, monitoring the fit of clothes) may aim at modulating difficult negative emotions by focusing ED individuals' attention to concrete self-experiences, rather than overwhelming emotions. On the other hand, body avoidance behaviors (e.g., covering mirrors, wearing oversized clothes, refusing to look at certain body parts) may aim at providing temporary relief from emotional distress. Qualitative studies have further suggested that AN and BN patients may delocate uncomfortable inner experiences to the body in an attempt to regulate emotions, while also believing (mistakenly) that, by altering their body through ED-related behaviors, they will achieve higher levels of self-acceptance, confidence, and agency (e.g., Espeset et al., 2012). Some AN and BN patients exhibit somatoform dissociation when experiencing emotional distress, which leads them to detach from their body, physical sensations, and/or bodily experiences (Mirabella et al., 2023).

Studies have also consistently found that bodily symptoms and body dissatisfaction in GD individuals may arise from the distress caused by their perceived incongruity between their physical body and their gender identity (Cooper et al., 2020; Mirabella et al., 2020; Pulice-Farrow et al., 2020). However, there remains a lack of sufficient research devoted to body uneasiness and its specific dimensions. In GD individuals, body uneasiness may extend beyond secondary sexual characteristics and also affect non-sexual body parts (Pulice-Farrow et al., 2020). This is because GD individuals frequently perceive their body through a lens of intense concern around their gender incongruity and conformance with gender norms. Subsequently, they may experience a unique set of body-related symptoms, including extreme body-checking behaviors and overconcern over their body shape and weight (Pulice-Farrow et al., 2020).

Few studies have suggested that GD individuals practice body-checking behaviors (e.g., frequent self-examination, body part measuring, body-related rumination) and/or body avoidance behaviors (e.g., avoidance of clothing that accentuates certain body shapes, binding techniques to flatten the chest, not looking at mirrors) to manage negative emotions associated with their gender identity and incongruity (Cusack et al., 2022). Given that intense negative feelings about one's body (e.g., shame, disgust, guilt) may lead to painful feelings of disconnection and detachment from one's body (Mirabella et al., 2020; Pulice-Farrow et al., 2020), feelings of discomfort, unease, estrangement, hatred, and disgust toward the body may lead GD individuals to



attempt to suppress their femininity or masculinity through, for example, restricting their food intake or engaging in overeating patterns (Cooper et al., 2020).

## Present study

In light of the aforementioned clinical and empirical literature, the present study aimed at exploring the potential association between emotional dysregulation and ED symptomatology, while also considering the possible mediating role of specific dimensions of body uneasiness, in a clinical sample of AFAB individuals with a DSM-5-TR (APA, 2022) diagnosis of AN, BN, or GD. Based on previous research on emotional dysregulation as a personality trait in both ED and GD samples, we assessed this dimension using the Shedler-Westen Assessment Procedure-200 (Westen & Shedler, 1999), which provided a multi-informant perspective to mitigate the well-known limitations of self-report measures of trait-based difficulties in emotion regulation. In more detail, we formulated three main hypotheses:

(1) Levels of emotional dysregulation, ED symptomatology, and body uneasiness would significantly differ between participants with a diagnosed ED (i.e., AN, BN) and those with a diagnosis of GD. More specifically, due to the full threshold clinical diagnoses of AN and BN, we expected that these patients would show greater ED symptomatic impairment than a clinical population for whom these symptoms were not core psychopathological features (e.g., Witcomb et al., 2015). At the same time, we expected that GD individuals would display ED symptoms in the sub-clinical and clinical range (Hartman-Munick et al., 2021). Similarly, in light of the extensive literature on AN and BN, we expected that AN-BN patients would show higher levels of emotional dysregulation (Monell et al., 2018) and body uneasiness (Nikodijevic et al., 2018), relative to GD individuals. However, we also predicted that GD individuals would show relevant features of emotional dysregulation (Cusack et al., 2022) and elevated scores on specific body uneasiness dimensions related to gender incongruity.

(2) Significant associations would emerge between emotional dysregulation, overall ED symptomatology, and specific dimensions of body uneasiness in AN, BN, and GD individuals. More specifically, we expected to find an association between emotional dysregulation and ED symptomatology, as well as between emotional dysregulation and body uneasiness dimensions (e.g., body avoidance, compulsive self-monitoring, depersonalization, weight phobia, body image concerns) (Nikodijevic et al., 2018), in both AN-BN patients (Monell et al., 2018; Sloan et al., 2017) and GD individuals (Cusack et al., 2022; Pulice-Farrow et al., 2020).

(3) Specific body uneasiness dimensions would mediate the association between overall ED symptomatology and emotional dysregulation differently for AN-BN patients and GD individuals. More specifically, we expected that body avoidance, weight phobia, body image concerns, and compulsive self-monitoring would mediate the association between emotional dysregulation and overall ED symptomatology in AN-BN patients (Nikodijevic et al., 2018); while body avoidance, body image concerns, and depersonalization would significantly mediate this association in GD individuals (Mirabella et al., 2020; Pulice-Farrow et al., 2020).

## Materials and methods

### Participants

The sample comprised 96 assigned female at birth participants, of whom 64 were diagnosed with AN ( $n=32$ ;  $M_{age} = 21.72$ ,  $SD=4.066$ ) or BN ( $n=32$ ;  $M_{age} = 22.22$ ,  $SD=5.528$ ). All ED patients (i.e., AN, BN) were recruited from a specialized and psychodynamic-oriented residential treatment center for EDs in Bologna (Italy). The inclusion criteria for these patients were: (a) aged 18 years or older; (b) having a DSM-5/DSM-5-TR diagnosis of AN or BN, established at intake by licensed staff (i.e., a psychiatrist and a clinical psychologist), using the Structured Clinical Interview for DSM-5 (SCID-5-CV) (First et al., 2016); and (c) reporting no organic syndrome, psychotic disorder, or syndrome with psychotic symptoms. The remaining 32 participants ( $M_{age} = 22.31$ ,  $SD=6.693$ ) were AFAB and at stage T0 of hormonal therapy (i.e., waiting to begin). These participants were recruited from the Unit of Endocrinology at the Policlinico Umberto I Hospital of Rome and had been diagnosed with GD (according to the DSM-5/DSM-5-TR) by specialized and trained clinicians at the Gender Identity Development Service (SAIFIP). The inclusion criteria for GD individuals were: (a) aged 18 years or older; (b) at stage T0 of hormonal therapy; and (c) reporting no organic syndrome, psychotic disorder, or syndrome with psychotic symptoms. No age differences emerged between groups,  $F(2, 93)=0.106$ ,  $p=0.899$ ,  $\eta^2_p=0.002$ .

### Procedure

All GD individuals who had been referred to a gender specialized service and all ED patients seeking treatment at a residential treatment center for EDs were invited to participate in a study exploring self-image, ED risk, and body representation. Study information was provided by the treating clinicians. In both groups, during the first week of treatment, all patients who agreed to participate were evaluated by a licensed

staff psychiatrist and a clinical psychologist using the SCID-5-CV, to ensure fulfilment of the diagnostic inclusion criterion (i.e., a DSM-5-TR diagnosis of AN, BN, or GD). Moreover, at the same time point, all participants completed self-report measures to record their ED symptoms and body uneasiness. Emotional dysregulation was assessed using an observer/clinician-rated measure, the Shedler-Westen Assessment Procedure-200 (SWAP-200; see “Measures” below). Within the first 2 weeks of treatment (instead of in the first week, as with the other assessments), treating clinicians in the AN-BN group administered the clinical interview and evaluated patients using the SWAP-200; in the GD group, the clinical interview and SWAP-200 assessment were conducted within the first 2 weeks of treatment, by the first author and trained external raters. Both rater groups had been trained to administer the SWAP-200 during two 16-hour workshops led by the first and the last two authors of this article, who had longstanding experience with the measure. One of these authors had previously been trained to administer the SWAP and the CDI by Drew Westen and Jonathan Shedler. The study was conducted according to the guidelines of the Declaration of Helsinki, and the study protocol was reviewed and approved by the local research ethics committee. All study subjects participated voluntarily and provided written informed consent prior to the assessments.

## Measures

### Emotional dysregulation

Emotional dysregulation was assessed using the Clinical Diagnostic Interview (CDI; Westen & Muderrisoglu, 2003). The CDI is a 2-hour systematic clinical interview comprised of 15 broad questions investigating presenting symptoms and personality characteristics. In the present study, the CDI was administered using the Shedler-Westen Assessment Procedure-200 (SWAP-200; Westen & Shedler, 1999). The SWAP-200 psychometric procedure aims at comprehensively assessing personality functioning and personality styles/disorders. The instrument utilizes the Q-sort method, which requires the clinician or rater to sort 200 items into eight categories, ranging from 0 (*not descriptive of the person*) to 7 (*most descriptive of the person*), in order to comply with a fixed distribution. The SWAP-200 derives a number of personality indices (see Westen & Shedler, 1999, for a detailed review). The present study only considered the dimensional score of emotional dysregulation, as derived from a Q-analysis. Q-analysis uses the same algorithms as factor analysis, but it creates groupings of people, rather than variables. The resulting groups (i.e., Q-factors) provide alternative sets of personality dimensions that are empirically identified and resemble personality patterns found in clinical practice.

The emotional dysregulated Q-factor is described by items referring to emotions that spiral out of control, a tendency to engage in suicidal thoughts and self-mutilating behaviors, an inability to self-soothe when distressed, and a tendency to feel that life is meaningless and to “catastrophize.” This Q-factor describes patients who might become irrational when strong emotions are stirred up, and tend to feel empty, bored, needy, and dependent. The SWAP-200 was designed for use by clinically experienced informants (both clinicians and external raters), and it has been shown to have excellent test-retest reliability in different patient populations, as well as good interrater, discriminant, and convergent validity (Blagov et al., 2012).

### Eating symptoms

Participants’ core components of eating psychopathology were assessed using the Eating Disorder Inventory-3 (EDI-3; Garner, 2004). The EDI-3 is a self-report questionnaire that is widely used in both research and clinical settings, and consists of 91 items organized into 12 primary scales: three investigating eating symptoms (i.e., Drive for Thinness, Bulimia, Body Dissatisfaction) and nine investigating general psychological scales that are highly relevant to EDs (i.e., Low Self-Esteem, Personal Alienation, Interoceptive Deficits, Interpersonal Insecurity, Interpersonal Alienation, Emotional Dysregulation, Perfectionism, Asceticism, Maturity Fears). The measure also yields six composite scores: one that is ED-specific and five that are general, integrative psychological constructs. In the present study, the Global Psychological Maladjustment composite score (GPMC) was used as an index of overall ED symptomatic impairment. The EDI-3 has been found to yield adequate convergent and discriminant validity (Clausen et al., 2011).

### Body uneasiness

Body uneasiness dimensions were assessed using the Body Uneasiness Test (BUT-A; Cuzzolaro et al., 2006). The BUT-A is a self-report measure comprised of 34 items exploring several dimensions of body-related psychopathology, within five subscales: Body Image Concerns (BIC; e.g., “I am fatter than others tell me”), Body Avoidance (AV; e.g., “I like those clothes which hide my body”), Compulsive Self-Monitoring (CSM; e.g., “I spend a lot of time thinking about some defects in my physical appearance”), Depersonalization (DEP; e.g., “I look at myself in the mirror and have a sensation of uneasiness and strangeness”), and Weight Phobia (WP; e.g., “I am terrified of putting on weight”). Items are rated on a 6-point Likert scale ranging from 0 (*never*) to 5 (*always*). The measure produces a total test score, known as the Global Severity Index (GSI), which ranges from 0 to 5. Higher scores indicate greater

body uneasiness. To gain a deeper understanding of the role played by specific body-related dimensions, the present study used all five subscales of the BUT-A.

## Data analysis

All analyses were performed using the statistical software R (R Core Team, 2021). Preliminarily, means, standard deviations, and bivariate correlations were calculated for the study variables in each group (i.e., AN patients, BN patients, GD individuals). Differences in SWAP-200 emotional dysregulation and overall ED symptomatic impairment across groups were explored using two analyses of variance (ANOVAs). One multivariate analysis of variance (MANOVA) was conducted to explore group differences in the five dimensions of body uneasiness (i.e., body image concerns, body avoidance, compulsive self-monitoring, depersonalization, weight phobia). In the event that no differences emerged between AN and BN patients, in the subsequent mediation analyses, they were grouped together as follows: ED patients (i.e., AN and BN patients) versus GD individuals.

Finally, the mediating role played by body uneasiness dimensions in the relation between emotional dysregulation and ED symptoms was tested using five conditional mediation models (one for each BUT dimension: BIC, AV, CSM, DEP, and WP), computing 95% confidence intervals with bootstrap percentiles and 5,000 resamples, as recommended by Hayes (2017). A post-hoc Monte Carlo power simulation was performed to obtain the statistical power of the results for the indirect effects, using the shiny and MASS add-on R packages (Schoemann et al., 2017).

## Results

### Differences in SWAP-200 emotional dysregulation, body uneasiness dimensions, and ED symptomatic impairment in the AN, BN, and GD groups

The ANOVA indicated a significant group difference in SWAP-200 emotional dysregulation,  $F(2, 93)=8.906$ ,  $p<0.001$ ,  $\eta^2_p=0.161$ . Post-hoc comparisons with Bonferroni's correction showed that BN patients reported higher SWAP-200 emotional dysregulation than GD patients (mean difference = 7.256,  $p<0.001$ ). Likewise, a further ANOVA indicated a significant group difference in EDI-3 ED symptomatic impairment,  $F(2,93)=21.762$ ,  $p<0.001$ ,  $\eta^2_p=0.319$ , with GD individuals reporting lower scores than both AN patients (mean difference = -62.630,  $p<0.001$ ) and BN patients (mean difference = -55.470,  $p<0.001$ ). Nonetheless, GD individuals' average score for EDI-3 ED

symptomatic impairment fell within the clinical range of interest ( $>70$ ) (see Giannini et al., 2008).

Finally, a MANOVA indicated group differences in several BUT-A body uneasiness dimensions, Wilks'  $\lambda(10,178)=0.494$ ,  $p<0.001$ ,  $\eta^2_p=0.297$ . Specifically, the univariate effects showed significant differences in Compulsive Self-Monitoring,  $F(2, 93)=20.102$ ,  $p<0.001$ ,  $\eta^2_p=0.302$ ; Depersonalization,  $F(2, 93)=4.075$ ,  $p=0.020$ ,  $\eta^2_p=0.081$ ; and Weight Phobia,  $F(2,93)=14.461$ ,  $p<0.001$ ,  $\eta^2_p=0.237$ . In more detail, GD patients reported lower Compulsive Self-Monitoring than AN patients (mean difference = -1.536,  $p<0.001$ ) and BN patients (mean difference = -1.718,  $p<0.001$ ), lower Depersonalization than BN patients (mean difference = -0.752,  $p=0.040$ ), and lower Weight Phobia than AN patients (mean difference = -1.131,  $p<0.001$ ) and BN patients (mean difference = -1.190,  $p<0.001$ ). Nevertheless, GD individuals showed average scores for BUT-A Body Avoidance, Depersonalization, Weight Phobia, and Body Image Concerns, within the clinical range of interest, compared to a cisgender, non-clinical sample (see Cuzzolaro et al., 2006).

### Bivariate associations among emotional dysregulation, ED symptomatic impairment, and body uneasiness, by group

Tables 1 and 2 display the complete associations between the SWAP-200 emotional dysregulation Q-factor, BUT-A body uneasiness dimensions, and EDI-3 ED symptomatic impairment in the three groups. With regards to AN patients, a positive correlation emerged between emotional dysregulation and BUT-A Depersonalization ( $r=0.368$ ,  $p<0.05$ ) and EDI-3 ED symptomatic impairment ( $r=0.480$ ,  $p<0.01$ ). Furthermore, EDI-3 ED symptomatic impairment was associated with all five dimensions of the BUT-A (i.e., Body Avoidance:  $r=0.676$ ,  $p<0.01$ ; Compulsive Self-Monitoring:  $r=0.670$ ,  $p<0.01$ ; Depersonalization:  $r=0.791$ ,  $p<0.01$ ; Weight Phobia:  $r=0.782$ ,  $p<0.01$ ; Body Image Concerns:  $r=0.676$ ,  $p<0.01$ ). In the BN group, a positive correlation emerged between EDI-3 ED symptomatic impairment and BUT-A Body Avoidance ( $r=0.386$ ,  $p<0.05$ ), Compulsive Self-Monitoring ( $r=0.506$ ,  $p<0.01$ ), Depersonalization ( $r=0.508$ ,  $p<0.01$ ), and Body Image Concerns ( $r=0.349$ ,  $p<0.05$ ). Finally, in the GD group, a positive correlation emerged between SWAP-200 emotional dysregulation and BUT-A Body Avoidance ( $r=0.476$ ,  $p<0.01$ ) and Depersonalization ( $r=0.512$ ,  $p<0.01$ ), as well as between EDI-3 ED symptomatic impairment and BUT-A Depersonalization ( $r=0.380$ ,  $p<0.05$ ).

**Table 1** Associations among emotional dysregulation, body uneasiness dimensions, and eating symptomatic impairment in AN and BN groups (N = 64)

	1	2	3	4	5	6	7	M	SD
1. Emotional dysregulation—SWAP-200 Q-factor	1.000	0.121	0.094	0.368*	0.321	0.138	0.480**	49.548	7.476
2. Avoidance—BUT	0.113	1.000	0.615***	0.806***	0.629***	0.738***	0.676***	2.258	1.364
3. Compulsive Self-Monitoring—BUT	-0.064	0.446*	1.000	0.702***	0.603***	0.595***	0.670***	2.928	1.236
4. Depersonalization—BUT	0.333	0.720***	0.590***	1.000	0.761***	0.767***	0.791***	3.039	1.335
5. Weight Phobia—BUT	0.054	0.529**	0.619***	0.649***	1.000	0.786***	0.782***	3.893	1.048
6. Body Image Concerns—BUT	0.181	0.690***	0.557**	0.737***	0.802***	1.000	0.676***	3.501	1.076
7. Eating symptomatic impairment—EDI-3	0.187	0.386*	0.506**	0.508**	0.311	0.349*	1.000	137.69	49.304
<i>M</i>	53.215	2.846	3.109	3.072	3.953	3.889	130.530		
<i>SD</i>	6.784	1.257	1.360	1.163	0.856	0.981	40.384		

Note. Associations for the AN group are displayed above the diagonal, while associations for the BN group are displayed below the diagonal SWAP-200 = Emotional dysregulation—SWAP-200 Q-factor; BUT = Body Uneasiness Test; EDI-3 = Eating Disorder Inventory-3; AN = anorexia nervosa; BN = bulimia nervosa

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$

**Table 2** Associations among emotional dysregulation, body uneasiness dimensions, and eating symptomatic impairment in the GD group (N = 32)

	1	2	3	4	5	6	7
1. Emotional dysregulation—SWAP-200 Q-factor	1.000						
2. Body Avoidance—BUT	0.476**	1.000					
3. Compulsive Self-Monitoring—BUT	-0.158	0.337	1.000				
4. Depersonalization—BUT	0.512**	0.627***	0.261	1.000			
5. Weight Phobia—BUT	0.150	0.452**	0.684***	0.380*	1.000		
6. Body Image Concerns—BUT	0.264	0.699***	0.531**	0.506**	0.500***	1.000	
7. Eating Symptomatic Impairment—EDI-3	0.319	0.242	0.316	0.380*	0.324	0.273	1.000
<i>M</i>	45.688	2.243	1.391	2.320	2.762	3.642	75.060
<i>SD</i>	7.124	1.063	0.9360	1.056	1.074	0.864	33.489

Note. SWAP-200 = Emotional dysregulation—SWAP-200 Q-factor; BUT = Body Uneasiness Test; EDI-3 = Eating Disorder Inventory-3; GD = gender dysphoria

\* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$

### Body uneasiness dimensions as mediators of the relationship between emotional dysregulation and ED symptomatic impairment in ED and GD samples

The five conditional mediation models indicated some significant indirect effects of BUT-A body uneasiness dimensions in the relation between SWAP-200 emotional dysregulation and EDI-3 ED symptomatic impairment in the AN-BN and GD samples. For the sake of brevity, only the significant indirect effects are explained below, while the full statistics are displayed in Tables 3, 4, 5, 6 and 7. Specifically, only in GD individuals, BUT-A Body Avoidance was a significant mediator, such that greater emotional dysregulation reflected in higher ED symptomatic impairment through an increase in body image-related avoidance behavior ( $\beta = 0.147$ ,  $p = 0.036$ ). Conversely, emotional dysregulation had no significant direct effect on EDI-3 ED symptomatic impairment ( $\beta = 0.153$ ,  $p = 0.057$ ). The Monte Carlo power analysis for indirect effects showed a large power of 89% (based on a 95% CI). Overall, the total effect was significant ( $p = 0.004$ ) and the model explained 54% of the variance.

Also, in both AN-BN patients and GD individuals, BUT-A Depersonalization was a significant mediator, such that greater emotional dysregulation was associated with higher ED symptomatic impairment, through greater feelings of depersonalization toward one's body ( $\beta = 0.198$ ,  $p = 0.004$ , and  $\beta = 0.219$ ,  $p = 0.012$ , respectively). Conversely, emotional dysregulation had no significant direct effect on ED symptomatic impairment in either AN-BN patients or GD individuals ( $\beta = 0.049$ ,  $p = 0.544$  and  $\beta = 0.051$ ,  $p = 0.5445$ , respectively). The Monte Carlo power analysis for indirect effects showed large powers of 96% and 99%, respectively (based on a 95% CI). Overall, the total effects were significant ( $p = 0.004$  and  $p = 0.004$ , respectively) and the model explained 56% of the variance.

Finally, in both samples, the BUT-A dimensions of Compulsive Self-Monitoring, Weight Phobia, and Body Image Concerns had no significant mediating role in the association between emotional dysregulation and ED symptomatic impairment. However, the total effect models were significant ( $p = 0.004$  for all three body uneasiness dimensions, in both samples) and explained 59%, 74%, and 58% of the variance, respectively.



**Table 3** Mediation of body avoidance in the relationship between emotional dysregulation and ED symptomatic impairment in the AN-BN and GD samples (N = 96)

Group	Type	Effect	Estimate	SE	95% C.I.		$\beta$	<i>p</i>
					Lower	Upper		
AN-BN	Indirect	Emotional dysregulation $\Rightarrow$ Avoidance $\Rightarrow$ Eating symptomatic impairment	2.354	1.624	-0.830	5.538	0.090	0.147
AN-BN	Component	Emotional dysregulation $\Rightarrow$ Avoidance	0.234	0.158	-0.075	0.544	0.187	0.138
AN-BN		Avoidance $\Rightarrow$ Eating symptomatic impairment	10.048	1.477	7.153	12.943	0.482	<0.001
AN-BN	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	3.766	2.025	-0.203	7.736	0.144	0.063
AN-BN	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004
GD	Indirect	Emotional dysregulation $\Rightarrow$ Avoidance $\Rightarrow$ Eating symptomatic impairment	3.633	1.734	0.234	7.032	0.147	0.036
GD	Component	Emotional dysregulation $\Rightarrow$ Avoidance	0.548	0.231	0.094	1.001	0.437	0.018
GD		Avoidance $\Rightarrow$ Eating symptomatic impairment	6.634	1.475	3.742	9.525	0.337	<0.001
GD	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	3.766	1.979	-0.113	7.645	0.153	0.057
GD	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004

Note. AN-BN = anorexia nervosa, bulimia nervosa; GD = gender dysphoria; C.I. = confidence interval; SE = standardized error

**Table 4** Mediation of compulsive self-monitoring in the relationship between emotional dysregulation and eating symptomatic impairment in the AN-BN and GD samples (N = 96)

Group	Type	Effect	Estimate	SE	95% C.I.		$\beta$	<i>p</i>
					Lower	Upper		
AN-BN	Indirect	Emotional dysregulation $\Rightarrow$ Compulsive Self-Monitoring $\Rightarrow$ Eating symptomatic impairment	0.423	1.498	-2.512	3.358	0.017	0.778
AN-BN	Component	Emotional dysregulation $\Rightarrow$ Compulsive Self-Monitoring	0.043	0.155	-0.260	0.348	0.031	0.777
AN-BN		Compulsive Self-Monitoring $\Rightarrow$ Eating symptomatic impairment	9.637	1.433	6.828	12.445	0.537	<0.001
AN-BN	Direct	Emotional dysregulation $\Rightarrow$ Eating Symptomatic Impairment	6.945	1.813	3.392	10.498	0.275	<0.001
AN-BN	Total	Emotional dysregulation $\Rightarrow$ Eating Symptomatic Impairment	6.527	2.277	2.064	10.990	0.254	0.004
GD	Indirect	Emotional dysregulation $\Rightarrow$ Compulsive Self-Monitoring $\Rightarrow$ Eating symptomatic impairment	-2.222	3.159	-8.413	3.970	-0.079	0.482
GD	Component	Emotional dysregulation $\Rightarrow$ Compulsive Self-Monitoring	-0.160	0.227	-0.606	0.285	-0.114	0.481
GD		Compulsive Self-Monitoring $\Rightarrow$ Eating symptomatic impairment	13.856	1.433	11.048	16.665	0.694	<0.001
GD	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.945	1.806	3.405	10.486	0.247	<0.001
GD	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004

Note. AN-BN = anorexia nervosa, bulimia nervosa; GD = gender dysphoria; C.I. = confidence interval; SE = standardized error

## Discussion

Despite a growing body of empirical research showing a specific association between emotional dysregulation and ED symptomatology in ED patients (e.g., Monell et al., 2018) and GD individuals (Lingiardi et al., 2017; Petruzelli et al., 2022), to the best of our knowledge, the present study was the first to explore that relationship in light of a third, pivotal factor at the root of both conditions: body

uneasiness. Specifically, research suggests that, in ED patients and GD individuals, dimensions of body uneasiness may serve as dysfunctional strategies to manage and overcome overwhelming negative emotions.

The present findings mainly confirmed our first hypothesis, as AN and BN patients receiving treatment at a specialized and intensive residential treatment center demonstrated higher overall ED symptomatology compared to GD individuals, despite the latter group obtaining an EDI-3 score

**Table 5** Mediation of depersonalization in the relationship between emotional dysregulation and eating symptomatic impairment in the AN-BN and GD samples (N = 96)

Group	Type	Effect	Estimate	SE	95% C.I.		$\beta$	<i>p</i>
					Lower	Upper		
AN-BN	Indirect	Emotional dysregulation $\Rightarrow$ Depersonalization $\Rightarrow$ Eating symptomatic impairment	5.153	1.785	1.654	8.653	0.198	0.004
AN-BN	Component	Emotional dysregulation $\Rightarrow$ Depersonalization	0.451	0.143	0.171	0.730	0.367	0.002
AN-BN		Depersonalization $\Rightarrow$ Eating symptomatic impairment	11.433	1.607	8.285	14.582	0.541	<0.001
AN-BN	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	1.267	2.091	-2.831	5.365	0.049	0.544
AN-BN	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004
GD	Indirect	Emotional dysregulation $\Rightarrow$ Depersonalization $\Rightarrow$ Eating symptomatic impairment	5.488	2.175	1.225	9.751	0.219	0.012
GD	Component	Emotional dysregulation $\Rightarrow$ Depersonalization	0.585	0.209	0.175	0.994	0.476	0.005
GD		Depersonalization $\Rightarrow$ Eating symptomatic impairment	9.386	1.606	6.238	12.534	0.460	<0.001
GD	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	1.267	2.096	-2.841	5.375	0.051	0.545
GD	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004

Note. AN-BN = anorexia nervosa, bulimia nervosa; GD = gender dysphoria; C.I. = confidence interval; SE = standardized error

**Table 6** Mediation of weight phobia in the relationship between emotional dysregulation and eating symptomatic impairment in the AN-BN and GD samples (N = 96)

Group	Type	Effect	Estimate	SE	95% C.I.		$\beta$	<i>p</i>
					Lower	Upper		
AN-BN	Indirect	Emotional dysregulation $\Rightarrow$ Weight Phobia $\Rightarrow$ Eating symptomatic impairment	3.479	2.155	-0.7449	7.703	0.135	0.106
AN-BN	Component	Emotional dysregulation $\Rightarrow$ Weight Phobia	0.208	0.128	-0.042	0.459	0.184	0.103
AN-BN		Weight Phobia $\Rightarrow$ Eating symptomatic impairment	16.690	1.383	13.979	19.402	0.731	<0.001
AN-BN	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	3.244	1.463	0.375	6.112	0.126	0.027
AN-BN	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004
GD	Indirect	Emotional dysregulation $\Rightarrow$ Weight Phobia $\Rightarrow$ Eating symptomatic impairment	2.864	3.094	-3.201	8.929	0.112	0.355
GD	Component	Emotional dysregulation $\Rightarrow$ Weight Phobia	0.174	0.187	-0.193	0.541	0.154	0.353
GD		Weight Phobia $\Rightarrow$ Eating symptomatic impairment	16.464	1.383	13.752	19.175	0.725	<0.001
GD	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	3.244	1.480	0.344	6.144	0.126	0.028
GD	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004

Note. AN-BN = anorexia nervosa, bulimia nervosa; GD = gender dysphoria; C.I. = confidence interval; SE = standardized error

for ED symptomatic impairment within the clinical range of interest. This result, which aligns with previous research (Witcomb et al., 2015), suggests that GD individuals may be at risk of developing disordered eating behaviors. Furthermore, relative to GD individuals, BN patients showed higher emotional dysregulation. In line with this, studies have shown that BN patients tend to experience intense and unstable emotions, which they may attempt to control through maladaptive behaviors such as binge eating and purging (Lavender et al., 2014). Additionally, with regard to body uneasiness dimensions, AN and BN patients obtained higher scores on compulsive self-monitoring compared to

GD individuals, suggesting that this dimension may be particularly descriptive of individuals diagnosed with a full ED (Nikodijevic et al., 2018). Similarly, BN patients showed higher levels of depersonalization compared to GD individuals, suggesting that detachment and estrangement from the body may represent strategies that BN patients use to cope with acute emotional distress. In contrast, AN patients obtained higher scores for weight phobia compared to GD individuals, suggesting that a fear of weight gain and distorted perceptions of weight and shape may be particularly salient in this clinical population.

**Table 7** Mediation of body image concerns in the relationship between emotional dysregulation and eating symptomatic impairment in the AN-BN and GD samples (N = 96)

Group	Type	Effect	Estimate	SE	95% C.I.		$\beta$	<i>p</i>
					Lower	Upper		
AN-BN	Indirect	Emotional dysregulation $\Rightarrow$ Body Image Concerns $\Rightarrow$ Eating symptomatic impairment	3.026	1.809	-0.519	6.572	0.115	0.094
AN-BN	Component	Emotional dysregulation $\Rightarrow$ Body Image Concerns	0.216	0.126	-0.031	0.464	0.221	0.087
AN-BN		Body Image Concerns $\Rightarrow$ Eating symptomatic impairment	13.997	1.769	10.530	17.465	0.523	<0.001
AN-BN	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	3.700	1.872	0.032	7.368	0.141	0.048
AN-BN	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.064	10.990	0.254	0.004
GD	Indirect	Emotional dysregulation $\Rightarrow$ Body Image Concerns $\Rightarrow$ Eating symptomatic impairment	2.399	1.854	-1.234	6.032	0.098	0.196
GD	Component	Emotional dysregulation $\Rightarrow$ Body Image Concerns	0.246	0.185	-0.116	0.609	0.251	0.183
GD		Body Image Concerns $\Rightarrow$ Eating symptomatic impairment	9.743	1.769	6.275	13.210	0.388	<0.001
GD	Direct	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	3.700	1.876	0.023	7.377	0.150	0.049
GD	Total	Emotional dysregulation $\Rightarrow$ Eating symptomatic impairment	6.527	2.277	2.0642	10.990	0.254	0.004

Note. AN-BN = anorexia nervosa, bulimia nervosa; GD = gender dysphoria; C.I. = confidence interval; SE = standardized error

Our second hypothesis was partially confirmed, as, among AN patients, an association emerged between emotional dysregulation and ED symptomatic impairment. This suggests that an inability to effectively manage and regulate emotions may contribute to the clinical presentation of AN (Selby et al., 2008). Additionally, in AN and BN patients, overall ED symptomatology was associated with all body uneasiness dimensions, implying that negative body perceptions may fuel ED behaviors (Nikodijevic et al., 2018). Interestingly, among BN patients, no relationship was found between ED symptomatic impairment and weight phobia, suggesting that this body-related domain may be less central in BN, compared to AN, for which an intense fear of gaining weight is a DSM-5-TR diagnostic criterion (APA, 2022). On the other hand, similar to AN patients, GD individuals showed an association between emotional dysregulation and depersonalization. This aligns with previous research showing that GD individuals tend to experience significant distress due to their perceived gender incongruity, which may give rise to feelings of bodily estrangement (Cusack et al., 2022). Depersonalization was also found to relate to more higher ED symptomatic impairment in this population, suggesting that, in GD individuals, this bodily dimension may interact with ED behaviors.

The present findings partially supported our third hypothesis. Specifically, while certain dimensions of body uneasiness played a mediating role in the relationship between emotional dysregulation and ED symptomatology in ED patients and GD individuals, some differences emerged between groups. In GD individuals, higher body avoidance

and depersonalization mediated the association between greater emotional dysregulation and higher ED symptomatic impairment. In contrast, in AN-BN patients, body avoidance did not emerge as a mediating variable, whereas higher levels of depersonalization mediated the relationship between greater emotional dysregulation and greater ED symptomatic impairment. These results support the theory that, in both EDs and GD, body image and overall body uneasiness may communicate internal mental states and reflect deficits in the capacity to mentalize and regulate emotions (Mirabella et al., 2023). However, considering a nuanced understanding of body uneasiness, the present study found that body avoidance emerged as a mediating variable only in the GD group. It may be argued that GD individuals uniquely experience severe emotional distress related to their gender incongruity, and this may increase their avoidance of situations in which they are likely to be confronted with their physical appearance, as well as their enactment of body-related avoidant behaviors (e.g., covering mirrors, wearing oversized clothing, refusing to be touched and/or to show certain parts of their body) (Cusack et al., 2022). In this light, body avoidance may relate to the refusal to have a body that does not correspond to one's perceived gender identity (Mirabella et al., 2020). Moreover, body avoidance behaviors may increase one's reliance on ED-related dysfunctional strategies to regulate negative and intense feelings about one's self and body (Pulice-Farrow et al., 2020).

Conversely, depersonalization emerged as a mediating dimension among both AN-BN patients and GD individuals.

With regard to GD individuals, gender incongruity may lead to an outright rejection of the body (i.e., its stimuli and needs), accompanied by feelings of depersonalization and/or disconnection from particular body parts (Cusack et al., 2022). In AN and BN patients, the literature describes impaired mind–body differentiation, lack of interoceptive awareness, and poor sensory and emotional sensitivity (i.e., difficulty discriminating feelings related to hunger and satiety) (e.g., Mancini et al., 2021). Feelings of depersonalization and estrangement toward one’s body may provide some escape from negative emotions and unthinkable mental states, thereby increasing the likelihood of uncontrolled eating behaviors. On this basis, the present results suggest that these body uneasiness dimensions, over and above other body-related variables, may represent mediating mechanisms that operate slightly differently in AN-BN patients versus GD individuals to facilitate engagement in—and exposure to—uncontrolled eating behaviors in association with emotional dysregulation.

These observations are highly relevant to help-seeking individuals with AN, BN, and GD. Specifically, AN and BN patients in intensive treatment settings may present severe and persistent ED symptoms, difficulty managing unwanted and intense emotions, significant body uneasiness, and poor motivation to change (Muzi et al., 2020). Thus, they may particularly benefit from a patient-tailored intervention considering the role of body depersonalization. Similarly, individuals with GD pursuing gender affirming interventions may represent a highly vulnerable population presenting with significant emotional distress and body avoidance and/or depersonalization, due to intrinsic suffering related to their gender incongruence, victimization, and societal pressure (Mirabella et al., 2020). Furthermore, the transdiagnostic roles played by emotional dysregulation and body uneasiness must be explored as potential treatment targets in these conditions, along with their interplay with ED symptoms.

Despite the promising results obtained, the present study had several limitations that must be considered in the interpretation of the results. First, all AN and BN patients were recruited from a single residential ED program, which limits the generalizability of the findings to patients in other ED treatment settings and individuals suffering from other EDs (e.g., binge eating disorder, avoidant/restrictive food intake disorder, etc.). Similarly, the comparatively smaller GD sample was comprised of individuals seeking gender-affirming treatment from a single specialized service. Thus, the results are not necessarily generalizable to the entire population of GD individuals. Moreover, the cross-sectional nature of the study design did not allow for causal inferences. Therefore, larger sample sizes (especially of GD individuals) and longitudinal designs featuring repeated

assessments are needed to better understand the mediating role of body uneasiness dimensions in the relationship between emotional dysregulation and ED symptomatology in these two populations. Additionally, the inclusion of only AFAB individuals limits the generalizability of the results to other sex- and gender-defined populations, such as cisgender males and individuals assigned male at birth (Hartman-Munick et al., 2021). Finally, the lack of a multi-trait and multi-method assessment of emotional dysregulation may represent another relevant limitation. Despite its extensive use in empirical studies on personality traits and disorders, the SWAP-200 has been criticized for its unrepresentative normative sample and its reliance on a fixed skewed distribution (with potential effects for reliability and validity), as well as concerns over the temporal stability of its scale scores. However, both literature reviews and empirical studies have addressed these concerns and found substantial evidence for the measure’s reliability and stability (e.g., Blagov et al., 2012), especially in clinical populations (as investigated in the present study). However, future investigations should employ at least two different measures of emotional dysregulation to generate more reliable data for analysis. Despite these limitations, the present study, which applied a theoretically grounded and multi-informant perspective, enhances our understanding of the complex interplay between emotional dysregulation, body uneasiness dimensions, and ED symptomatology in two specific conditions (i.e., EDs, GD).

To summarize, as McDougall (1989, p. 97) stated, “the body is the theatre of feelings, memories and stories.” The present study contributes to the scientific literature on body uneasiness (i.e., relating to how one “lives” in one’s body at a given time, in relation to their felt experience) in both AN-BN and GD (Mirabella et al., 2023). From a clinical standpoint, with regard to GD individuals, prevention strategies and therapeutic interventions addressing body-related distress may contribute to reducing difficult emotions and sensations concerning gender incongruity and decreasing the use of dysregulated eating behaviors as a strategy for coping with the body and social dysphoria. Future studies should aim at deepening our understanding of the complex role played by social stressors in GD (e.g., stigma, discrimination, rejection), which may lead to and/or influence the development of maladaptive coping mechanisms regarding the body or eating behaviors. Moreover, with regard to AN and BN patients, therapeutic interventions aimed at enhancing interoceptive awareness and somato-psyche integration, as well as building a constructive relational repertoire for communicating emotional experiences, might hold promise.

**Author contributions** MM and LM conceived the study hypotheses and wrote the original draft. NC contributed to the data analysis and methodology, and extensively revised the original manuscript. AF and



MAR contributed to the data collection and assessment, and revised the final manuscript. VL, AMS, and CM extensively revised and edited the final manuscript. All authors have read and agreed to the final version to be published.

**Funding** Open access funding provided by Università degli Studi di Roma La Sapienza within the CRUI-CARE Agreement. No funding was received for conducting this study.

**Data availability** The datasets analyzed are available upon reasonable request.

## Declarations

**Ethical approval** All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Ethics Committee of the Department of Dynamic and Clinical Psychology and Health Studies of Sapienza University of Rome (approval documents references N. 0000398 and N. 327).

**Informed consent** Informed consent was obtained from all individual participants included in the study.

**Financial interests** The authors have no relevant financial or non-financial interests to disclose.

**Competing interests** The authors have no competing interests to declare that are relevant to the content of this article.

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