

Models of eating disorders: a theoretical investigation of abnormal eating patterns and body image disturbance

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Summary

Research focused on body image issues has increased since the mid-twentieth century. Distortions in size perception, as well as body dissatisfaction, related to eating disorders, refer to body image disturbance. In this paper, the multidimensional model of eating disorders, the sociocultural model of the development of eating pathology, the 'transdiagnostic' theory and treatment of eating disorders, and the reward-centred model for the development and maintenance of anorexia nervosa have been described. In the first three models, body dissatisfaction has been found to play a relevant role. The fourth is presented as a transtheoretical model of eating disorders, which was created based on a review of previous studies.

INTRODUCTION

Eating disorders are one of the most prevalent psychiatric disorders to affect adolescent and young adult females in the Western countries [1]. An eating disorder is defined as a persistent disturbance of eating or eating-related behavior leading to changes in the consumption or absorption of food that results in physiological and psychosocial impairments [2].

The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) [2] includes several changes in eating disorder classification. These modifications involve the diagnosis (revisions to the diagnostic criteria for anorexia nervosa and bulimia nervosa, recognition of binge eating disorder) as well as the addition of three disorders (pica, rumination and avoidant/restrictive food intake disorder). On the other

hand, feeding and eating disorders are, for the first time, classed in the DSM-5 as a single category (Table 1).

Both anorexia nervosa (AN) and bulimia nervosa (BN) are usually considered the prototypes of an eating disorder [3]. Anorexia nervosa is characterised by three essential diagnostic criteria [2]. The first is self-induced starvation leading to significantly low body weight. The second is an intense fear of gaining weight or of becoming fat, thus hindering weight gain. The third

Table 1 Current status of feeding and eating disorders nosology [2]

Feeding and eating disorders classification
Pica
Rumination disorder
Avoidant/restrictive food intake disorder
Anorexia nervosa
Bulimia nervosa
Binge eating disorder
Other specified feeding or eating disorder
Unspecified feeding or eating disorder

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is a disturbance in self-perceived body weight or shape that influences self-evaluation. Bulimia nervosa, on the other hand, includes repeated episodes of binge eating followed by recurrent compensatory behaviours (such as self-induced vomiting, laxative abuse or fasting) to counteract weight gain [2]. Both binge eating and compensatory behaviours need to occur at least once a week for 3 months for the diagnosis of bulimia. In addition, self-evaluation is overly dependent on body shape and weight [2]. In conclusion, it is worth noting that diagnostic criteria for anorexia nervosa are related to the corporeal aspect (and indicate body image disorder), whereas diagnostic criteria for bulimia nervosa refer more to the nutritional aspect.

Mental disorders most commonly comorbid with different subtypes of eating disorders are obsessive-compulsive disorder, addiction, depression and borderline personality disorder [2, 4].

Eating disorders are biopsychosocial diseases [5]. Eating pathology is a broad term referring to the attitudes, behaviors and thoughts related to the full and partial symptoms of eating disorders [6], including preoccupation with weight and body shape, extreme dietary restrictions, binge eating and compensatory behaviors (self-induced vomiting, excessive physical exercise). Eating disorders are considered to be a serious public health issue [7]. Global studies have shown that cases of eating disorders have been observed in more than forty countries on all continents [8]. The global consumer culture puts such pressure on women regarding appearance and beauty that, in some women, this results in a need to control their own bodies [9]. A meta-analysis based on a number of studies shows that the impact of contemporary culture on girls and women is conducive to improper nutrition and the emergence of dissatisfaction with the body [10]. Dysfunctional (and negative) body image attitudes regarding weight and body shape are a major characteristic of eating disorders [8]. Body image disturbance is a primary feature of eating disorders [11].

This paper concentrates on body image and its disturbance in eating disorders and presents a multidimensional model of eating disorders [12] and a sociocultural model of the development of eating pathology [13, 14], in which body dissatisfaction is thought to lead to eating disorders

via two pathways (two different mediators): restrained eating and negative affect (particularly depression). This paper further describes the “transdiagnostic” theory and treatment of eating disorders [15] as well as the reward-centred model for the development and maintenance of anorexia nervosa [16]. In addition, the Eating Issues and Body Continuum [17], representing a range of eating behaviours and attitudes towards food and body image, ranging from normal to pathological behaviour, is shown. We also present the transtheoretical model of eating disorders, which was created based on a review of previous studies. The different models explain the origin of eating disorders and underline their similarities and differences.

The multidimensional model of eating disorders

Both anorexia nervosa and bulimia nervosa are multifactorial disorders. The multidimensional model of eating disorders is divided into three major components: predisposing, precipitating and perpetuating factors [12]. The interplay of individual (psychological and biological), familial and cultural predisposing factors plays a major role in shaping the psychopathology of eating disorders. Among the precipitating factors, dieting is invariably an early element. However, starvation symptoms and their psychological, emotional and physical consequences fall into a group of perpetuating factors [18]. A slightly modified multidimensional model of the development of eating disorders, as proposed by Garner [12], is shown in Figure 1.

The pattern of symptoms of eating disorders represents a common pathway resulting from individual, familial and cultural predispositions. Psychological factors refer to depression, anxiety, personality disorder, cognitive and emotional deficits (e.g. stereotypic distorted beliefs and reasoning errors, inability to identify and respond accurately to emotional states), body image disturbance and psychological or physical trauma (e.g. sexual abuse) [12]. Among the biological factors, genetics, constitutional features (e.g. prenatal or perinatal risk factors, trauma, convulsions, older maternal age, low birth weight), physical features (e.g. a propensity for obesity), as well as neuroendocrine and metabol-

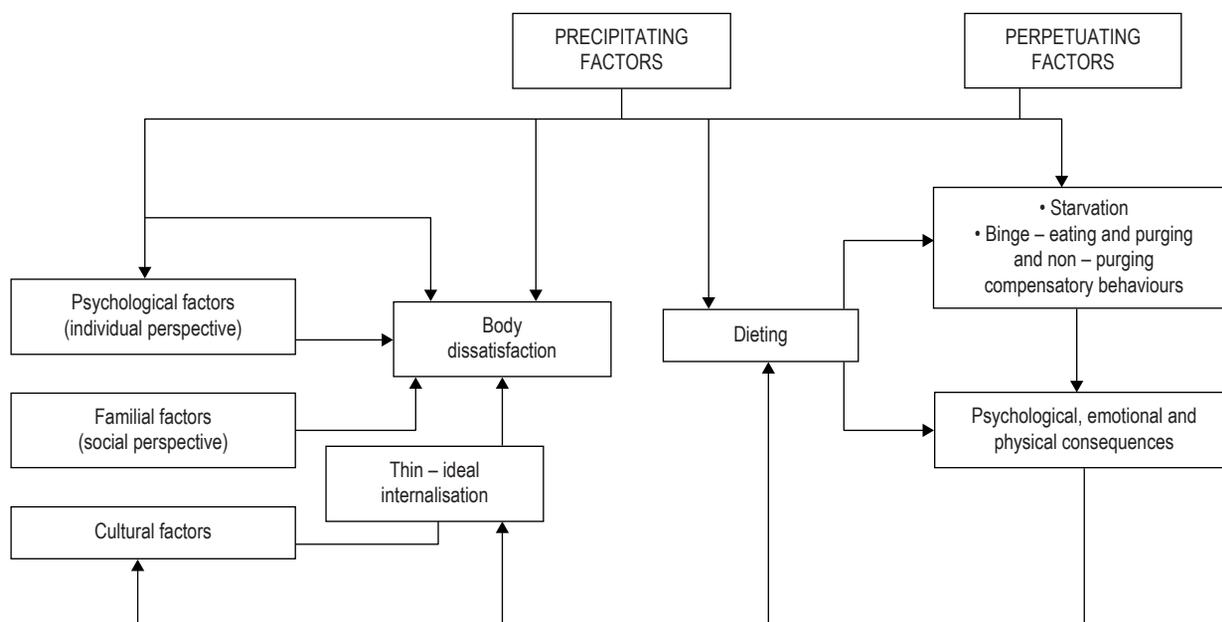


Fig. 1 Multidimensional model of the pathogenesis of eating disorders (adapted from Garner) [9]

ic abnormalities (e.g. disturbances in the hypothalamic-pituitary-gonadal axis, abnormalities in several neuroregulatory systems) may contribute to a specific vulnerability [12].

Familial factors (particularly the pathogenic role of the family) contribute to the development of eating disorders. These factors may be characterised by a dominant, intrusive or ambivalent mother and a passive and ineffectual father and specific patterns of interaction (e.g. enmeshment, overprotectiveness, rigidity, in-family conflict avoidance) [12].

One of several predisposing factors which plays a role in the increasing incidence of eating disorders is related to the sociocultural pressure to be thin (the pressure to be thin can lead, in turn, to intense dieting). Body shape dissatisfaction and a strong concern about physical appearance also seem to predate the development of eating disorders [12].

As shown in Figure 1, precipitating factors may be implicated in the pathogenesis of eating disorders. Dissatisfaction with body weight and body shape and restrictive dieting that increases the feeling of self-worth and self-control can induce eating disorders. Moreover, depression, mood disorders, inadequate coping skills and adverse life events may be identified as potential precipitants [12].

Perpetuating factors involve the psychological, emotional and physical effects of starvation.

Starvation prompts a deterioration in mood, increases food preoccupations and makes food (and control of eating) even more important [12]. Apart from starvation, binge eating and purging and non-purging compensatory behaviours are included in the group of perpetuating factors in Figure 1 (Garner did not include this in his model). We believe that these, the most frequent symptoms of full – and sub-threshold forms of eating disorders [19], should be linked together with starvation. One of the prototypes of eating disorders, bulimia nervosa, is characterised by repeated episodes of binge eating followed by compensatory behaviours. These behaviours are also present in the case of the binge-purge subtype of anorexia nervosa. Inappropriate compensatory behaviours in order to prevent weight gain are divided into purging behaviours such as self-induced vomiting and the use of laxatives and diuretics, and non-purging behaviours such as the use of diet pills, dietary restraint and excessive exercise [20].

The dual-pathway model of eating pathology

The dual-pathway model of eating pathology [13, 14] represents a synthesis of the socio-cultural, dietary and affect regulation aspects related to eating disorders (Figure 2). This empirically supported dual-pathway model [21] suggests

that internalisation of the thin-ideal contributes to body dissatisfaction. It also hypothesises that high family, peer and media pressure results in increased body dissatisfaction. Body dissatisfaction is thought to lead to eating pathology via two different mediators (the two pathways). The first pathway is the pathway of unhealthy dieting behaviours and the second pathway is the pathway of negative affect (given the importance of appearance in Western culture). Both factors consequently increase the risk for eating pathology. Dieting, in turn, is thought to foster negative affect because of the failures that are of-

ten related to transient dietary restrictions and the impact of caloric deprivation on mood. Negative affect, in turn, might lead people to binge eating to provide comfort and distraction from negative emotions. Therefore, the dual-pathway model of eating pathology posits that individuals may initiate abnormal eating behaviour because of either extreme dieting or chronic affect or a combination of these factors. That is, either one of these two pathways may be sufficient to promote the onset of eating pathology.

In this dual-pathway model of eating disorders, the initial pressure to be thin and thin-ide-

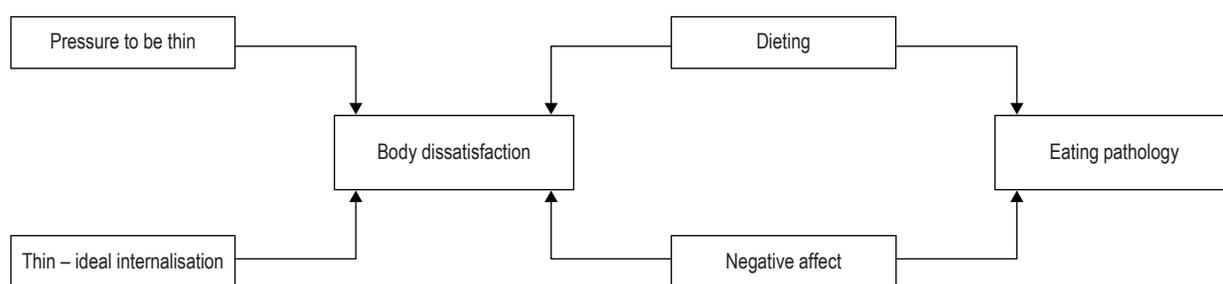


Fig. 2 Theoretical components of Stice's dual-pathway model of eating disorders [11]

al internalisation predicted subsequent growth in body image, initial body dissatisfaction predicted growth in dieting and negative affect, and initial dieting and negative affect predicted eating pathology. The relationship between initial dieting and growth in negative affect was found to be marginally significant. As Stice [14] emphasises, the proximal social environment plays a role in the genesis of body dissatisfaction and a subscription to the thin-ideal may contribute to body image disturbances.

“Transdiagnostic” model of eating disorders

Fairburn et al. [15] describe a “transdiagnostic” model of eating disorders and provide evidence that patients with anorexia, bulimia and atypical eating disorders display many common clinical features (e.g. excessive preoccupation with figure, weight and their control). The line of argument for transdiagnostic mechanisms is the transformation of the symptoms of one type of eating disorder into another type during the course of treatment (and afterwards) (e.g. symptoms of anorexia nervosa converted

to symptoms of bulimia nervosa), and the fact that the symptoms of eating disorders are non-transformed into other mental illnesses [22]. It is worth pointing out that this evidence leads to the use of the transdiagnostic model of eating disorders in enhanced cognitive-behavior therapy (CBT-E) [23].

The basis for the transdiagnostic model of eating disorders was the cognitive-behavioral model of anorexia and bulimia [22]. The core psychopathology of eating disorders is a dysfunctional cognitive schema related to low self-esteem, high perfectionism, mood intolerance and difficulties in relationships with other people [15]. These psychopathological symptoms of bulimia nervosa play a relevant role in the emergence of an excessive preoccupation with figure, weight and their control, self-monitoring, and restrictive eating [22]. The only symptoms of bulimia which are not related to the core psychopathology are paroxysmal overeating and inappropriate use of compensatory behaviors (self-induced vomiting and laxatives). In addition, the emergence of these symptoms is often associated with difficult life issues and negative mood. Some of

the symptoms of bulimia are also characteristic of anorexia. The cognitive-behavioral theory of anorexia nervosa (restricting subtype) encompasses the following common elements: excessive preoccupation with figure, weight and their control, and non-compensatory weight control (restrictive diet). Body image disturbance and maladaptive behaviors lead to excessive concentration on eating, social withdrawal, severity of obsessive thoughts and behaviours in relation to the body, and excessive satiety. These symptoms reinforce other maintaining mechanisms [15,22]. Anorexia and bulimia also differ in the level of the relationship between food restriction and binge episodes. The first type of eating dis-

order is related to dieting. Instead, patients with bulimia exhibited more severe paroxysmal over-eating than restrictive eating [22].

The clinical features and maintaining mechanisms which are characteristic of anorexia nervosa and bulimia nervosa play a relevant role in the occurrence and maintenance of atypical eating disorders [15,22]. The core psychopathology of all types of eating disorders is related to very similar symptoms and many elements of the maintaining mechanism are repeated in all types [22]. CBT for eating disorders in the transdiagnostic approach is described earlier (Figure 3) [15].

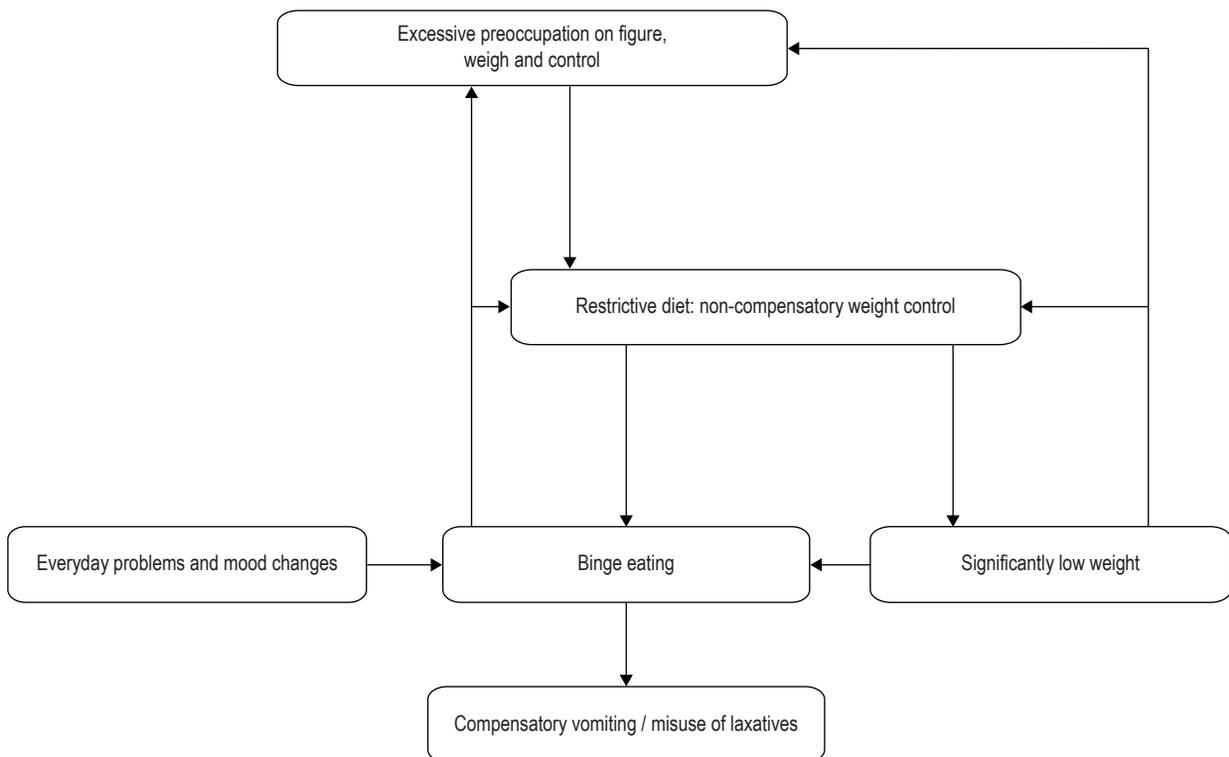


Fig. 3 The 'transdiagnostic' theory of eating disorders: cognitive behavioural approach (adapted from Fairburn et al.) [12]

A reward-centred model for the development and maintenance of anorexia nervosa

A significant amount of research shows that neurobiological and psychophysiological factors are relevant to the development and maintenance of eating disorders [16,24]. Both groups of factors lead to a distortion of body image and to abnormal eating patterns [25,26]. It is worth pointing out that reward association learning is

relevant in the treatment of persistent symptoms of anorexia nervosa (the formation of a connection between desirable behaviors and a reward) and is related to increase dopamine activity [16].

The reward-centred model for the development and maintenance of anorexia nervosa emphasises that the process of the development of anorexia nervosa encompasses several groups of factors [16]. The first group are: triggers (e.g. suppression of emotions), socio-emotional fac-

tors (e.g. the social part of empowerment), physiological factors (e.g. dopamine). This element is related to the association between vulnerability (preamplifier factors; e.g. personality) and behavioural changes (e.g. compensatory behaviours), and behavioral changes and reward (e.g. propensity to increased susceptibility to pathological behaviors). Three of the above factors in-

itiate the formation of a negative attitude to food and to weight gain. Behaviors of anorexia support an increase in dopamine activity which perpetuates the negative cognitive biases associated with anorexia nervosa (related to eating, weight and shape). Thus, persistent symptoms of anorexia nervosa lead to the formation of a full-blown syndrome (Figure 4) [16].

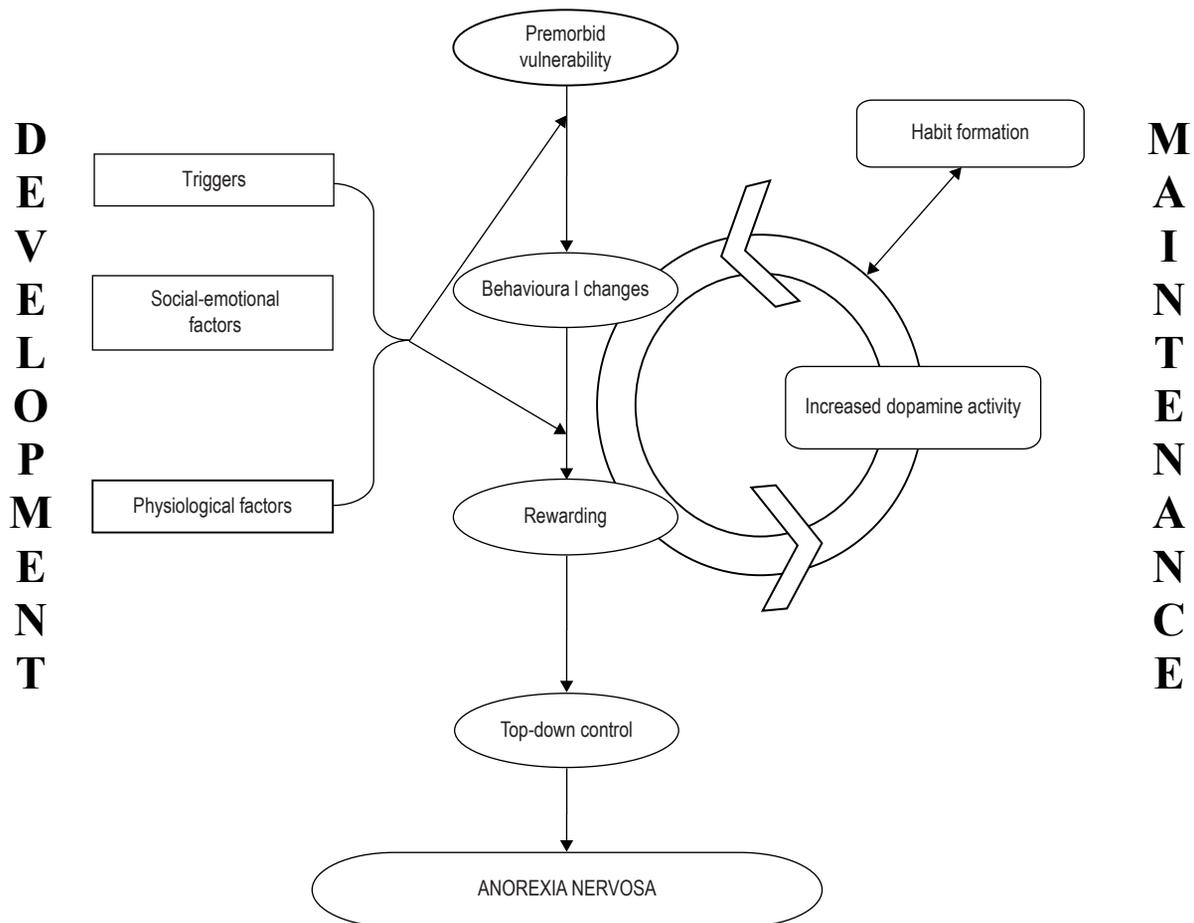


Fig. 4 A reward-centred model of anorexia nervosa (adapted from O'Hara, Campbell & Schmidt) [13]

The transtheoretical model of eating disorders

The models discussed so far provide a lot of information about the etiology and mechanisms of the maintenance of eating disorders. However, it is worth pointing out that other studies describe other factors related to eating disorders. The Maudsley Model of Anorexia Nervosa Treatment for Adults (MANTRA) considered the existence of four main maintaining factors [27,28]. First is the propensity to a 'thinking style' related to inflexibility, excessive focus-

ing on detail and fear of making mistakes. Problems in the emotional sphere – the second factor – encompass avoidance in experiencing and expressing emotions, and difficulties in emotional regulation. The third group of factors are linked to interpersonal relationships – some patients display difficulties with adaptive emotional responses in relation to other people (e.g. a preponderance to negative emotions: fear, guilt, shame). The last factors – pro-anorexia beliefs – are related to the belief that anorexia helps the person to function in everyday life (e.g. 'AN

makes me safe’) [27,28]. Starvation can be considered as a factor supporting and reinforcing the above-mentioned elements. Its consequences are mutually reinforcing for the four main maintaining factors [27,28]. The MANTRA emphasises that difficulties with socioemotional functioning are initiated by alexithymia, high experience of negative emotions, high symptoms of social anxiety, and a high level of upward social comparison [29,30].

In addition, some patients with bulimia nervosa suffer improper parental care [31]. Physical violence and sexual abuse predispose to the occurrence of eating disorders [32]. Previous research shows that patients with bulimia nervosa got the least adequate care and the most emotional abuse (vs. patients with anorexia nervosa and vs. non-clinical group) [31]. Emotional

abuse is also an important etiologic factor in the occurrence of obesity and compulsive overeating [33]. Furthermore, maladaptive regulation of emotional states plays a relevant role in the mediation between emotional abuse and the emergence of eating disorders [17,32,34]. Other research shows that increased bulimic symptoms lead to a rise in emotional dysregulation [35]. High levels of emotional difficulties are also associated with high-intensity use of compensatory behaviours (perfectionism moderates this relationship) [35,36]. It is worth pointing out that emotional difficulties are related to emotional eating – it occurs with bulimic symptoms and preoccupation with food [36].

To sum up, based on the above-mentioned models and research, the transtheoretical model of eating disorders was created (Figure 5).

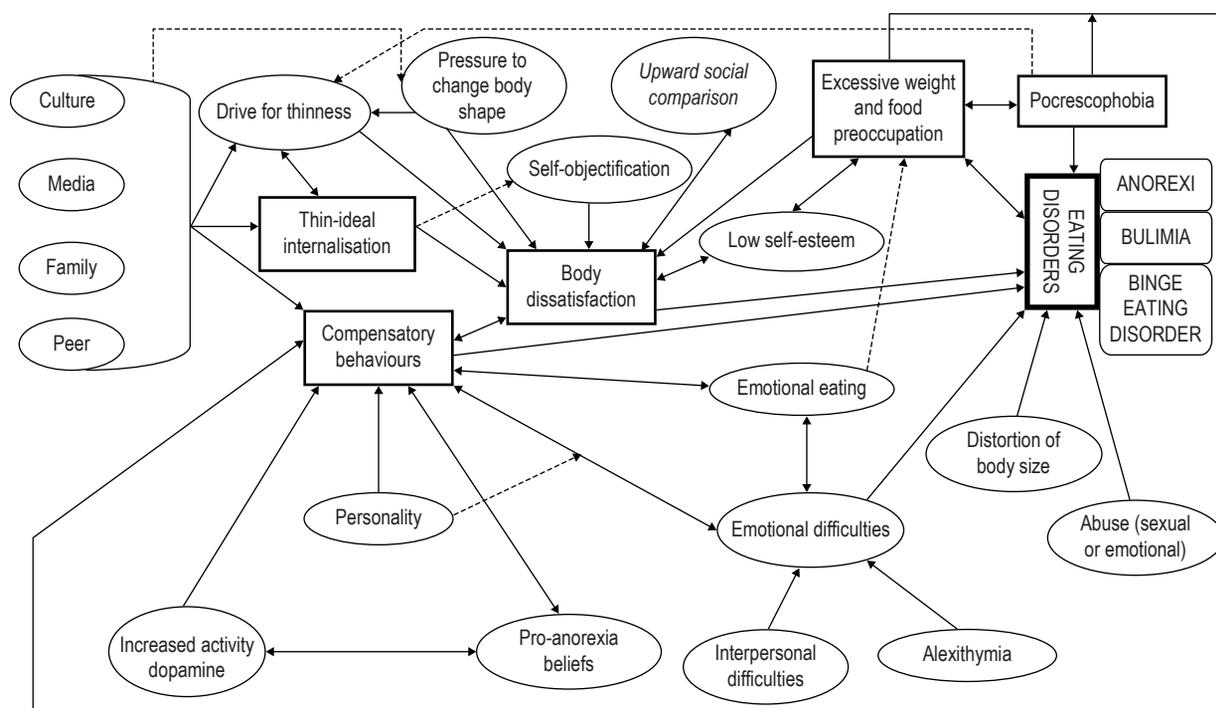


Fig. 5 Transtheoretical model of eating disorders

Legend: Figure 5 encompasses factors leading to emergence and persistence of eating disorders. The bold elements are the symptoms of eating disorders (defined in DSM-5). The dashed lines describe direct relations between variables.

Eating disorders and body image

There is no doubt that eating disorders and body image are closely related. The Eating Issues and Body Image Continuum focuses on eating patterns and body image as a developmental issue [37]. The Continuum presents a range of eating

patterns and attitudes to body image, with an absence of issues about eating and the body at one end of the spectrum and eating disorders and negative body image located at the other end (Figure 6).

The two columns on the left involve healthy attitudes toward eating and body image. Columns

three and four reflect a movement towards unhealthy attitudes, where both preoccupation and distortion of body image and preoccupation with

eating and methods to control food intake occur. Finally, column five concerns pathological behaviors towards body image and eating patterns.

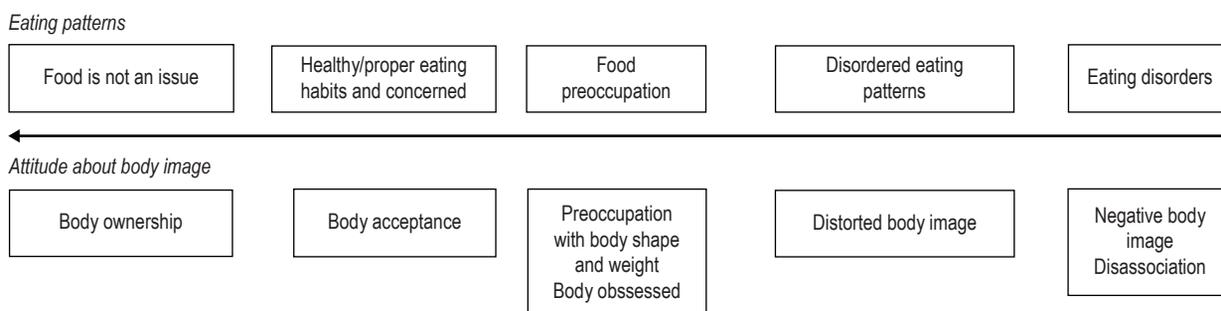


Fig. 6 Eating Issues and Body Continuum (adapted from Smiley, King & Avey, 1997 cited in 14)

Other approaches to eating disorders and body image

Humanistic approaches concentrate on an individual's potential and inherent drive toward self-actualization and the importance of a sense of meaning and purpose in order to feel fully alive [38,39]. They highlight that important elements of treatment are empathy, unconditional acceptance and comprehension of other people's emotional states, behaviours and beliefs. This approach assumes that self-actualization and self-realization are significant for mental health. Treatment is related to the finding and realization of need [40].

Systemic approaches are related to a dysfunctional relationship within the family [41]. There are three main systemic approaches. First, Minuchin's Structural Family Therapy assumes that symptoms (of eating disorders) are connected with the maintenance of family homeostasis [42]. The characteristic features of such families are: enmeshment, rigid boundaries, overprotectiveness and lack of adaptive coping with conflict [42]. Palazzoli's Milan Systems Approach highlights the salience of the sociocultural aspect (e.g. pressure to be thin) and family (e.g. pressure to be the best in school and a high achiever) for the development of anorexia nervosa [41]. Last, Weber & Stierlin's Systemic Approach to the Understanding and Treatment of Anorexia Nervosa assumes that in an anorexic family transgenerational transmission of maladaptive beliefs and values takes place, as well as a dysfunctional process of separation-individuation [43].

The basis for the integrative approach to eating disorders are other psychotherapeutic approach-

es focused on etiology and maintenance mechanisms [44]. Slade's approach assumes that to understand eating disorders, we must have complete information about the disease. The author enumerates three main groups of factor which are significant for eating disorders: predisposing factors (e.g. dysfunctional family relationships, perfectionism), trigger factor (e.g. negative comments about the body, loss of control and a diminished sense of efficacy) and maintenance factor (e.g. positive comments after losing weight, sense of control over eating). A holistic treatment influences the different aspects of the illness [44].

Previous research showed that low proprioception is an important factor in eating disorders etiology [45]. Body image disturbance is one of the most common clinical features attributed to eating disorders. Therefore, body oriented therapies are often used as an auxiliary method. Treatment for eating disorders can include a variety of commonly used methods including dance movement therapy, which focuses on the body, body experience, movement or physical exercise, kinesiotherapy and body-oriented psychotherapy [46], the body-mind approach, analytical body psychotherapy, the Hakomi Method [47]. An approach that focused primarily on the body is body-centered therapy (body-focused therapy) [48,49]. Patients are encouraged into movement, yoga and other breathing/relaxation exercises to increase interoceptive awareness. It also allows to distinguish between emotions and the feeling of hunger and increase control of the symptoms of eating disorders [44, 48,

49]. It is noteworthy that an increasing number of studies emphasizes the importance of body-focused therapies in eating disorders [46].

CONCLUSIONS

Since high levels of concern over one's body shape and weight (a disturbance in the cognitive and affective components of body image) constitute the core psychopathology of eating disorders [50], researchers have begun to evaluate factors that might contribute to body image problems as well as to construct hypothetical models of risk for eating disorders. These models explain how variables connect with one another to predict eating disorder symptomatology. In the multidimensional model of eating disorders [15], anorexia nervosa and bulimia nervosa are presented as multidetermined and heterogeneous syndromes resulting from an interaction of biological, psychological, familial and socio-cultural predisposing factors. In the dual-pathway model of eating pathology [13,14] dieting and negative affect predict increases in eating disorder symptoms. Nevertheless, in both models, body dissatisfaction leads to eating disorders via dieting.

Previous research has demonstrated the role of body image disturbance in predicting the severity of eating disorders [51], in maintaining eating disorders [17] and in the occurrence of relapse [52]. It is worth noting that knowledge of predictive factors makes it possible to design prevention programs, whereas knowledge of maintaining factors makes it possible to design optimally effective treatments for patients with eating disorders. Nevertheless, despite numerous theoretical, empirical and psychotherapeutic approaches to the problem of what causes eating disorders and body image distortions, the question remains open. In addition, it is worth remembering that many of the cited studies are cross-sectional and that actual predictive factors can only come out of prospective longitudinal studies.

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