

Risk Factors Involved in the Development and Maintenance of Dysfunctional Eating Behaviors: a Theoretical Review

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Abstract:

Introduction: *Dysfunctional eating behaviors usually involve unhealthy eating patterns like: restrictive eating, uncontrolled/binge eating or emotional eating. The increasing prevalence of eating pathology, its high negative impact on the physical and mental health of the individual and the relatively low efficiency of the preventing and treatment programs indicate the need of a better understanding of this issue.*

Objective: *This article aims at outlining an overall configuration of predisposing, triggering and maintaining factors of dysfunctional eating attitudes and behaviors.*

Methods: *The method employed in elaborating this paper was a theoretical review of the available scientific literature presenting risk factors involved in the development and maintenance of dysfunctional eating behaviors. The paper focuses on and describes the most impacting factors.*

Results: *The risk factors are presented taking into account the intrapersonal, interpersonal and socio-cultural areas of influence. The findings indicate that numerous and various factors play different roles in the onset and maintenance of eating pathology.*

Conclusions: *Although many of the factors have not been tested through longitudinal design studies, the data offers a broad perspective on risk conditions of dysfunctional eating behaviors. The information provided in this paper does not only contribute to a better understanding of eating pathology, but it can also be used as a starting point in developing prevention programs for eating disorders.*

Keywords: *eating disorders, dysfunctional eating, risk factors*

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1. Introduction

Alarming, studies indicate that an increasing number of people display dysfunctional or unhealthy eating patterns (Hudson, Hiripi, Pope & Kessler, 2007; Polivy & Herman, 2002). Eating behavior can be considered dysfunctional if it is dissociated from its natural function of satisfying hunger and nourishing the body and it is instead directed toward losing weight, reshaping the body and releasing stress (Berg, 2000). Once governed by external factors eating behavior becomes chaotic (rigid diets, binge eating, skipping meals etc.) providing much more or much lower energy intake than the body actually needs (Berg, 2000).

Taken to the extreme, dysfunctional eating behaviors grow into clinical eating disorders (ED). ED regroups several diseases characterized by excessive concern about eating, leading to the development of abnormal eating patterns (either insufficient or excessive) and compensatory behaviors (Fairburn and Walsh, 2002; Smink, Van Hoeken & Hoek, 2012). The main features of eating disorders are body image distortions, restrictive eating and uncontrolled eating and extreme behaviors of shape and weight control (purgation, starvation, compulsive exercise, Striegel-Moore & Bulik, 2007).

Whether they involve drastic limitation of food ingestion or loss of control over eating, followed by binge eating or emotional eating, or inability to follow a healthy diet, they have serious consequences on the physical and mental health of the individual. In a meta-analytic research, Winkler et al. (2014) revealed a significantly lower quality of life in the case of people suffering from ED compared to the general population. Other studies have shown the existence of increased interpersonal problems (Connan et al., 2009), sexual dysfunction (Pinheiro et al., 2009), a higher level of substance abuse (Courbasson & Brunshaw, 2009) and a higher suicide rate (Papadopoulos et al., 2009), in the case of people suffering from eating disorders than the general population.

Another issue is the low efficiency of eating disorders therapies (Bulik, Berkman, Brownley, Sedway & Lohr, 2007; Carter et al., 2011; Kass, Holko & Wilfrey, 2013; Shapiro et al., 2007; Zipfel et al. 2014), and of weight loss programs for obese individuals (Tsai & Wadden, 2005). Empirical data shows that at the end of cognitive behavioral therapy, over 50% of patients suffering from various types of ED were still displaying symptoms fully or partially (Byrne, Fusland, Allen & Watson, 2011; Fairburn et

al., 2009). These results indicate the need for a better study and understanding of the predisposing, triggering and maintaining factors of dysfunctional and unhealthy eating patterns.

In the scientific literature, the factors impacting the dysfunctional eating attitudes and behaviors are generally presented considering the following areas of influence (Connors, 1996; Pike et al., 2006; Shisslak & Crago, 2001; Striegel-More & Cachelin, 1999): 1. individual or intrapersonal; 2. interpersonal; 3. socio-cultural. A good understanding of the risk factors and of how they act to promote, initiate and maintain dysfunctional eating attitudes and behaviors would substantially contribute to unravel the etiology of eating disorders and to improve ED prevention and treatment programs.

2. Risk factors

2.1. Individual factors

There are various and numerous individual factors with predisposing, triggering and maintaining role in eating pathology. Our article focuses on the factors that yield the greatest impact. The analyses of evidence-based research and theoretical studies among individual factors which have the highest impact on developing eating disorders (ED) has provided support for variables as: being a female/young woman or an adolescent, personality traits, low self-esteem, body dissatisfaction, worries concerning the body and food-related items, self-control, negative affect, problem solving difficulties, genetic predispositions, executive functioning deficits, cognitive biases (attention and memory bias).

Data on the prevalence of eating disorders indicate an increased risk for women (Hudson, Hiripi, Pope & Kessler, 2007; Hudson, Coit, Lalonde & Pope, 2012), and for puberty and adolescence as time of ED onset (Hudson et al., 2007; Zysberg & Tell, 2013). The main cause is considered to be the culturally objectification of women and the appreciation of their value depending on sexual attractiveness, defined nowadays according to standards of suppleness almost impossible to attain. Since childhood, women are taught that power, respect and wealth depend on physical appearance. According to the objectification theory (Fredrickson & Roberts, 1997) girls and women often internalize an external observer perspective as the main image on their bodies. This perspective may cause constant monitoring of one's body, followed by feelings of shame and anxiety and diminishing of the awareness over internal physiological signals.

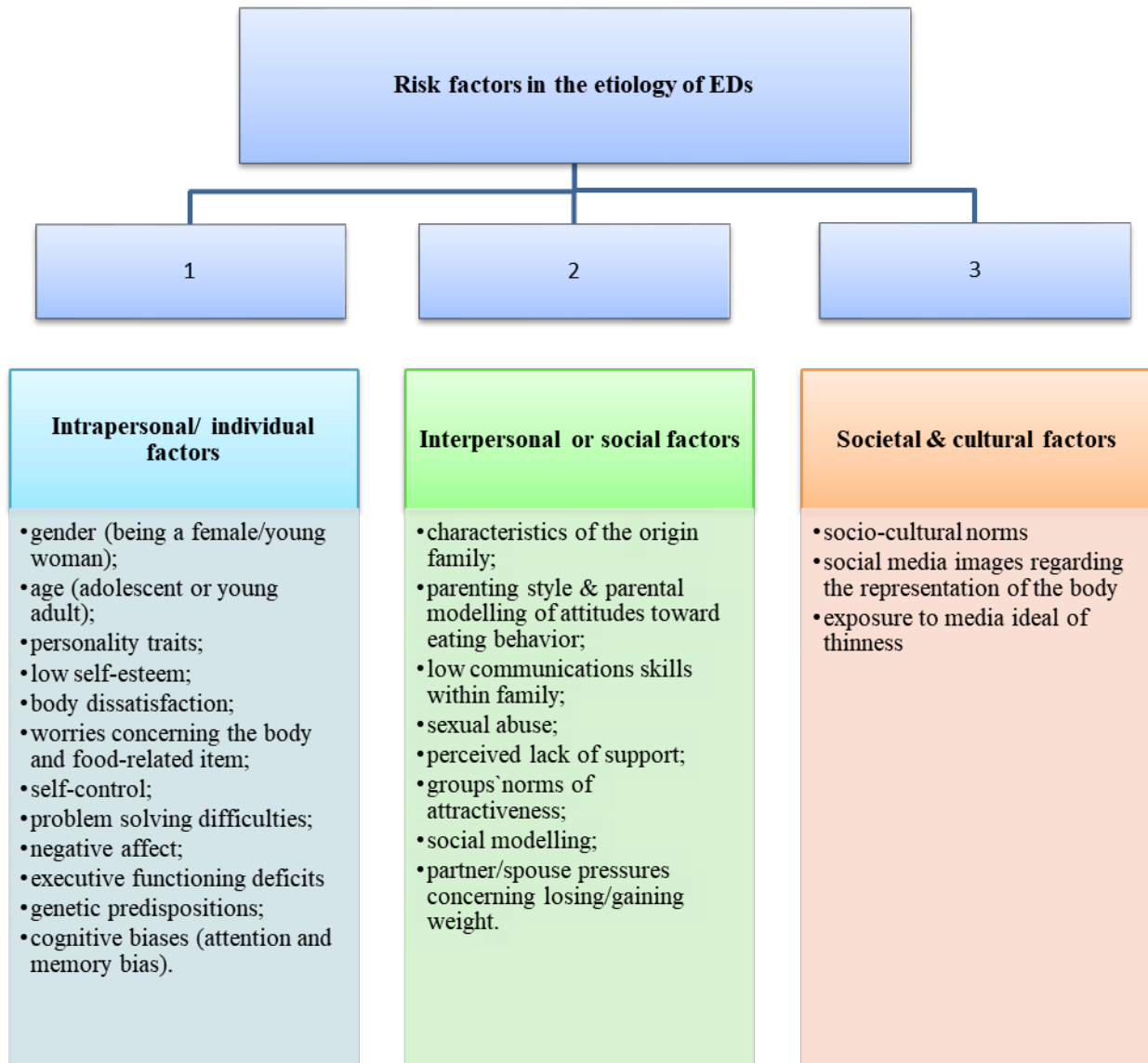


Figure 1. The risk factors in the etiology of eating disorder: an overview

Nevertheless, from a gender perspective, women have been shown to be more regardful about food and health issues than men, who are more confident and demonstrate a rather uncritical and conservative adherence to eating profiles and patterns (Arganini, Comitato, Virgili, & Turrini, 2012). One possible explanation for the gender-specific patterns of healthy food choices might be related to nutritional information knowledge. Specifically, culturally and socially defined roles differ between males and females, leading to significant differences in their knowledge about health and nutrition and their exposure to nutrition risks. For example, gender plays an important role in determining risk factors for eating disorders, which influence nutritional outcomes. The most common of these are anorexia nervosa, bulimia

nervosa, and binge eating. According to Buckland, Dalton, Stubbs, Hetherington, Blundell, & Finlayson (2015) knowledge gives a position of power on food label use. One reason is probably that food-related activities, such as shopping, cooking and eating are conventionally presented as female-centered. Given women's traditional role in purchasing, preparing and providing food, it is not surprising that men know less about the health benefits of specific food items. Indeed, Emanuel, McCully, Gallagher, & Updegraff (2012) studied the gender differences in fruit and vegetable intake revealing that women's attitude toward food was different than men's. Women reported more positive attitude toward fruit and vegetable intake than men. In general, many studies reported here are consistent in concluding that women generally make slightly

healthier food choices, but they are also more exposed to develop eating disorders.

There is also evidence in assuming age as an important risk factor for eating disorders. For instance, the onset age for anorexia nervosa and bulimia nervosa, based on a study of Woodside & Garfinkel (1992) on a sample of 323 patients, referred to a tertiary center. While the pattern of anorexia nervosa and bulimia nervosa onset is similar up to age 25, there is a significant excess of new cases of anorexia nervosa beyond this point, suggesting that young adults and adolescents may be vulnerable in developing eating disorders.

Personality factors may also predispose to the development of EDs. Studies comparing the features of bulimic patients with those of the general population, revealed: 1. higher levels of novelty search, impulsivity and harm avoidance (Diaz-Marsa, Carrasco & Saiz, 2000; Fassino et al. 2002; Kleifield, Sunday, Hurt & Halmi, 1994); 2. a higher rate of negative affect and reactivity to stress (Pryor & Wiederman, 1996); 3. several personality disorders (Bulik, Sullivan, Joyce & Carter, 1995). Compared with the general population, anorexia nervosa was associated more with personality traits such as: 1. higher levels of harm avoidance, conscientiousness, persistence and perfectionism (Halmi et al., 2000); 2. a higher frequency of obsessive symptoms (Halmi et al., 2000; Srinivasagam et al., 1995).

Perfectionism is a personal trait characterized by setting unrealistic standards, trying to do everything flawlessly, critical evaluation of oneself and worries about the evaluations of others (Hewitt, Flett & Ediger, 1996). It was often described as a specific characteristic of eating disorders (Boone, Soenens, Vansteenkiste & Braet, 2012; Halmi et al., 2000; Hewitt et al. 1996). Over time, studies have revealed positive associations between: 1. eating disorders and unrealistic standards of attractiveness and thinness (Garner, Olmstead, Polivy & Garfinkel, 1984) or unrealistic expectations and attempts in different situations (Butterfield & Leclair, 1988, apud Hewitt et al., 1996); 2. perfectionism and eating disorders (especially anorexia nervosa; Halmi et al., 2000), restrictive or binge eating patterns (Boone et al., 2012); 3. anorexia and bulimia nervosa and perfectionist personal standards, high levels of worry about the mistakes and doubts about actions (Bulik et al., 2003; Sassaroli et al., 2008). If self-oriented perfectionism has been associated with anorexia nervosa, the social facets of perfectionism (especially socially prescribed perfectionism and perfectionist self-presentation) were

associated with various symptoms of eating disorders, and also with avoidance of body image and with self-esteem (Bastiani, Rao, Weltzin & Kaye, 1995). According to Hewitt et al. (1996), perfectionism can lead to the development of eating disorders by involving three different mechanisms: 1. perfectionists usually set high and strict standards, and this might also include standards of body shape and weight; 2. perfectionists are more sensitive to the expectations of others and to socio-cultural standards of thinness; 3. the desire to display a perfect image in front of others in order to obtain their approval leads to embodiment of the socio-cultural ideals of attractiveness. A recent clinical model, *Embodied Cognition*, highlights the central role of the body in influencing the mind (Foglia, & Wilson, 2013). According to this theory, human cognition is fundamentally grounded in sensory-motor processes and in our body's morphology and visceral states. This amounts to saying that, cognitive functions are influenced by bodily states. From this perspective, our conceptual system is the result of the interaction of a dual representation system: schematic or allocentric which includes body schema, objectified body, and body image, respectively perceptual or egocentric which integrate spatial body, active body and personal body. Additionally, the comparison between the objectified body and an ideal societal body, expression of social norms and values, creates an outcome which is a new representation of the body - body image. This concept integrates the objectified representation of the personal body with the ideal societal body (the *Ideal Me*) and enhances our bodily self-consciousness. Moreover, Riva (2014) connects this theoretical model to eating disorders. More specifically, this author suggests that eating disorders may be the outcome of a disturbance in the way the body is experienced and remembered: individuals with eating disorders may be locked to an objectified body that is no longer updated by contrasting egocentric representations driven by perception. The impossibility of attaining societal standards determines unhealthy eating pattern and food choices.

Low self-esteem is another common characteristic of people suffering from eating disorders. Numerous studies have revealed a strong correlation between low self-esteem and eating disorders. Some authors suggest that this is a necessary condition for the development of eating disorders, namely that it may be considered a common etiologic mechanism by which multiple factors trigger the disorder. Empirical data

indicate that low self-esteem is a predictor for body dissatisfaction and eating disorders (Tiggemann, 2005). A longitudinal study, which followed the evolution of 400 student girls, revealed that those who had low self-esteem when they were 11-12 years old developed more symptoms associated with eating disorders at age 15-16 (Button, Sonuga-Barka, Davies & Thompson, 1996). In a study of Shea and Pritchard (2007), self-esteem proved to be the second predictive factor of bulimia, drive for thinness and body dissatisfaction. Bardone, Vohs, Abramson, Heatherton & Joiner Jr. (2000) suggest that the individuals that consider themselves overweight, with high levels of perfectionism and low self-esteem are at a very high risk of developing symptoms associated with bulimia nervosa. Therefore, the literature indicates that eating extends beyond the need of covering - physiological needs, having a major role in identity expression, communication, social relationships, as well as in defining gender roles and building self-esteem.

Body image is another predisposing factor of developing eating disorders. It is the result of the way we perceive our body, the mental picture of one's body appearance (Kowner, 2002). In the US, an alarming rate of adolescents and preadolescents (50%) are experiencing body dissatisfaction, regardless of body size or race (Berman, Presnell & Martinez, 2006). Studies with longitudinal design revealed that body dissatisfaction considerably increases the risk of displaying dysfunctional eating behaviors and predict a lower level of self-esteem, depression and obesity (Grabe, Hyde & Lindberg, 2007; Paxton, Neumark-Sztainer & Hannan, 2006; Tiggemann, 2005). Neumark-Sztainer, Paxton, Hannan, Haines & Story (2006) have shown that low levels of body satisfaction were associated, five years later, with risky health behaviors, such as unhealthy weight control behaviors and hyperphagia. Recent empirical evidence suggest that both sexes experience body dissatisfaction - young women with normal weight consider themselves overweight and want to lose weight, while young boys want to increase their muscle mass (Forbes et al., 2001; Furnham et al. 2002; Pritchard, 2008, Parent & Moradi, 2010; as cited in Ennis, 2012).

Worries about body weight and diets associated with body dissatisfaction are considered to be a precipitating factor of partial or clinical eating disorders in adolescents (Killen et al., 1996; Gowers & Shore, 2001). Worry is conceptualized as a thought activity characterized by pervasive anxious predictions and fears of possible future negative events. Despite

the fact that an increasing number of individuals express their desire to lose weight, especially in industrialized countries, the prevalence of obesity increases because of the difficulty of maintaining a certain weight in the long term (Teixeira et al., 2010). Several studies (Doucet, Ameras Despres, Bouchard & Tremblay, 2001; Provencher et al., 2004) discovered that women who previously followed a diet are more likely to gain weight later on than women who never kept a diet. This suggests that the ability to regulate eating is vulnerable, particularly under conditions where the control is voluntary and long-term. To sum up, a consistent body of research has revealed that people with eating disorders, such as bulimia or anorexia nervosa, have prevalent weight and food concerns (Neumark-Sztainer et al., 2002) which become habitual and automatic and further contribute to the maintenance of eating disorder, as typical cases of overeating, undereating or purging behavior. In turn, a common worry can be viewed as a helpful strategy that may facilitate performance in goal striving toward healthy eating.

Positive correlations were observed between high levels of control and anorexia (individuals enact restrictive eating behaviors as a way of self-control, and sometimes as a way of controlling others (Jarman et al., 1997) and between low levels of control and binge eating patterns (eating behavior is used as a means of emotional regulation, Matheson et al., 2012; Osborn et al., 2013; Tagney et al., 2004; all authors cited in Zysberg & Tell, 2013). Although self-control has proved to be a valuable skill, it can harm the individual if not doubled by flexibility, resilience (adjusting the self-control levels in either direction, in order to adapt to a given situation; Astani, 2015; Block, 2002; Dvorak & Simons, 2009). Besides the two attributes, the motivation and the goals underlying self-regulation have also proved to be important.

Studies regarding the eating regulation behavior show that the persons who display extrinsic motivation to regulate their eating behavior are more prone to develop dysfunctional eating behaviors than those who display a self-contained type of motivation. (Pelletier, Dion, Slovenian-D'Angelo & Reid, 2004; Strong & Huon, 1999, Verstuyf, Patrick, Vansteenkiste & Taxeira, 2012). Pelletier et al. (2004) showed that relatively autonomous eating regulation is associated with fewer symptoms of bulimia and healthier eating behaviors, while relatively controlled eating regulation is associated with more bulimic symptoms and less healthy eating behaviors. Regarding the goals involved

in eating regulation, several studies (Putterman & Linden, 2004; Schelling et al., 2011) showed that weight loss in order to be physically attractive/to have a thin body is associated with rigid diets, loss of control over food intake, while adopting a healthy eating style is associated with a lower rate of maladaptive eating behaviors aiming towards weight loss (Thogerson-Ntoumani, Ntoumanis & Nikitaras, 2010; Verstuyf et al., 2012).

Previous research indicates that having difficulties with identifying, regulating and expressing negative emotions can lead to the development of eating disorders. Anorexia nervosa was associated with difficulties in recognizing emotions, tolerate stress and emotion regulation, maladaptive beliefs about negative emotions and about expressing them (Hambrook et al., 2011; Harrison, Sullivan, Tchanturia & Treasure, 2009, 2010), the awareness and understanding of emotions, emotional intolerance, emotion avoidance, expressing emotions and negative beliefs, extreme emotional reactions and lack of empathy (Kyriacou, Easter & Tchanturia, 2009). Hambrook et al. (2011) indicates that anorexics tend to put others before them, and to present a compliant external image, even when you feel hostility. Empirical data show that bulimia nervosa is predicted by emotional intelligence, alexithymia, negative affect and emotional regulation (Markey, Vander & Wal, 2007) and is associated with difficulties in identifying and regulating emotions and impulses and with ambivalence in expressing emotions (Legenbauer, Vocks & Ruddle, 2008; Quinton & Wagner, 2005; Slim & Zeman, 2002). Difficulties in emotional regulation were also associated with binge eating disorder (Munsch, Meyer, Quartier & Wilhelm, 2012). Women suffering from eating disorders show a lower tolerance to stress than the healthy ones; first tend to avoid emotional experiences, whereas healthy women make more efforts for accepting and managing them (Corstorphine, Mountford, Tomlinson, Waller & Meyer, 2007). Depression proved to be another important predictor of eating pathology (Santos, Richards & Bleckley, 2007; Dennard & Richards, 2013). A meta-analysis (Caglar-Nazali et al., 2014) indicated a series of emotional and social problems as possible factors involved in the development and maintenance of eating disorders: insecure attachment, low perceived parental affection, difficulties in recognizing and expressing facial emotions and communication, increased eye contact avoidance, low social skills, low authority, difficulty being assertive, negative self-evaluation, alexithymia, a low

understanding of mental states and sensitivity to social dominance. Dysfunctional eating behavior is seen as a mechanism operated to inhibit negative emotions (especially those of anger and disgust; Fox & Power, 2009). Hayaki (2009) stresses that individuals who expect eating to generate emotional release are at a higher risk of developing eating disorders.

The difficulties in solving problems/conflicts have been shown to be also involved in the development of eating disorders. In a study of Holt & Espelage (2002), eating pathology was associated with more inefficient problem solving in interpersonal situations. Another study revealed poorer problem solving skills and higher rates of withdrawal from the conflict, accompanied by a stronger dissatisfaction with the romantic relationship, in bulimic patients compared with the control group. The results illustrated that women suffering from bulimia believe that “their partners cannot change”, thus feeling helplessness because of the inability to resolve conflicts in a manner convenient for both them and their partners (van Buren & Williamson, 1988).

Being part of a family with a history of eating disorders increases the risk of developing subclinical or clinical eating disorders. Studies have shown an increased risk for both anorexia nervosa and bulimia nervosa (Strober, Freeman, Lampert, Diamond & Kaye, 2000; Lilenfeld et al., 1998). Women related to people suffering from eating disorders are 7 to 20 times more likely to develop anorexia and bulimia nervosa than the general population, and monozygotic twins have a higher pathology concordance than dizygotic twins (Klump, Kaye & Strober, 2001). Also, the results suggest that the presence of obsessive personality in parents can increase the risk of developing anorexia nervosa in children (Lilenfeld et al., 1998).

Several studies indicate the presence of neurocognitive deficits in the area of executive function (governing higher-level processes, behaviors directed towards a particular purpose) in patients suffering from eating disorders (Kanakam & Treasure, 2013; van Elburg & Treasure, 2013). Meta-analytic studies involving patients with anorexia and bulimia nervosa, indicate the presence of deficits in set shifting (for example in adjusting behaviors and cognitions in accordance with the rules and requirements of changing situations; Roberts, Tchanturia & Treasure, 2010; Wu, Brockmeyer, Skunde, Herzog & Friedrich, 2014), in central coherence (for example by biased focus on small details and a decreased ability to integrate information in a gestalt; Lopez, Tchanturia,

Stahl & Treasure, 2009) and working memory (for example, the inability of the individual to temporarily store and track relevant information to achieve the goal, ignoring distracting or irrelevant information; Duchesne et al., 2010; Zakzanis, Campbell & Potsinelli, 2010). A decreased inhibitory control was also found in patients with binge eating symptoms (Wu, Hartmann, Skunde, Herzog & Friedrich, 2013). It appears that working memory plays a significant role in eating self-regulation. In fact, it has been argued that working memory (WM) may very well lie at the heart of successful cognitive control (Houben, Dassen & Jansen, 2011). In this regard, enhancing WM capacity via training appears to facilitate the successful eating regulation (Mandia, 2016). It has been suggested that more scientific evidence is needed to support the transfer of WM training from laboratory context to everyday behavior.

Individuals exhibiting eating disorders are strongly affected by a cognitive bias. It is relatively recently that researchers have begun to underline the relevance of cognitive biases in the etiology and maintenance of eating disorders (EDs). Biased processing of body-related information may predict the development of EDs. A cognitive bias represents a systematic error in thinking that affects the decisions and evaluations that people make referring to a deviation from norm or rationality in judgment, whereby the reality may be distorted in an illogical way. A consistent body of research has suggested that, in various clinical conditions individuals are biased in favor of selectively processing, remembering and interpreting information that is directly linked with their disorder (Milan et al., 2012). In the specific case of eating disorders, the beliefs and expectancies pertaining to body size, the preoccupation with weight and shape and also food-related characteristics are distorted. Individuals with EDs are assumed to form maladaptive schemas and the inaccurate cognitive structures may play a specific role in the etiology and maintenance of EDs. Furthermore, there are two research directions in this area: the first one, which focuses on cognitive biases in response to semantic stimuli (food or body-related words) and the second one, which is far less explored, that emphasizes on the cognitive biases in response to visual stimuli (i.e. pictures and photographs of human body). According to Williamson, White, York-Crowe, & Stewart (2004), the most studied cognitive biases linked to EDs are: 1. attention(al) bias, 2. selective memory bias, 3. selective interpretation bias, 4. body size overestimation, 5.

extreme drive for thinness. In this paper, we will discuss the attentional and selective memory bias, as they are the most salient in scientific literature.

Concerning attentional bias, it may be useful to define this construct. It represents a cognitive bias which means that it is a type of thinking error and it involves the tendency of the individuals to pay more attention to threatening stimuli, in this case they will focus differentially on stimuli related to weight or body shape and eating behavior. In other words, individuals with EDs are more likely to pay attention to cues pertaining to body and food-related information than the neutral cues, in contrast to healthy people (Smeets, Roefs, van Furth, & Jansen, 2008). More specifically, in the study mentioned previously, the researchers showed that the precise nature of the attentional bias in ED patients is dependent upon the type of information they are presented with. In this vein, speed detection accounted for the attention favoring of body-related cues whereas increased distraction was found associated with food-related information. This finding offers potential scope for intervention that focuses on healthy eating. Indeed, in a systematic and meta-analysis of the effects of attention in eating behavior, Robinson et al. (2013) indicated that eating when distracted produced a moderate increase in immediate intake in healthy population, but an increased later intake to a greater extent. One possible explanation for attentional bias in external eaters (individuals who are eating in response to environmental cues rather than internal hunger state) may be the stress condition (Newman, O'Connor, & Conner, 2008). According to this study, high external eaters showed greater attentional biases for all food words in the stress condition than did low external eaters. Concerning restrained eaters, there is also support that patients characterized by this eating pattern showed greater speed in detection of food cues and an enhanced orientation toward food in general compared to neutral cues. Additional novel findings were suggested that attentional bias is positively related to trait impulsivity, highlighting the relationship between the ability to control impulsive reaction and selective attention to food-related information (Hou et al., 2011). All things considered, in ED, biased information processing concerning body weight and size was assumed to reinforce overconcern with weight and disturbed body image, thereby leading to dietary restraint and body dissatisfaction, which has been correlated with the development and the maintenance of EDs such as binge eating. Investigating attentional biases in

response to visual stimuli may be particularly relevant with some core characteristics of ED, such as preoccupation with weight and shape, a low score of body satisfaction and body image distortions (Schuck, Munsch, & Schneider, 2015).

From a cognitive-behavioral perspective, individuals with ED are assumed to have developed a disordered schema that focuses on overconcern with body size and eating (Cooper & Fairburn, 1993). According to this model, overestimation of body size is viewed as a cognitive bias which has roots in a self-schema that involves memory storages related to body shape and eating behavior in general. In this situation, information about weight or body shape will be easier activated and more rapidly accessed compared to other type of information. This is what the scientific literature conceptualized as being the memory bias. Researchers commonly distinguish between explicit and implicit memory bias. Implicit memory bias is hypothesized to be related to procedural, reference, expectancy and data driven memory, whereas explicit memory bias concerns declarative, working, semantic and episodic memory data. Memory biases were mostly associated with binge eating disorder and anorexia nervosa (Strupp, Weingartner, Kaye, & Gwirtsman, 2008). In addressing the memory bias in ED is worthy of analyzing if the bias is caused by a selection, an encoding or retrieval bias. Clinical observations provide evidence for supporting the idea that patients who suffer from EDs display a selective memory bias for information consistent with their self-schema relevant to body perception. Therefore, it seems that they are more prone to remember their schema information which contains stereotyped and overvalued data concerning weight and shape, that supports maladaptive beliefs and body related preoccupation. Notably, in ED patients there was found a memory bias for words related to fat compared to control groups and the tendency to recall positive or negative comments about their weight (Svaldi, Bender, & Tuschen-Caffier, 2010). Last but not least, these results may serve to improve clinical treatments for eating disorders. This suggests the importance of considering the role of cognitive biases within clinical practice and treatment when working with patients.

2.2. Interpersonal factors

The main interpersonal factors impacting the development and maintenance of dysfunctional eating attitudes and behaviors are the *family*, the *peers* (friends, colleagues) and the *partner*.

Studies that have examined the characteristics of the families of individuals displaying eating disorders revealed several malfunctions (McNamura & Loveman, 1990; Steiger, Liquornik, Chapman & Hussain, 1991; Di Paola, Faravelli & Ricca, 2010). Empirical data indicate that compared with the control group bulimic patients perceive their families as less cohesive and emotionally expressive, as having more conflicts and as focusing more strongly towards achievement (Johnson & Flach, 1985; Stern et al., 1989; Bonne, Lahat, Kfir, Katz & Bachar, 2003). Individuals suffering from anorexia perceive their families as having a lower degree of cohesion, and as being more conflict avoidant than those in the control group (Latzer & Gaber, 1998). The mothers of adolescents high on binge eating levels reported lower levels of cohesion, organization and emotional expressiveness within the family, compared to the mothers of adolescents low on binge eating levels (Attie & Brooks-Gunn, 1989).

Regarding parenting styles, although anorexia nervosa was associated with rejective/neglectful style (characterized by emotional disengagement and low boundaries) and bulimia nervosa with overprotective style, most studies tend to rather associate parental styles with the severity of symptoms rather than with specific eating disorders (Troisi, Massaroni & Cuzzorolo, 2005; Zachrisson & Kulbotten, 2006; Horesh, Sommerfeld, Wolf, Zubery & Zalsman, 2015). A meta-analysis revealed a positive association between eating pathology and low levels of parental affection, but high protection (Tetley, Moghaddam, Dawson & Rennoldson, 2014).

Many authors believe that the dysfunctions inside the family should be seen as a predisposing cause of eating disorders and that the family experiences associated with body image, food and nutrition have actually the biggest impact in triggering and maintaining them (Crowther, Kichler, Sherwood & Kühner, 2002; Kluck, 2008). Studies that examined the indirect influence of parents' diets, maladaptive eating behaviors and attitudes and thin ideal internalization of mothers on their adolescent children's eating attitudes and behaviors, have indicated both significant (Neumark-Sztainer et al, 2010; Rodgers, Faure & Chabrol, 2009; Yanez, Peix, Atserias, Arnau & Brug, 2007) and insignificant associations (Neumark-Sztainer et al, 2010; Rodgers et al., 2009; Kichler & Crowther 2008; Baker, Whisman & Brownell, 2000). The risk that parental modeling of attitudes and behaviors can have, under certain conditions, on children, cannot although be denied.

Negative communication from family, implying criticism or ironies related to physical appearance and weight or encouragement of weight loss or dieting, showed a positive association with the dysfunctional attitudes and eating behaviors among children (Annus, Smith, Fisher & Williams, 2007; Ata, Ludden & Lally, 2007; Unikel, Von Halle, Bulik & Ocampo, 2012). A study of Neumark-Sztainer et al. (2010) including a sample of adolescent girls indicates that about 45% of them are encouraged to diet by mothers, and 36% by fathers. Keery, Boutelle, van den Berg & Thompson (2005) have shown that an increased number of secondary school student girls are exposed to negative comments of family members. 23% of them said they had been mocked by parents about their physical appearance, while 29% reported bantering about physical appearance from relatives. These data indicate that a fairly large proportion of parents are using negative communication in relation to their children.

Clinical psychologists argue that childhood sexual abuse may favor the development of eating disorders, but the results of empirical studies are not as consistent. Some studies have found associations between the history of sexual abuse or trauma and specific symptoms of bulimia nervosa (Wonderlich, Brewerton, Jolic Dansky & Abbott, 1997; Waller, 1991), but others have highlighted inconclusive associations (Smolak & Murnen, 2002).

Perceived lack of support, conflicts and dissatisfaction in relation to peers may also contribute to body dissatisfaction and eating pathology, in adolescents (Paxton, 2007). Some authors explain the findings pointing out that these adolescents perceive themselves as having low social skills (Ferriter, Eberhart & Hammen, 2010), while other authors consider it a way of seeking peer approval (Schutz & Paxton, 2007).

Peer groups have a significant contribution in shaping the attractiveness ideals of its members. Peers impact depends, however, on the closeness, the quality of relationship shared. Depending on ingroup and outgroup assessments on physical appearance (e.g., shape and weight), group members learn what is a desirable or an undesirable appearance. Also, if a group of peers attach increased importance to physical appearance, the group will tend to evaluate themselves and others, based on this criterion (Jones, Vigfusdottir & Lee, 2004). In addition to social modeling, the peers group leaves its mark on the individual's standards of physical appearance also through direct pressures (e.g.,

encouraging dieting) and indirect pressures (e.g., excluding someone who does not comply with the groups' norms of attractiveness; the concern of friends with physical appearance). Studies examining the peers influence on physical appearance showed a positive association between them and girls' worries about weight and boys' worries about muscle mass, and eating pathology in both sexes (Shomaker & Furman, 2009). Recent studies (Herbozo & Thompson, 2006; Colagero, Herzebo & Thompson, 2009) indicate that not only negative comments but also compliments on appearance may contribute to body dissatisfaction because both remind women that others evaluate their physical appearance, and lead to an increased attention on body image (for example, by body monitoring).

Fat talk inserted into casual conversation is another indirect means by which peers can cause an increased focus on physical appearance (McDonald Clarke, Murnen & Smolak, 2010). Fat talk may include comments concerning own weight ("I'm so fat"), eating behaviors ("I shouldn't have eaten it") or body shape ("Try not to catch my thighs in the picture"). Although they may appear seemingly innocent comments and increase the authenticity of the relationship through sharing common values, studies have shown that repeated negative remarks about appearance have negative effects on body satisfaction (Stice, Maxfield & Wells, 2003). Empirical data shows a positive association between dysfunctional eating behaviors in adolescents and peers' diets or comments regarding own weight loss (Neumark-Sztainer, 2010; Hitchinson & Rapee, 2007). Thus, social modeling proves to be a significant risk factor in the development of dysfunctional eating behaviors.

The partner or spouse may also exert pressures toward the embodiment of the socio-cultural ideals of attractiveness. Murry, Touyz & Beumont (1995) indicated that women are more likely to receive negative comments from partner and to be influenced by them. Other studies, however, showed that men are equally exposed as women to commentaries on weight. Sheets and Ajmere (2005) studied a group of 554 students that were in a relationship, indicating that more than 30% of them have been asked by the partner or asked their partner to lose or gain weight. While men were most often told to take weight, women were told to lose weight. Both men and women receiving this comments, reported a lower satisfaction in the relationship.

A longitudinal study conducted over a period of 10 years, involving 2287 adults indicated that about 22% of men and 24% of women received painful

comments related to weight from their partner. Hispanic, Asian and young overweight or obese young women were more likely to receive such comments than other groups (Eisenberg, Berge, Fulkerson & Neumark-Szteiner, 2011). Another study on middle-aged women indicated that partner comments (either positive or negative) had a greater impact on the body assessment of thinner women and of those that received positive comments over time. The results suggest that social feedback has important effects on self-evaluation of body appearance not only in childhood and adolescence, but also in adulthood (McLaren, Kuh, Hardy & Gauvin, 2004).

Obese individuals are the most affected by these pressures. They often accuse discrimination in selection, difficulties in finding suitable clothes, difficulties in finding a partner and public mockery (Hutchinson, 1994; Rand & MacGregor, 1990; Rothblum et al., 1989). Society shows no hesitation in expressing negative attitudes towards obesity, mainly based on the idea that weight is controllable (Crandall, 1994). Negative stereotypes involving obese people include the idea that they are ugly, they have emotional and moral problems, they are asexual, unfortunate, they have a low willpower and are hard to be liked (Crandall, 1994). Surprisingly, these stereotypes are equally manifested by obese individuals (Crandall, 1994; all authors cited in Myers & Rosen, 1999).

2.3. Socio-cultural factors

Another category of factors that could favor the onset and the maintaining of eating disorders are the socio-cultural factors: socio-cultural norms that promote thinness, the direct or indirect pressures towards thinness expressed especially through media. Exposure to images, messages or patterns that reinforce the value of thinness as a sign of physical beauty/attractiveness leads, among others, to the development of a negative body images, concerns about shape and weight, self-objectification, fear of weight gain, thin ideal internalization and maladaptive weight control behavior (Stice, 2002; Neumark-Sztainer et al., 2006; Shomaker & Furman, 2009; Neumark-Sztainer, 2010).

Previous data, involving both males and females, suggest that pressures toward thinness coming from the media are felt to be significantly higher than those coming from family and peers (Kingbury, 2008). Numerous magazines, TV programs, movies/clips reinforce directly or indirectly the value and desirability of thinness for women by generally

illustrating slender models and rarely overweight models (Fouts & Burggraf, 1999, 2000; Greenberg, Eastin, Hofschire, Lachlan & Brownell, 2003). During the last years, images of women in media became increasingly thinner, and at the same time, the complaints of adolescents and preadolescents about their physical appearance increased (Stice & Shaw, 2002; Levine & Harrison, 2004). Empirical data indicates that women who appear nowadays in the media are thinner than those that appeared in the past (Silverstein, Perdue, Peterson & Kelly, 1986), thinner than the average weight of women in general (Frouts & Burhraf, 1999, 2000) and even than the weight limit of anorexia (Wiseman, Gray, Moismann & Ahrens, 1992). Constantly exposed to these media contents, individuals start to perceive them as true representations of reality, incorporating the thin ideal as a central aspect of their standard of attractiveness (Brown & Witherspoon, 2002). More recent, research has also demonstrated a positive correlation between Facebook usage, as a social media platform, and body dissatisfaction in youth. This issue leads to unhealthy lifestyles, eating patterns and eating disorders (Kulyk, den Daas, David, & van Gemert-Pijnen, 2015).

Blowers, Loxton, Grady-Flesser, Occhipinti & Dawe (2003) highlighted the fact that the pressures towards thinness coming from the media are perceived to be the highest, and thus that they are playing an essential role in the internalization of the thin ideal. Similarly Grabe, Ward and Hyde (2008) indicated that exposure to media depicted ideal of thinness correlates with higher levels of body dissatisfaction, thin ideal internalization and attitudes and behaviors specific to bulimia and anorexia nervosa. The authors also reported that the effects of media exposure on thin ideal internalization in women are stronger since 2000 compared to 1990-2000. Thin ideal internalization raises body image dissatisfaction, as it is almost impossible to attain for most women. Furthermore, this discontent causes negative emotions and strict dieting that increase the risk of eating disorders (Stice et al., 2001; Stice & Shaw, 2002; Grabe, Ward & Hyde, 2008).

Media images appear to play an important role in the way women perceive their own body, but the issue is still not entirely clear. Some studies have shown that exposure to the thin ideal (for example to television commercials or music videos; Hargreaves & Tiggemann, 2004; Strahan, 2003; Tiggemann & Slater, 2003) resulted in an increased body dissatisfaction and eating pathology in women. Also, a

meta-analysis investigating the effects of the exposure to media images depicting attractive men with muscle mass on men indicates a relative increase in body dissatisfaction that can further cause negative self-evaluation. The negative impact is greater as the previous body dissatisfaction experienced is higher (Blond, 2008). Other studies have indicated that body dissatisfaction can be also increased by exposing individuals to overweight models (Holmstrom, 2004) or that exposure to the thin ideal does not invariably trigger worry and body dissatisfaction, dieting or dysfunctional eating patterns (Groesz, Murnen & Levine, 2002; Halliwell, Dittmar & Howe, 2005; Holmstrom, 2004). Accepting social attitudes over female attractiveness (Heinberg & Thompson, 1995), low social support (Stice, Spangler & Agras, 2001) and low body satisfaction (Groesz et al., 2002) were shown to make women more vulnerable to social pressures towards thinness. On one hand, it can be argued that within society there are socially constructed gender roles that influence or even determine the differences in food choices. It has been suggested that females are more worried than men about their appearance because attractiveness is easier explained in women's case from an evolutionary view. Evolutionary perspective argues that physical beauty is a cue for the individual's reproductive success (Jokela, 2009). On the other hand, dieting in women of all ages can be explained by the current belief that thin is beautiful and thus a good strategy to attract males. The female sociocultural beauty ideal had become ultra-thin so that they would adopt dangerous diet often unattainable and unhealthy which leads to the development of EDs (Perloff, 2014). Our paper underlines the necessity that celebrities and other opinion formers should promote in social media more realistic appearances for combating harmful stereotypes and supporting a healthier lifestyle through making healthy food choices and behavior.

3. Discussion

This article was written with the aim to provide an overall picture of predisposing, triggering and maintaining factors of dysfunctional eating attitudes and behaviors. The factors were presented taking into account the intrapersonal, interpersonal, socio-cultural areas of influence. Although many of the factors have not been tested through studies with longitudinal design, these models offer a broad perspective on risk conditions of dysfunctional eating behaviors – a piece of information that is highly relevant for designing prevention programs.

The studies carried out until now used cross designs or pursued a particular sample of individuals for a relatively short period of time. Longitudinal studies over an extended period of time are needed for more accurately understand the risk factors involved in triggering and maintaining shape and weight concerns and dysfunctional eating patterns. Following a sample of individuals starting from elementary school (before the formation of dysfunctional eating attitudes and behaviors) to adulthood, might help capturing the changes that occur with age and the specific risk factors involved at different stages of development. While the impact and the mechanism of influence of some of them is clearly explained, in the case of certain factors such as dispositional self-control, motivation and goals of regulating eating behavior, pressures toward thinness and thin ideal internalization, they still require clarification (Astani, 2015, 2016; Verstuyf et al., 2012).

Most studies have focused on identifying risk factors, while protective factors received less attention. The poor efficiency of the therapeutic programs (Bulik, Berkman, Brownley, Sedway & Lohr, 2007; Kass, Holko & Wilfrey, 2013; Shapiro et al., 2007), especially in the case of anorexia nervosa (Carter et al., 2011; Zipfel et al., 2014), suggests the need of improving them and to focus a greater attention and effort to refine prevention programs. This goal cannot be achieved without detailed examination of both risk factors and their influence mechanisms and protective factors and mechanisms through which they can mitigate or cancel the effects of the first ones.

4. Conclusion

During the last decades, eating regulation has received increasingly more attention from researchers. This was due to the growing prevalence of eating pathology, its great potential to harm the physical and mental health of the individual and the relatively low efficiency of preventing and treatment programs of eating disorders. The fact that an increasing number of people exhibit dysfunctional eating patterns is hardly surprising, given the increasing socio-cultural pressures of embodying the thin ideal, which has become the equivalent of beauty, social acceptance or career success. Although many theories attempted to offer valid explanations of eating disorders and although there have been identified a wide range of predisposing, triggering and maintaining factors of ED, there are still many questions left that need to be answered. To be able to answer them and to bring to

the surface what's left unknown one needs to gain an overview of the topic. Our paper highlights that there are many important variables in the etiology of eating disorders, and therefore further research is needed in this area to develop effective psychological interventions for specific populations. We also believe that the theoretical review of the risk factors involved in developing of eating pathology carried out in this article, is an important starting point in understanding the etiology of eating disorders.

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