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Eating Disorders

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Synonyms

Anorexia nervosa; Binge eating disorder; Bulimia nervosa; EDs; Fear of weight gain; Food restriction

Definition

Eating disorders are a category of psychological disorders characterized by abnormal eating and related thoughts and emotions. People with eating disorders often have a preoccupation with food and their body image.

Introduction

Eating disorders (EDs) are a category of psychological disorders. The three main classifications in the category of feeding and eating disorders are anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED). A fourth category is "eating disorders not otherwise specified," in which individuals have eating-related problems but do not meet the diagnostic criteria for anorexia, bulimia, or binge eating. Eating disorders are characterized by abnormal eating behaviors and related thoughts and emotions (Parekh 2017). People who suffer from eating disorders are often preoccupied with food and their body image or weight and tend to be perfectionists who are extremely critical of themselves and their bodies (Parekh 2017). Eating disorders can be detrimental to one's overall health and, in some cases, they can be life-threatening conditions. For example, anorexia is associated with increased risk of osteoporosis, anemia, and damage to the heart and brain (Brownell et al. 2011). Research has shown that individuals with anorexia have a mortality rate 18 times higher than peers who do not have eating disorders (Steinhausen 2009). Bulimia can result in mouth damage, gum disease, esophageal tears, and gastric ruptures (Parekh 2017). Furthermore, eating disorders are associated with an increased risk of suicide and increased rates of other psychological disorders such as depression and anxiety (Walden Behavioral Care 2019). Approximately 90% of those diagnosed with eating disorders are females (Hudson et al. 2007). However, the number of males diagnosed with eating disorders has been slowly increasing. When it comes to binge eating disorder, males and females are equally as likely to be affected (Brownell et al. 2011). Over recent decades, researchers have been studying the potential adaptive underpinnings of psychological characteristics which at nonclinical thresholds or in different

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ancestral environments may have conferred a survival or reproductive advantage, but which in their extreme form contribute to maladaptive eating behavior in contemporary humans. This chapter will describe the symptoms and diagnostic categories of eating disorders, discuss major hypotheses surrounding the evolution of the psychological and behavioral features of AN and BN, and highlight the role of food preferences and consumption behavior that evolved in ancestral environments that contributes to binge-eating disorder in a modern food environment.

Anorexia Nervosa and Bulimia Nervosa

Anorexia nervosa is an eating disorder specifically categorized by significantly low body weight, an intense fear of gaining weight or becoming fat, and disturbances in body image (Parekh 2017). The disorder can take one of two forms: restrictive subtype and binge-eating/purging subtype (National Institute of Mental Health 2018). The disorder typically emerges in adolescence, primarily between the ages of 15 and 19, and has the highest prevalence among females in Western societies (Brownell et al. 2011). However, eating disorders can affect people of all ages, racial/ethnic backgrounds, and genders (National Institute of Mental Health 2018). Bulimia nervosa, on the other hand, involves episodes of binge eating excessive quantities of food in a short amount of time and subsequent compensatory behavior to prevent weight gain by vomiting or using laxatives, enemas, or diuretics (Walden Behavioral Care 2019). This disorder can also be classified further into two types: purging and nonpurging. Purging type is the most common form of bulimia and involves the abovementioned compensatory behaviors (Walden Behavioral Care 2019). The nonpurging type involves excessive exercise or fasting after a binge eating episode (Walden Behavioral Care 2019). Individuals with bulimia and anorexia share many features such as an extreme fear of fatness, a distorted body-image, a preoccupation with food and eating, and both primarily affect females of reproductive age in Western societies.

Since the mid-1970s, researchers have been interested in explaining the cause of eating disorders from a variety of perspectives. Some of the predominant theories are rooted in psychoanalytic approaches, sociocultural approaches, and biological approaches (see Salmon et al. 2009 for review). For example, one common sociocultural explanation attributes the cause of eating disorders to exposure to western ideals of female beauty and the internalization of a thin ideal (Salmon et al. 2009). Another set of studies from a biological approach have focused on the influence of genetics due to high heritability rates. Yet, despite the various theories that attempt to explain these disorders, they all face major limitations and thus the causation of eating disorders still remains poorly understood (Faer et al. 2005; Salmon et al. 2009).

Recently, some researchers have approached the problem from a Darwinian perspective and developed evolutionary hypotheses in an attempt to better understand these disorders. Guisinger (2003) proposed the adapted to flee from famine hypothesis, which suggests that anorectic symptoms are manifestations of adaptive mechanisms to conditions of famine faced in our evolutionary past. These symptoms include restrictive food intake, denial of starvation, and hyperactivity, the latter of which has been evidenced by laboratory findings on rodents. Aside from this and some other minor theories, a few distinct evolutionary hypotheses can be identified in the current literature, all surrounding the ultimate causation of eating disorders. These include the Reproductive Suppression Model (Wasser and Barash 1983; Voland and Voland 1989), and theories that fall under the evolutionary concept of intrasexual competition, which includes the Sexual Competition Hypothesis (Abed 1998, 2012), and the theory that anorexia is a manipulative strategy imposed on subordinates by females (Mealey 2000).

The Reproductive Suppression Model (RSM)

We first consider the Reproductive Suppression Model (RSM) proposed by Wasser and Barash (1983). This theory rests on the assumption that not all conditions are equally favorable for investment in reproduction (Wasser and Barash 1983). For example, poor mental and physical health, social and psychological stressors accompanied by a perceived loss of social support, or the expectation that future conditions will be better than present conditions should trigger the suppression of reproduction. Individuals under this type of stress might be unsuited to pregnancy and raising offspring since these are cues of unfavorable environmental conditions (Wasser and Barash 1983). In these circumstances, the ability to delay reproduction is adaptive because it allows females to avoid reproduction when environmental conditions are not conducive to her offspring's survival, and thus the benefits of suppressing reproduction often outweigh the costs. Females of many species including rabbits, elephant seals, and chimpanzees appear able to suppress or delay reproduction when environmental conditions are unfavorable. These mechanisms for "deciding" not to reproduce include suppression or delay of ovulation, delay of sexual maturation, and fetal miscarriage (Wasser and Barash 1983).

Other scholars have built on this initial theory and applied the RSM to humans to try to explain anorexia. They argue that it could be beneficial for human females to suppress reproductive potential when conditions are not favorable for investment in reproduction, and that body fat is minimized in situations when it would be disadvantageous for a girl to become pregnant (Surbey 1987; Voland and Voland 1989). By becoming anorexic, females can manipulate the timing of reproduction and stunt development. Research by Juda, Campbell, and Crawford (2004) supports the Reproductive Suppression Hypothesis, as they found women who perceived less support from their families have higher levels of dieting and decreased perceptions of parental readiness. They felt less prepared to raise a child and had more disordered eating attitudes and behaviors. Dieting is a mechanism that can be used to suppress reproduction; thus, these results lend support to the idea that dieting symptoms and perhaps eating disorders may be associated with an ancestral reproductive suppression mechanism (Juda et al. 2004).

This is highly relevant in modern day society which favors late maturation. Anorexia is a way to delay a female's natural developmental trajectory by reducing fat through strict dietary behaviors. Most women require adipose tissue to make up approximately 22% of their body weight to maintain ovulation (Salmon et al. 2009). Women with anorexia approach a dangerously low weight to the point that their bodies often become incapable of supporting reproduction. Women with anorexia often experience cessation of their normal menstrual cycle (amenorrhea), since their body fat levels drop significantly below the average (Surbey 1987). Surbey (1987) concludes that it is unlikely that anorexia itself is the result of selection. Rather, what might have been selected for is the ability of females to alter the timing of reproduction and anorexia nervosa appears to reflect this ability in response to environmental conditions (Surbey 1987). Voland and Voland (1989) noted that the patient's age, initiating events, and the developmental context of AN seem to support the connection between reproductive suppression and AN. For example, 95% of AN cases had an onset under the age of 25, which corresponds with the ages at which women are most fecund (Voland and Voland 1989). The authors also incorporate kin selection theory to explain reproductive suppression in anorexic females. It has been proposed that the reproductive suppression that occurs in anorexic individuals may be adaptive since it allows for an increase of familial helping behavior at the cost of her reproductive suppression (Voland and Voland 1989). This could allow for an increase in her inclusive fitness, as noted in an analysis of female anorexic case histories by Voland and Voland (1989). Some studies have found that anorexic individuals are constantly and excessively worried about the welfare of their families and feel responsible for protecting their family members, and this worry, coupled with excessive

helping behavior, was apparent in one of the case studies (Voland and Voland 1989).

Although the reproductive suppression model has received some support, it fails to address many key features of anorexia. For example, it cannot be used to explain why anorexia exists in postmenopausal women, why a less costly method to suppress reproduction would not have been selected for, and the distorted body image of those who have eating disorders. Furthermore, it fails to explain eating disorders in males and the mechanisms associated with other eating disorders.

Intrasexual Competition

Another evolutionary hypothesis surrounding eating disorders attempts to address some of these gaps and limitations faced by the previous explanations. The Sexual Competition Hypothesis (SCH) is based on Darwin's (1859) theory of sexual selection, which has shaped systems designed for mate attraction and retention. This theory explains that eating disorders, as well as the pursuit of thinness more generally, stem from the process of female intrasexual competition. Specifically, eating disorders are considered to be a state of "runaway" female intrasexual competition whereby the drive for thinness, which in moderation may be a useful and even adaptive strategy, instead spirals out of control in response to a range of genetic and/or environmental factors and becomes maladaptive (Abed 1998, 2012; Faer et al. 2005). Whereas men usually engage in more direct, physical forms of competition, women tend to engage in indirect forms of intrasexual competition. This often invokes the exclusion of rivals from the peer group, disparaging the competitor's appearance and gossiping or spreading rumors about the rival's fidelity or level of promiscuity (e.g., Davis et al. 2018). The goal of this form of intrasexual competition is to reduce the mate value and lower the desirability of a rival in the eyes of potential mates while simultaneously raising one's own standing within the social network.

One other competitive mechanism women might employ within this domain, which bridges intersexual and intrasexual selection is the achievement and preservation of a nubile, sexually appealing body shape, as modeled by a low waist-to-hip ratio (WHR). Reproductive potential reaches its maximum 3–4 years after puberty, and this is also the time the nubile female body takes its full shape (Abed 1998). Men exhibit preferences for women of intermediate weight with a low WHR (Singh 1993). From this, it can be inferred that the extremely low body weight of those with anorexia is not an ideal imposed by men (Mealey 2000). Research demonstrates that the most attractive female WHR was judged to be 0.7–0.8 by both males and females (Singh 1994). Conversely, males with a low WHR were considered undesirable (Singh 1995). This gender specificity of the ideal WHR suggests that this trait is fundamental to mate attraction and could have evolved via sexual selection. A low WHR in women is viewed as an honest signal of a woman's health and reproductive potential; it putatively indicates a higher estrogen ratio and greater fecundity (Jasienska 2004). Thinness has also been shown to correlate with youthfulness (Singh 1993). Thus, the pursuit of thinness can be an adaptive strategy for mate attraction and retention, but only to a point. Once the female reaches a state of being clearly undernourished and emaciated, this is no longer attractive to males and is a threat to the woman's health and wellbeing. The bodies of women with anorexia do not represent the attractive ideal, since their WHR is far from the 0.7 to 0.8 range. Furthermore, obvious malnutrition is a visual cue that can signal a woman's inability to bear children. For example, having very low body fat can result in amenorrhea, the absence of ovulation and menstruation. The SCH is also able to explain pathological by-products such as reproductive suppression. The theory proposes that amenorrhea arises as a by-product of maladaptive runaway intrasexual competition (Abed 1998). Thus, for women with eating disorders, this drive for thinness becomes extreme and maladaptive.

There has generally been more empirical support for this hypothesis relative to the others reviewed thus far. For example, Faer et al. (2005) recently demonstrated that intrasexual competition

for mates had positive direct relationship with body dissatisfaction and drive for thinness. Furthermore, it was a predictor of disordered eating behavior, suggesting that eating disorders are fundamentally linked to female intrasexual competitiveness (Faer et al. 2005). In an extension of this study by Abed et al. (2012), results demonstrated an association between female intrasexual competitiveness, status, and disordered eating behavior. This consistent finding lends more support to the SCH. In a study by Li, Smith, Griskevicius, Cason, and Bryan (2010), researchers found that for heterosexual women, but not homosexual women, intrasexual competition cues led to greater body image dissatisfaction and more restricted eating attitudes after exposure to competitive vs. noncompetitive cues of same-sex individuals. Specifically, this occurs after being exposed to a photo of a high-status competitor (Li et al. 2010). This study emphasizes the role that cues of high status competitors might be playing in the relationship between intrasexual competition and unhealthy eating behaviors. More recently, Arnocky et al. (2016) showed that when women made social comparisons to attractive intrasexual rivals (measured either as an individual difference trait or by experimental priming task), females reported being more envious and in turn were more willing to use risky diet pills in order to lose weight.

One theory that strongly supports the SCH speculates that dominant women may attempt to inhibit the reproductive capacity of other women in order to diminish resource competition (Mealey 2000). In this case, anorexia is a tactic of reproductive suppression of subordinates by dominant females which manifests as an intense form of female intrasexual competition. It has been suggested that the reproductive manipulation of subordinate women by dominants is a type of competitive reproductive suppression (Wasser and Barash 1983). Mealey (2000) hypothesizes that anorexia could be a result of increases in female intrasexual competition, specifically through the media, whereby socially successful and dominant women manipulate young women who are potential competitors for good mates and other resources. From this perspective, anorexia is a consequence of social manipulation rather than a tactic for outcompeting rivals.

Another existing theory that lends support to the SCH is life history (LH) theory. Fast life history strategies are associated with greater risk-taking and short-term thinking, whereas slow life history strategies are associated with long-term thinking and careful consideration of risks (Abed et al. 2012). The SCH predicts that intense intrasexual competition for mates is associated with disordered eating behaviors, which has been supported by research (Abed et al. 2012). Further, recent research has shown that disordered eating behavior is predicted by a fast life history strategy (Abed et al. 2012). A fast life history strategy is associated with increased effort toward propagating one's genes in the short term and involves greater mating effort compared to a slower life history strategy. Thus, a fast life history strategy is consistent with the increased mating effort involved in high levels of female intrasexual competitiveness, and slow life history strategies are incompatible with increased levels of intrasexual competitiveness. Indeed, a slow life history strategy was found negatively correlate with intrasexual competitiveness (Abed et al. 2012). Furthermore, it seems that a slow life history strategy incorporates increased behavioral regulation or self-control, which plays a protective role against female intrasexual competitiveness and the development of disordered eating behavior (Salmon et al. 2009). Thus, these results categorize eating disorders as pathologies of deficient behavioral regulation and indirectly associate disordered eating behaviors with faster life history strategies and high intrasexual competitiveness.

The SCH has recently been applied to a wider range of eating disorders, since the drive for thinness is apparent in both individuals with bulimia and anorexia. This hypothesis proposes that intense female intrasexual competitiveness is the ultimate cause of both eating disorders (Abed et al. 2012). However, this hypothesis does not come without its own limitations. Namely, it still makes it difficult to explain the existence of eating disorders in males; however, sex differences in response to intrasexual competition may explain

why dietary restriction and AN is substantially more common in females. Additionally, this hypothesis rests upon the assumption that concern about physical attractiveness is universal. Since the Sexual Competition Hypothesis and the process of reproductive suppression both involve female intrasexual competition, it is also possible that both mechanisms might be working together in some cases (Abed 1998). This growing body of evidence suggests that the psychological and behavioral aspects that make up AN and BN have roots in evolutionary concepts such as intrasexual competitiveness and potentially the process of reproductive suppression in response to less than ideal environmental conditions, and that this lens can provide a more comprehensive understanding of the ultimate factors contributing to these disorders.

Binge Eating Disorder

Binge eating disorder is an eating disorder characterized by out-of-control episodes of binge eating in which individuals consume excessive amounts of food in a short period of time (Striegel-Moore and Franko 2003). Individuals with BED eat until feeling uncomfortably full, eat much more rapidly than normal, eat large amounts of food even when they are not hungry, eat alone due to embarrassment, and experience marked distress regarding their behavior (Parekh 2017). The binge eating is not associated with the use of compensatory behaviors as in anorexia and bulimia. Compared to individuals with anorexia nervosa and bulimia nervosa who are usually underweight (AN) or normal to slightly overweight (BN), those with binge eating disorder are often overweight. Although binge eating disorder affects males and females at similar rates, men are significantly less likely to be diagnosed. This is because men are less likely than women to report distress over binge eating, which is a symptom required for diagnosis of BED (Striegel-Moore and Franko 2003).

Evolutionary theory can also help to inform the prevalence of this eating disorder. In our evolutionary history, foods high in fats and sugars were very hard to come by; therefore, it was advantageous to be able to store fat and sugar effectively and to develop psychophysiological mechanisms that motivate their consumption. It was also advantageous to overeat occasionally, since there were periods of food shortages that humans had to account for (King 2013). This was often due to seasonal variations in food, which resulted in both periods of food shortage and abundance, so it was adaptive to consume as much animal fat as possible when it was available (King 2013). Since then, the human diet has changed dramatically. Now, fats and sugars are widely available and easily accessible, which is contributing to widespread obesity and early loss of life (King 2013; Mealey 2000). Research has also found that it is not necessarily about physiological hunger signals that drive humans to seek out and consume large amounts of food; rather, it is the large variety of highly palatable foods (King 2013). Indeed, research shows that individuals with binge eating disorder consume more dessert and snack-food items than obese control subjects during meals, and highly palatable foods with a greater percentage of fat (Yanovski et al. 1993). Foods high in sugar and fat activate reward centers of the brain, and thus we are driven to eat foods that are now widely available to us, yet can be very dangerous for our health in large quantities (King 2013). Binge eating disorder has been linked to severe obesity, diabetes, hypertension, and cardiovascular disease, and in general, a high body mass index can be detrimental to health and fertility (Parekh 2017). Today obesity constitutes a serious global epidemic in industrialized countries (Kardum et al. 2008).

Conclusion

Because the understanding of eating disorders constitutes a relatively new area of research, especially from an evolutionary perspective, it is important for evolutionary psychologists to continue to research the ultimate underpinnings of eating disorders and how these interact with more proximate causal and contributing factors to better inform clinical practice and treatment.

For example, assessments may incorporate measures of intrasexual competitiveness. Further, a majority of the work to date has been conducted on individuals with anorexia nervosa, whereas the bodies of literature on bulimia, binge eating disorder, and other related eating disorders still require significantly more attention from an evolutionary psychological perspective.

Cross-References

- Anorexia Nervosa
- Desire to Be Included Among Desirable Women
- Evolutionary Clinical Psychology
- Intrasexual Competition Between Females
- Obesity

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