



A network approach to eating disorder symptomatology: Do desire for thinness and fear of gaining weight play unique roles in the network?



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ABSTRACT

This study used network analyses to test the hypotheses that desire for thinness and fear of gaining weight are related but distinct constructs that play a central role in disordered eating. Data from a sample of 251 college women were used. Sparse undirected eating disorder symptom networks were calculated. Bootstrapped difference tests for edge weights and centrality indices were used to compare the position of desire for thinness and fear of gaining weight. Desire for thinness and fear of gaining weight exhibited unique patterns of associations within the network. Desire for thinness was highly connected to body dissatisfaction, thoughts about dieting, and thoughts about binge eating. Fear of gaining weight was not. Desire for thinness emerged as the most central symptom. Our findings support the distinction between fear of gaining weight and desire for thinness and their different roles within the eating disorder symptom network.

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1. Introduction

Disordered eating pathology is highly prevalent among young women, with over 10% of young women meeting criteria for at least one eating disorder as described in the *Diagnostic Statistical Manual of Mental Disorders IV-TR* (DSM-IV-TR; Hudson, Hiripi, Pope, & Kessler, 2007; Stice, Marti, Shaw, & Jaconis, 2009). These disorders, as well as subthreshold or partial eating disorders that do not fulfill all diagnostic criteria, are marked by chronicity, resistance to treatment, relapse, and rates of mortality and functional impairment that are among the highest of all psychiatric diseases (Crow et al., 2009; Schmidt et al., 2008; Striegel-Moore, Seeley, & Lewinsohn, 2003; Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011). Given the morbidity and burden of partial eating disorders in youth, and the likely chronicity of these disorders, there have been calls to consider these disorders as worthy of prevention and treatment in their own right (Le Grange & Loeb, 2007). Accordingly, it is critical that we better understand the factors that contribute to their development and maintenance (Stice, 2016). In this study, we focus on two symptoms thought to be core features of disordered eating: a desire for thinness and fear of gaining weight (Carels & Musher-Eizenman, 2010; Levitt, 2003; Polivy & Herman, 2002).

Western society places a very high value on thinness, which has come to represent youth and beauty and is additionally equated with other positive intrinsic characteristics, including self-control over eating and, by extension, in other areas of life (Levitt, 2003). Over the past 50 years, the standards of thinness have become increasingly unattainable. Contemporary standards of beauty promote an extremely slender figure, particularly for women, that is largely unachievable by healthy means (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). At the same time, anti-fat attitudes are also prevalent among individuals in Western cultures (Ata & Thompson, 2010; Goldfarb, Dykens, & Gerrard, 1985). Being overweight is stereotypically associated with negative characteristics such as laziness, lack of self-control, and stupidity (Ata & Thompson, 2010; Puhl & Heuer, 2009), especially among women (Fikkan & Rothblum, 2012).

Biases towards thinness and against being overweight lead to weight-based discrimination that favors individuals who conform to social standards of thinness and disadvantages individuals who are overweight (Puhl & Heuer, 2009). In this way, individuals considered to be thin have been shown to be more popular when they were children and benefit from social, educational, and financial advantages, whereas overweight individuals have been shown to be less likely to find and maintain employment or obtain healthcare, and more likely to experience educational disadvantage (Eagly, Ashmore, Makhijani, & Longo, 1991; Puhl & Heuer, 2009). Given the salience of weight-related attitudes in social discourse and the discrimination that accompanies these attitudes, it is not surpris-

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ing that individuals commonly report both a desire for thinness and a fear of weight gain (Carels & Musher-Eizenman, 2010; Dalley & Buunk, 2011; Nicolino, Martz, & Curtin, 2002). Desire for thinness and fear of gaining weight, are, in turn, associated with body dissatisfaction and eating disorder symptomatology (Cash, Counts, & Huffine, 1990; Peñas-Lledó, Bulik, Lichtenstein, Larsson, & Baker, 2015; Sanders & Heiss, 1998; Wiederman & Pryor, 2000). Indeed, a desire for thinness and fear of weight gain have, together, long been considered a core symptom of disordered eating and among the main driving forces behind restrictive and binge-purge types of symptomatology (Polivy & Herman, 2002).

In a recent innovative study, Levinson and colleagues (Levinson et al., 2017) provided a direct test of the hypothesis that desire for thinness and fear of weight gain are core symptoms of bulimic pathology. Their study was rooted in a novel conceptualization of mental disorders, referred to as the network approach, which argues that mental disorders can be conceptualized and studied as networks of mutually reinforcing symptoms (McNally, 2016). According to this approach, a psychopathology network consists of two elements: “nodes” representing symptoms, and “edges” representing associations between pairs of symptoms. For example, according to the network approach, eating disorder symptoms hang together as a syndrome, not because they are caused by an underlying disorder, but because they are connected through a web of causal relationships (e.g., restrictive eating causally contributing to a binge eating episode which, in turn leads to compensatory behavior) (Borsboom & Cramer, 2013; Forbush, Siew, & Vitevitch, 2016; McNally et al., 2015). In this way, eating disorder symptoms and the relationships among them constitute, rather than reflect, eating disorder psychopathology.

Using methodology derived from the network approach described above, Levinson et al. (2017) estimated the structure of the eating disorder network among a sample of adults with an eating disorder diagnosis of bulimia nervosa and calculated a particular index of symptom importance referred to as symptom centrality. Measures of symptom centrality denote the magnitude of associative influence that each particular symptom has on the network as a whole, with high centrality indicating symptoms that are particularly important to the disorder at hand. Results suggested that fear of weight gain, desire to lose weight, and overvaluation of shape and weight were among the most central symptoms of the network (Levinson et al., 2017). Importantly, this study included only patients whose eating disorder was given a bulimia nervosa diagnosis. Furthermore, their network included 27 nodes represented by emotions, cognitions, and behaviors, that vary, and were assessed over different timescales.

In the current study, we used network analyses to further examine desire for thinness, fear of being overweight, and their relationship to the rest of the eating disorder symptom network. Current cognitive behavioral theories of eating disorders have posited the existence of core psychopathology common across all diagnostic presentations (Fairburn, Cooper, & Shafran, 2003). Our investigation was grounded in such a transdiagnostic perspective. Although desire for thinness and fear of gaining weight are typically assessed as a single construct (Levitt, 2004), some eating disorder theorists have argued that they are in fact separate constructs with distinct correlates (Levitt, 2003). For example, an individual who strongly endorses and actively pursues the ultra-slender beauty ideal may experience a strong desire for thinness but may not experience a strong fear of weight gain. For this individual, disordered eating may emerge as a means to realize the rewards attributed to the achievement of the thin ideal and, thereby, may be more strongly associated with proactive behavior intended to realize that ideal (e.g., dieting and regular exercise). Conversely, and consistent with clinical descriptions, individuals who display chronic

and rigid restrictive behaviors may display a strong fear of gaining weight.

To date, there are few formal examinations of the independence of fear of gaining weight and desire for thinness. Extant data have supported the possibility that desire for thinness and fear of gaining weight are distinct constructs, with fear of gaining weight more strongly predicting motivation to engage in restriction for weight loss than did a desire for thinness (Dalley & Buunk, 2011). However, much remains unknown about these potentially distinct constructs. In particular, it is unclear if desire for thinness and fear of gaining weight have distinct patterns of associations with other eating disorder symptoms and, thus, potentially distinct roles in the development and maintenance of disordered eating. Clarifying the relative independence of desire for thinness and fear of gaining weight has both theoretical and practical importance. From a theoretical perspective, increasing our understanding of the way these constructs are related would help to refine etiological transdiagnostic models of eating disorders, and the ways in which sociocultural pressures towards thinness contribute to the development and maintenance of these disorders. From a practical perspective, it would help to inform prevention and intervention approaches by elucidating specific disorder pathways and allowing for more targeted approaches.

Just as network analyses provided new tools for testing long-standing hypotheses about the importance of desire for thinness and fear of gaining weight, they similarly provide a means of assessing the hypothesis about the independence of these variables. In addition, the network approach offers unique strengths for conducting this investigation as it allows for the examination of the relative relationships of desire for thinness and fear of gaining weight with all other components of the eating disorders network concurrently. If these variables are independent or distinct, they should exhibit distinct patterns of association with other symptoms in the eating disorder network (Fried & Cramer, 2018). The aim of the present study was therefore (a) to examine whether fear of gaining weight and desire for thinness exhibit unique patterns of association with the other symptoms in a network of eating disorder cognitions and emotions, and (b) to examine whether fear of gaining weight and desire for thinness were central elements of the network of eating disorder symptoms among an undergraduate sample of young women.

2. Method

2.1. Participants and procedures

Participants were female, full-time undergraduate students who were at least 18 years old ($N = 319$). Participants who did not complete all of the items required for the current analyses ($n = 68$) were removed from the study. Thus, the final sample consisted of 251 women with complete data. The mean age of the sample was 19.82 years ($SD = 1.54$). Approximately 28% of the participants were first-year students, 24% were second-year students, 22% were third-year students, 15% were fourth-year students, and 11% percent were fifth-year students. Overall, the majority of participants self-identified as Caucasian (63%), and the remainder of the sample identified as Asian (24%), Hispanic (5%), Black (3%), or other (5%). The mean (SD) BMI was 23.38 kg/m^2 (4.23), ranging from 13.69 to 45.39. An independent-samples t -test found no significant difference in age, $t(33) = 0.08$, $p = .93$, BMI, $t(110) = 0.21$, $p = .83$, or year in university, $t(112) = 1.19$, $p = .23$, between individuals who were retained for the analyses and individuals who were removed.

Participants were recruited through advertisements, flyers, and postings on campus social media groups on platforms such as Facebook. Inclusion criteria included being a female full-time undergraduate student, at least 18 years old, and willing to pro-

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