

Anxiety and Disordered Eating

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Published online: 4 July 2013

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Empirical accounts of a relation between anxiety and eating disorders date as far back as 1950 (e.g., Keys et al. 1950). Investigations into this relation, particularly studies conducted over the past 20 years, have confirmed that individuals with eating disorders are at significantly elevated risk for generalized anxiety disorder, specific phobias, social phobia, obsessive compulsive disorder, and post-traumatic stress disorder (Pallister and Waller 2008; Reyes-Rodríguez et al. 2011). Approximately 65 % of patients with eating disorders meet criteria for at least one anxiety disorder, which tends to predate and to persist beyond remission of the eating disorder (Adamegan et al. 2012; Godart et al. 2003; Kaye et al. 2004; Klump et al. 2004; Swinbourne et al. 2012; Swinbourne and Touyz 2007). Anxiety has thus come to be considered a possible predisposing risk factor for eating disorders, whereas eating disorders may represent more complex manifestations of underlying anxiety vulnerability.

Improving adherence to and outcomes of eating disorder interventions remain important goals, and patients with comorbid anxiety disorders appear especially in need of enhanced interventions as they tend to have poorer illness courses and outcomes (Dellava et al. 2010; Herpertz-Dahlmann et al. 2001; Thornton et al. 2011; Yackobovitch-Gavan et al. 2009). The purpose of this special series is to highlight some of the latest work on the relation between anxiety and disordered eating, with the overarching goal of identifying promising areas of research that may ultimately lead to better interventions. To this end, we invited submissions reporting on the interplay among specific anxiety-

related vulnerabilities and disordered eating symptoms and risk processes.

The eight manuscripts in this special series collectively investigate a range of anxiety and disordered eating constructs, are guided by various theoretical models, and employ complementary research designs and analytic approaches. By analyzing hypothesized relations at multiple levels and by testing theoretically-relevant interactions among variables of interest, these papers help advance the literature in terms of refining contemporary accounts of the anxiety-disordered eating relation. Below, we provide a brief overview of each article along with a discussion as to how they relate to the theme of this special series.

The first two papers in the series build on extant evidence that genetic vulnerability for anxiety may increase risk for eating pathology and help to explain the high rates of anxiety-eating disorder comorbidity (Bellodi et al. 2001; Halmi et al. 1991; Lilenfeld et al. 1998; Strober et al. 2000). Goddard and Treasure (2013) present data suggesting that trait anxiety may be an intermediate phenotype of eating disorders, particularly anorexia nervosa (AN), which comprised the majority of eating disorder diagnoses in their sample. Taborelli et al. (2013) found that mothers' anxiety levels while pregnant, as well as maternal overprotection, differentiated between their daughters with and without AN. Importantly, this study highlights that genetic and early environmental influences may be specific to particular eating disorder diagnoses, as these patterns did not emerge for women with bulimia nervosa (BN). Together, these two studies provide support for a potential shared genetic vulnerability for anxiety and AN.

The remaining papers in this series explore specific cognitive vulnerability factors common to both anxiety and disordered eating. In one of two papers exploring the interplay among anxiety, eating pathology, and

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perfectionism, Egan et al. (2013) found that anxiety partially mediated the association between eating disorders and self-oriented perfectionism and suggested that treating perfectionism, a plausible transdiagnostic factor, may enhance treatment for both eating and anxiety disorders. In the other study, Menatti et al. (2013) showed that maladaptive self-evaluative perfectionism, which has been related to core components of social anxiety disorder (Heimberg et al. 2010), mediated the relation between bulimic symptoms and fear of public scrutiny and social interaction anxiety, two important components of social anxiety disorder, over and above distorted body-related thoughts. Related to these two studies, DeBoer et al. (2013) examined the role of fear of negative evaluation in the progression of college sorority women's eating disorder risk factors over time. In this study, fear of negative evaluation predicted subsequent body dissatisfaction and eating disorder symptoms. Thin-ideal internalization was also predicted by prior levels of fear of negative evaluation, but only among women with BMIs that were relatively high (although still within the normal range) for their peer group. Fear of negative evaluation was itself predicted by prior levels of the majority of risk factors included in the dual-pathway etiological model of BN (Stice and Agras 1998). This study represents an initial attempt at establishing temporal precedence in anxiety and eating symptom amelioration in response to intervention.

Two papers in this series highlight specific dimensions of anxiety sensitivity, a risk factor for anxiety- and panic-related disorders more broadly, in eating pathology. Using both cross-sectional and experimental data, Hearon et al. (2013) found that anxiety sensitivity was positively associated with self-reports of emotional eating, coping motives for eating, and expectancies that eating leads to loss of control. They also found that body mass index (BMI) interacted with fear of loss of mental control (a sub-dimension of anxiety sensitivity) and the belief that eating leads to feeling out of control to predict overeating. Although anxiety sensitivity appears to be a risk factor for eating pathology (Anestis et al. 2008; DeBoer et al. 2012), and both eating disorders and anxiety sensitivity are risk factors for suicidality (Capron et al. 2012a, b), elevated sensitivity to *somatic* anxiety symptoms may actually *protect* women with elevated ED symptomology against suicidality, as less aversion to physical pain is associated with acquired capability for suicide (Fink et al. 2013). These two studies represent an important direction for anxiety-eating disorder comorbidity research in their efforts to tease apart the relative risk conferred by specific sub-components of anxiety vulnerability constructs.

Bardone-Cone and colleagues' (2013) contribution to this issue suggests that anxiety's associations with various facets of eating pathology may be strongest among women who

tend to derive their self-worth from their physical appearance. Their results also suggest that the extent to which one's social group values physical appearance, as reflected by the frequency of appearance-focused conversations, independently moderates the association between anxiety and binge eating. Such personal and cultural emphases on appearance and thinness may be particularly common in certain Western subcultures. As noted by DeBoer et al. (2013), associations among anxiety and eating disorder symptoms may be stronger among women with high BMIs relative to their peer group (even if in a healthy range) if they have low self-esteem and are also embedded in an environment that emphasizes physical appearance (Cashel et al. 2003).

The findings from these six manuscripts suggest that perfectionism, fear of negative evaluation, anxiety sensitivity, and appearance-related self-worth may be worthwhile targets for eating disorder prevention and intervention. Additionally, it appears that the influence of some anxiety variables (i.e., fear of negative evaluation and anxiety sensitivity) and may be more pronounced for women with relatively high BMIs.

We hope that this issue will: (1) inform readers of the theoretical importance and clinical significance of this area of research; (2) highlight the various constructs currently thought to be most pertinent to the anxiety-eating disorder relation; and (3) identify promising directions for future investigation. As demonstrated by the eight contributions to this issue, our understanding of the nature of anxiety-eating disorder comorbidity has grown remarkably since 1950. As such high-quality empirical work continues to accumulate, the field will become better able to quickly identify at-risk individuals and to enhance interventions for both anxiety and eating disorders.

Conflict of interest None.

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