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Integrating eating disorder-specific risk factors into the acquired preparedness model of dysregulated eating: A moderated mediation analysis

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ABSTRACT

Tests of the acquired preparedness model demonstrate that the personality trait of negative urgency (i.e., the tendency to act impulsively when distressed) predicts the expectation that eating alleviates negative affect, and this eating expectancy subsequently predicts dysregulated eating. Although recent data indicate that eating disorder-specific risk factors (i.e., appearance pressures, thin-ideal internalization, body dissatisfaction, dietary restraint) strengthen negative urgency-dysregulated eating associations, it is unclear whether these risk factors impact associations directly or indirectly (i.e., through eating expectancies). The current study used latent moderated structural equation modeling to test moderated mediation hypotheses in a sample of 313 female college students. Eating expectancies mediated the association between negative urgency and dysregulated eating, and the indirect effect of negative urgency on dysregulated eating through eating expectancies was conditional on level of each eating disorder risk factor. Appearance pressures, thin-ideal internalization, body dissatisfaction, and dietary restraint significantly moderated the association between eating expectancies and dysregulated eating, while only dietary restraint moderated the direct effect of negative urgency on dysregulated eating. Findings suggest that the development of high-risk eating expectancies among individuals with negative urgency, combined with sociocultural pressures for thinness and their consequences, is associated with the greatest risk for dysregulated eating.

1. Introduction

Negative urgency, the tendency to act impulsively when distressed, is a personality risk factor for eating disorders (EDs) that has been associated with multiple components of dysregulated eating (e.g., binge eating, loss of control eating) in both cross-sectional and longitudinal studies (Fischer, Peterson, & McCarthy, 2013; Pearson, Combs, Zapolski, & Smith, 2012; Racine et al., 2013, 2015). An important model that explains how negative urgency leads to dysregulated eating is the Acquired Preparedness (AP) Model. This model posits that individuals with high-risk personality traits (e.g., negative urgency) experience, respond to, and ultimately learn different things from the same environmental event or context than individuals without high-risk personality traits. This differential environmental experience can lead to the formation of different learned expectancies, such as the expectancy that certain environmental cues (e.g., food, alcohol) will provide positive or negative reinforcement. Thus, high-risk personality traits may lead to psychological disturbances as a result of differential psychosocial learning (Smith & Anderson, 2001). In the application of the AP model to dysregulated eating, high negative urgency differentially prepares individuals to experience and respond to situations in the environment that lead to the expectation that eating will alleviate negative affect. Negative reinforcement eating expectancies then predict dysregulated eating, as individuals high in negative urgency may attempt to reduce distress through the use of maladaptive eating behaviors (Pearson, Wonderlich, & Smith, 2015). In support of the AP model, negative affect eating expectancies have been found to mediate the association between negative urgency and binge eating (Combs, Pearson, & Smith, 2011; Pearson et al., 2012).

In addition to linking negative urgency and psychopathology, high-risk expectancies contribute to divergent symptom trajectories among individuals with negative urgency. Negative urgency is a transdiagnostic risk factor for psychopathology (Dir, Karyadi, & Cyders, 2013), and reinforcement expectancies for specific reward stimuli (e.g., food, alcohol) partially explain different psychopathology presentations among individuals with high negative urgency. For example, Fischer, Settles, Collins, Gunn, and Smith (2012) found that, while individuals with EDs, alcohol use disorders, or both conditions had higher negative urgency compared to controls, eating expectancies were highest among the ED and comorbid groups, and alcohol expectancies were highest among the alcohol use disorder and comorbid groups. However, environmental or individual difference factors that influence

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the development of one set of high-risk expectancies and, thus one form of psychopathology, over another remain under-investigated.

To understand who with negative urgency is most at risk for dysregulated eating, two recent studies examined whether prominent ED risk factors specified in the well-established dual pathway model of the development of bulimic symptomatology (i.e., appearance pressures, thin-ideal internalization, body dissatisfaction, dietary restraint; Stice, 2001) strengthen negative urgency-dysregulated eating associations. In a sample of college women, each of the above-mentioned ED risk factors interacted with negative urgency to predict dysregulated eating, but not depressive symptoms or problematic alcohol use (Racine & Martin, 2016). Further, in female twins spanning late childhood to early adulthood, appearance pressures, thin-ideal internalization, and body dissatisfaction, but not dietary restraint, moderated phenotypic and genetic associations between negative urgency and binge eating (Racine et al., in press). Together, ED-specific risk factors may shape genetic influences on negative urgency into manifesting as dysregulated eating versus another form of psychopathology.

Taken together, research on the AP model of dysregulated eating suggests that high-risk eating expectancies mediate the association between negative urgency and dysregulated eating, and dual-pathway model ED risk factors moderate negative urgency-binge eating links. However, research has yet to examine well-established ED risk factors in the context of the AP model of dysregulated eating. Thus, it is unclear whether ED risk factors moderate the direct association between negative urgency and dysregulated eating or the indirect association between these variables, through eating expectancies. A moderated mediation framework can be used to test these different possibilities in order to identify the specific ways in which risk factors combine to lead to dysregulated eating, as well as the most promising mechanisms to target in treatment for individuals with unique risk factor combinations.

In considering how eating disorder specific risk factors might influence the pathways specified in the AP model, three non-mutually exclusive moderation possibilities exist. First, ED risk factors may moderate the direct association between negative urgency and dysregulated eating, explaining why only some individuals with high negative urgency develop problematic eating. Second, ED risk factors may moderate the relationship between negative urgency and eating expectancies. Specifically, environmental (i.e., appearance pressures) and individual difference (i.e., thin-ideal internalization, body dissatisfaction, dietary restraint) factors may place those with high negative urgency at risk for developing specific reinforcement expectancies, such as the belief that eating will decrease negative affect. Third, ED risk factors may moderate the association between eating expectancies and dysregulated eating, such that negative reinforcement eating expectancies may be most strongly associated with eating pathology in the context of sociocultural pressures for thinness and associated consequences. Examining these various possible relationships can help isolate specific pathways of risk for dysregulated eating and can inform the development and refinement of ED prevention programs.

Given the above, the current study used a moderated mediation framework to investigate whether ED risk factors moderate associations between negative urgency and eating expectancies, eating expectancies and dysregulated eating, and/or negative urgency and dysregulated eating, controlling for eating expectancies. We examined this research question using the same sample (N = 313 college females) and measures[1] as our previous report (Racine & Martin, 2016) in order to ensure that methodological features could not explain differing results. College women have very high rates of disordered eating (Berg, Frazier, & Sherr, 2009), and significant variability in dysregulated eating and its risk factors exists in unselected samples, permitting tests of interactive effects. Further, identifying transactional risk factor relationships that may be unique to this vulnerable population is essential for developing more effective interventions for disordered eating among college-aged students (Eisenberg, Nicklett, Roeder, & Kirz, 2011). Although we hypothesized that ED risk factors would significantly moderate the indirect effect of negative urgency on dysregulated eating through eating expectancies, we did not have a priori hypotheses about whether moderation would occur by strengthening negative urgency-eating expectancies or eating expectancies-dysregulated eating associations.

2. Method

2.1. Participants

Participants were 313 undergraduate females ranging in age from 18 to 39 (M (SD) = 19.23 (2.04)) years with body mass indexes (BMIs) from 17.11 to 54.73 (M (SD) = 23.47 (4.20)). Most of the sample (90.4%) identified as Caucasian, with 3.3% identifying as African American, 2.3% as Asian, 0.7% as American Indian or Alaskan Native, and 3.3% as bi- or multi-racial. After providing informed consent, participants completed online behavioral health questionnaires and received course credit for participation. To overcome limitations of online data collection, we included three attention check questions (e.g., "Please select the response blue from the following options"); participants were required to select the correct response before proceeding with the survey. In addition, data were examined to identify participants who responded in a questionable manner. Participants who responded inconsistently across measures (e.g., endorsing an item on one measure but denying on another measure), provided a large number of repetitive answers within a measure, and/or completed the survey in an unreasonably short time (i.e., <30 min) were excluded.

2.2. Measures

2.2.1. UPPS-P Impulsive Behavior Scale (Lynam, Smith, Whiteside, & Cyders, 2006)

The UPPS-P Impulsive Behavior Scale Negative Urgency subscale includes items rated on a 4-point scale from 1 (agree strongly) to 4 (disagree strongly). Excellent internal consistency (αs > 0.85; Smith et al., 2007) and adequate test-retest reliability over 1 month (r = 0.73; Anestis, Selby, & Joiner, 2007) have been demonstrated. Negative urgency scores assessed via self-report and interview methods are highly correlated, with lower correlations among negative urgency and other UPPS-P traits (Smith et al., 2007).

2.2.2. Eating Expectancy Inventory (EEI; Hohlstein, Smith, & Atlas, 1998)

The EEI Eating Helps Manage Negative Affect (i.e., negative affect) subscale assesses the belief that eating can/will reduce aversive states. Items, rated on a 7-point scale from 1 (completely disagree) to 7 (completely agree), demonstrate excellent internal consistency (α = 0.94; Hohlstein et al., 1998). EEI Negative Affect scores are higher among women with bulimia nervosa compared to women with anorexia nervosa and healthy controls (Hohlstein et al., 1998) and prospectively predict binge eating (Pearson et al., 2012).

2.2.3. Sociocultural Attitudes Towards Appearance Questionnaire – 4 (SATAQ-4; Schaefer et al., 2014)

The SATAQ-4 Family, Peer, and Media Pressures subscales assess perceived pressure to conform to sociocultural appearance ideals, while the Thin/Low Body Fat Internalization subscale captures the acceptance of/adherence to cultural ideals of thinness. Items are rated on a 5-point scale from 1 (definitely disagree) to 5 (definitely agree). The Family Pressures (αs = 0.85–0.89), Peer Pressures (αs = 0.85–0.89), Media Pressures (αs = 0.93–0.95), and Thin/Low Body Fat Internalization subscales (αs = 0.75–0.91) demonstrated excellent internal

[1] Our previous report included the Dutch Eating Behavior Questionnaire Emotional Eating subscale as an indicator of dysregulated eating. This subscale was not included in the current study because of a high cross-loading on the eating expectancy latent variable and the need to use separate scales to represent our mediator and dependent variable.