



# Associations of neuroticism-impulsivity and coping with binge eating in a nationally representative sample of adolescents in the United States



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## ABSTRACT

**Objective:** Binge eating behavior is a public health concern due to its negative physical and mental health consequences. Little is known about the interplay of personality traits, coping styles, and binge eating in the general adolescent population. We examined the associations among the combination of neuroticism and impulsivity (NI), maladaptive coping styles (poor problem solving, distraction, and escape-avoidance), and lifetime prevalence of binge eating in a nationally representative sample of U.S. adolescents. We also explored coping as a moderator of the NI-lifetime binge eating association and gender as a moderator of the NI-coping associations and coping-lifetime binge eating associations.

**Methods:** We used data from the National Comorbidity Survey: Adolescent Supplement (NCS-A: 2001–2004), a cross-sectional nationally representative study of adolescents aged 13 to 18 years ( $n = 10,028$ ). We studied the associations of NI and coping with lifetime binge eating using multivariate regression models.

**Results:** High NI was significantly associated with all three coping styles, especially escape-avoidance ( $\beta = 3.96$ , confidence interval [CI] = 3.62, 4.29,  $p < 0.001$ ). Gender was a significant moderator of the NI – distraction coping association ( $\beta = -0.68$ , CI =  $-1.33, -0.03$ ,  $p = 0.041$ ), indicating a stronger association in males ( $\beta = 1.20$ , CI = 0.81, 1.58,  $p < 0.001$ ) than females ( $\beta = 0.53$ , CI = 0.02, 1.03,  $p = 0.042$ ). Lifetime prevalence of binge eating was 1.13 times higher with increased escape-avoidance coping (CI = 1.10, 1.18,  $p < 0.001$ ).

**Discussion:** Our findings indicate significant associations among high NI, increased escape-avoidance coping, and higher lifetime prevalence of binge eating in adolescents. Findings of our study have potential to inform development of interventions that target modification of maladaptive personality traits and coping styles to reduce problematic eating.

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## 1. Introduction

Recent findings from population-level studies suggest binge eating disorder (BED) is a public health concern (Austin, 2012; Swanson, Crow, Le Grange, Swendsen & Merikangas, 2011) due to its prevalence of 1.6% in adolescents (Swanson et al., 2011) and 2.8% in adults (Hudson, Hiripi, Pope & Kessler, 2007) in the general U.S. population and its negative health consequences, including obesity (Marcus & Wildes, 2013; Neumark-Sztainer et al., 2007; Stankovic & Potenza, 2010) and comorbidity with almost all major psychiatric disorders (Fairburn et al., 1998; Hudson et al., 2007; Swanson et al., 2011). BED,

a new diagnosis in DSM5 (American Psychiatric Association, 2013), is characterized by persistently consuming uncommonly large quantities of food with a sense of loss of control and distress. Subthreshold binge eating disorder is also problematic as it is even more prevalent than BED in the general adolescent population (Swanson et al., 2011) and also has associations with negative health outcomes (Sonneville et al., 2013; Stice, Marti, Shaw & Jaconis, 2009; Swanson et al., 2011). Identifying psychosocial correlates of binge eating is an important first step toward developing prevention and treatment strategies to reduce binge eating.

We previously found that the combination of high neuroticism and high impulsivity (NI) was significantly associated with higher lifetime prevalence of binge eating (Lee-Winn, Townsend, Reinblatt & Mendelson, 2016). Coping—cognitive and behavioral responses that individuals use to manage perceived stress (Susan Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986)—is linked with adolescents' well-being, such as adjustment, school performance, and physical and mental health (Garcia, 2010; Schonert-Reichl, 2003; Sveinbjornsdottir

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& Thorsteinsson, 2008). We know little, however, about the potential interplay between NI and coping in relation to binge eating in the general population. Assessing this interplay, such as exploring coping as a potential moderator of the association between NI and binge eating in the general adolescent population will provide a more nuanced understanding of how personality and coping are linked with maladaptive patterns of behavior relevant for eating issues.

Evidence suggests that personality traits and coping styles have both independent and interactive effects on mental and physical health (Carver & Connor-Smith, 2010). Personality scholars have conceptualized personality in different ways, including three major frameworks of personality: 1) Eysenck's Three Factor Model (neuroticism, extraversion, and psychoticism) (Eysenck, Eysenck & Barrett, 1985), 2) Costa and McCrae's Five Factor Model (FFM: neuroticism, conscientiousness, agreeableness, openness, and extraversion) (Costa & McCrae, 1992), and 3) Zuckerman and Kuhlman's alternative Five Factor Model, which proposes variations on the FFM and Eysenck models (Zuckerman, 2002; Zuckerman, Michael, Joireman, Teta & Kraft, 1993). Research suggests that individuals with low conscientiousness (i.e., high impulsivity) and high neuroticism tend to be more vulnerable to stress and dysfunctional coping (Grant & Langan-Fox, 2006; Vollrath & Torgersen, 2000). This combination of high impulsivity and neuroticism can be conceptualized as *negative urgency* – the tendency to engage in rash actions (i.e. impulsivity) under emotional distress (neuroticism) (Fischer, Smith & Cyders, 2008; Racine et al., 2013; Settles et al., 2012; Whiteside & Lynam, 2001). In a prior study, NI was found to have a robust association with bulimic symptomatology (Fischer et al., 2008). In previous work, our team also identified NI as a significant correlate of binge eating behavior among adolescents in the general population (Lee-Winn et al., 2016).

Learning adaptive skills to manage stress during adolescence is crucial (McLaughlin, Hatzenbuehler, Mennin & Nolen-Hoeksema, 2011; Silk et al., 2007; Steinberg & Avenevoli, 2000), as adolescents' coping patterns can impact both their present and future well-being (Broderick & Korteland, 2002; Garcia, 2010; Schonert-Reichl, 2003). Enhancing coping skills, especially problem solving, emotion regulation, and use of social support, may increase youths' resilience when faced with stressors (Compas, Champion & Reeslund, 2005). Theorists have grouped coping in several ways (Carver & Connor-Smith, 2010; Compas, Connor-Smith, Saltzman, Thomsen & Wadsworth, 2001; Skinner, Edge, Altman & Sherwood, 2003). One common way of distinguishing coping styles is problem-focused versus emotion-focused coping (Lazarus & Folkman, 1984). Generally, problem-focused coping (e.g., logical analysis, direct action, decision making, planning) (Skinner et al., 2003) attempts to remove a stressor or minimize its impact, whereas emotion-focused coping (e.g., avoidance, denial, wishful thinking, rumination, yelling, crying) aims to diminish distress caused by a stressor (Carver & Connor-Smith, 2010; Lazarus & Folkman, 1984).

Most coping skills are not considered inherently adaptive or maladaptive, as a great deal depends on the context and manner of their use. Problem-focused coping, however, is generally linked with better adjustment and well-being whereas emotion-focused coping tends to be associated with increased distress and psychopathology (Ball & Lee, 2000; Compas et al., 2001; Ghaderi & Scott, 2000), including eating disorders (Ball & Lee, 2000; Compas et al., 2001). For instance, distraction coping, which aims to divert attention by engaging in secondary behavioral or cognitive activities (Skinner et al., 2003), was associated with both same day and next day binge eating (Freeman & Gil, 2004). Avoidance coping (e.g., escape, disengagement, wishful thinking) (Skinner et al., 2003) has been proposed as a predictor of eating disorders (Aldao, Nolen-Hoeksema & Schweizer, 2010) and has been reported in patients with anorexia nervosa (AN) or bulimia nervosa (BN) in the U.S. and other countries (Bloks, Spinhoven, Callewaert, Willemse-Koning & Turksma, 2001; Bloks, Van Furth, Callewaert & Hoek, 2004; Brytek-Matera & Schiltz, 2013; Fitzsimmons & Bardone-Cone, 2010; Lobera, Estébanez, Fernández, Bautista & Garrido, 2009; Nagata,

Matsuyama, Kiriike, Iketani & Oshima, 2000; Troop, Holbrey & Treasure, 1998; Troop, Holbrey, Trowler & Treasure, 1994), female college students in the U.S. (Dennard & Richards, 2013; Kelly, Lydecker & Mazzeo, 2012; Wolff, Crosby, Roberts & Wittrock, 2000; Wonderlich-Tierney & Vander Wal, 2010), and community samples of adolescents in Spain (García-Grau, Fusté, Miró, Saldaña & Bados, 2002, 2004).

Research suggests that coping can be considered “personality in action” (Bolger & Zuckerman, 1995) based on a moderate shared genetic basis between coping and personality (Kato & Pedersen, 2005), as well as strong correlations between the constructs (Connor-Smith & Flachsbart, 2007). A recent-meta analysis of personality – coping associations based on the FFM (Costa & McCrae, 1992) revealed a general pattern of increased use of emotion-focused coping and decreased use of problem-focused coping in high neuroticism or low conscientiousness (Connor-Smith & Flachsbart, 2007). Studies that used Eysenck's personality model (Eysenck et al., 1985) showed that young Canadian males (age 17–21) with serious gambling issues characterized by increased impulsivity/intensity seeking were more likely to use avoidance and distraction coping (Nower, Derevensky & Gupta, 2004), and neuroticism and psychoticism had direct positive effects on avoidance coping among Croatian adolescents (Kardum & Krapić, 2001). Consideration of personality and coping in association with binge eating may contribute to theoretical models in this area and may guide the development of interventions that target either or both maladaptive personality traits and coping styles to decrease problematic eating among adolescents.

Evidence suggests that coping strategies individuals use to deal with stress may reduce or amplify personality–psychopathology associations (Carver & Connor-Smith, 2010). Current findings on moderation effects of coping on temperament/personality–psychopathology associations are inconsistent. For instance, using avoidance or denial coping strategies has been shown to strengthen the relationships between the behavioral approach (e.g., a tendency to seek rewards) and disordered eating among Australian adolescents (Hasking, 2006). However, another study showed emotion-oriented coping reduced the strength of associations between trait anxiety and disordered eating, indicating possible short-term usefulness of adaptive avoidance coping, such as going for a walk (Fitzsimmons & Bardone-Cone, 2010). Investigating coping as a potential moderator of the associations between personality traits and binge eating may inform future interventions to decrease the use of maladaptive coping.

Research also suggests that personality–psychopathology associations may differ by gender (Tackett, 2006). For example, negative urgency was only significantly associated with disordered eating among female college students but not their male counterparts (Davis-Becker, Peterson & Fischer, 2014). Assessing potential gender differences between personality traits and binge eating may be worthwhile for designing intervention programs that could benefit either or both genders. Little is known about relations among NI, coping styles, and binge eating, and no nationally representative studies of adolescents, to the authors' knowledge, have investigated coping styles in association with binge eating or whether the association of NI and binge eating varies as a function of coping style.

The current study is a follow-up to our earlier study with the National Comorbidity Survey: Adolescent Supplement (NCS-A) data, in which we found significant associations between NI and binge eating (Lee-Winn et al., 2016). In the present study, we extended our prior research by assessing associations among coping styles, NI, and binge eating in the general United States adolescent population, using data from the NCS-A. Based on previous research, we hypothesized that avoidance, distraction, and poor problem solving would be positively associated with NI and lifetime prevalence of binge eating. We also hypothesized that avoidance, distraction, and poor problem solving would moderate the associations between NI and lifetime binge eating. We explored adolescent gender as a potential moderator of each NI–coping and coping–lifetime binge eating association.

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