



# Food addiction and substance addiction in women: Common clinical characteristics



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## ABSTRACT

Food addiction is characterized by poorly controlled intake of highly-palatable, calorically-dense, foods. While previous studies indicate that risk factors for food addiction are similar to substance use disorders (SUD), these studies have looked at food addiction and SUD in independent samples, limiting the ability to directly compare food addiction to SUD. The present study was conducted to assess rates of post-traumatic stress disorder (PTSD), depression, childhood and adult trauma exposure, as well as presence and severity of emotion dysregulation, in a sample of women (N = 229) who either meet criteria for no addiction, food addiction only or SUD only. The prevalence of food addiction was 18.3% and the prevalence of SUD was 30.6% in this sample. Women with food addiction and women with SUD endorsed more depression and PTSD symptoms when compared with individuals with no addiction. Individuals with food addiction and SUD had higher total emotion dysregulation scores, specifically with difficulties in goal directed behaviors, non-acceptance of emotional responses, impulse control, limited access to emotion regulation strategies, and lack of emotional clarity, when compared to individuals with no addiction (all  $p$ 's < 0.05). There were no differences in PTSD and depression symptoms and emotion dysregulation scores between food addiction and SUD groups (all  $p$  > 0.05). However, women with SUD endorsed higher levels of total childhood ( $p$  < 0.01) and adulthood trauma ( $p$  < 0.01) as compared with women with no addiction or food addiction. These results suggest that women with food addiction and those with SUD share similar psychological characteristics and risk factors, with the exception of trauma histories. These findings have implications for the detection of risk for and treatment of these disorders.

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## 1. Introduction

Food addiction is characterized by the poorly-controlled consumption of highly-palatable foods (Gearhardt, Corbin, & Brownell, 2009). Individuals with food addiction exhibit classic symptoms of addiction, such as a preoccupation with obtaining the desired substance, excessive ingestion of the substance and continued, excessive use, despite adverse biological consequences (Gearhardt et al., 2009). Food addiction can be diagnosed using the Yale Food Addiction Scale (YFAS), which was developed based on the DSM-IV criteria for substance use disorders (SUD) (Gearhardt et al., 2009). While the criteria for diagnosis are similar between food addiction and SUD, food addiction has only recently become the subject of

clinical investigation. As such, the comorbid psychiatric features of food addiction, such as depression and aspects of emotional dysregulation (e.g., poor impulse control), are not well known. Characterization of differences and commonalities in clinical characteristics between food addiction and SUD would aid in the detection of risk for and treatment of food addiction.

To date, studies focusing on food addiction and SUD have described risk factors and consequences associated with these addictions in independent samples, not allowing for comparisons between the two conditions. For example, food addiction and SUD have both been associated with emotional and maladaptive eating (Davis et al., 2011; Gearhardt, White, Masheb, & Grilo, 2013; Gearhardt et al., 2012; Gregorowski, Seedat, & Jordaan, 2013; Hodson, Newcomb, Locke, & Goodyear, 2006). Food addiction has been associated with heightened impulsivity, similar to what has been described in individuals with SUD (Pivarunas & Conner, 2015). More recently, food addiction and SUD have both been associated with emotion dysregulation (Gearhardt et al., 2013; Pivarunas &

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Conner, 2015). Emotional regulation refers to an individual's ability to monitor and appropriately respond to emotions (Thompson, 1994; Wilcox, Pommy, & Adinoff, 2016). Individuals with poor emotion regulation abilities often have poorer decision-making, i.e., a reduced ability to limit impulsive behaviors and adaptively handle unpleasant feelings (Murphy, Ewbank, & Calder, 2012; Weiss, Sullivan, & Tull, 2015). Engaging in maladaptive behaviors, such as substance use and overconsumption of food, have both been described as coping mechanisms for dealing with distressing emotions associated with psychopathology, including depression and posttraumatic stress disorder (PTSD) (Berenson, Laz, Pohlmeier, Rahman, & Cunningham, 2015; Gearhardt et al., 2012; Hirth, Rahman, & Berenson, 2011; Mason et al., 2014; Mitchell & Wolf, 2016). Indeed, emotion dysregulation is associated with developing an addiction (Griffin, Lowe, Acevedo, & Botvin, 2015; Simons, Dvorak, & Lau-Barraco, 2009; Wong & Rowland, 2013) and greater SUD severity (Weiss, Tull, Anestis, & Gratz, 2013).

Similar to SUD, exposure to childhood trauma and early life stress and adversity has been shown to be associated with maladaptive eating and food addiction (Imperatori et al., 2016; Mason et al., 2014; Michopoulos et al., 2015). Maltreated children develop eating disorders at higher rates than non-maltreated children (Kong & Bernstein, 2009), and are more likely to engage in emotional eating in adulthood (Michopoulos et al., 2015). Importantly, exposure to childhood trauma is also linked to development of psychopathology, specifically depression and PTSD (Heim & Nemeroff, 2001; Kessler, Davis, & Kendler, 1997), both of which have been described as risk factors for addictive behaviors (Logrip, Zorrilla, & Koob, 2012).

Taken together, previous investigations show clear relationships between food addiction and trauma, emotion dysregulation and psychopathology that parallel those described in SUD. However, these studies have looked at food addiction and SUD in independent samples, limiting the ability to directly compare food addiction to SUD (Ziauddeen & Fletcher, 2013; Ziauddeen, Farooqi, & Fletcher, 2012). Therefore, the current study was designed to examine rates of PTSD, depression, childhood and adult trauma exposure, as well as presence and severity of emotion dysregulation, in a sample of traumatized women with food addiction or SUD. We also included a group of traumatized women with no current addiction for comparison. Based on previous literature, we hypothesized that the food addiction and SUD groups would have similar patterns of emotion dysregulation, psychopathology, and trauma exposure. Specifically, we predicted that more severe emotional dysregulation, depression and PTSD symptoms would be observed in both food addiction and SUD groups when compared to controls. We also hypothesized that food addiction and SUD would be associated with greater rates of trauma exposure.

## 2. Methods

**Participants.** Participants were 229 women drawn from a large study of risk factors for PTSD in a low socioeconomic, urban minority population. Women were recruited from waiting rooms in the diabetic, gynecology, and primary care medical clinics Grady Memorial Hospital, a public hospital in Atlanta, Georgia. Eligible participants were between the ages of 18 and 65, English speaking, and able to give informed consent. Of these 229 participants, 42 women had food addiction but not SUD, 70 women had SUD but no food addiction, and 117 women had neither food addiction nor SUD. Women that had comorbid were not included in the current study as our goal was to compare food addiction to SUD. All study procedures were reviewed and approved by the Emory Institutional Review Board and the Grady Hospital Research Oversight Committee. All participants underwent a structured clinical interview

and completed all the measures described below.

**Measures.** Demographic information was collected with a locally developed Demographics Form that collected information on sex, age, self-identified race, education and income (Gillespie et al., 2009). Body mass index (BMI; kg/m<sup>2</sup>) was calculated using self-reported height (m) and weight (kg).

The Yale Food Addiction Scale (YFAS) is a 25-item scale designed to assess food addiction symptoms (Gearhardt et al., 2009). With this measure, food addiction can be measured as a continuous variable (symptom count) and as a categorical variable (presence of absence of food addiction). The symptom count scoring version provides information on the number of symptoms experienced in the last 12 months. The diagnostic scoring version designates a “diagnosis” of food addiction if an individual reports three or more symptoms in the past 12 months with clinically significant distress or impairment.

The Emotional Eating subscale of the Dutch Eating Behavior Questionnaire (DEBQ) was also administered to assess emotional eating severity (Van Strien, Frijters, Vanstaveren, Defares, & Deurenberg, 1986). The DEBQ Emotional Eating subscale assesses desire to eat under different emotional states (e.g., irritated, depressed, lonely, frightened and disappointed) and is scored on a 5-point Likert scale ranging from 0 (“No desire”) to 4 (“A strong desire”). Total emotional eating severity was calculated by summing responses to individual DEBQ questions as described previously (Cronbach's  $\alpha=0.92$ ) (Michopoulos et al., 2015).

The Traumatic Events Inventory (TEI) was used to assess lifetime trauma exposure (childhood and adulthood). The TEI was administered by trained research interviewers. The TEI was developed and validated in our population (Gillespie et al., 2009), and assesses experiencing and witnessing traumatic events separately. We used this measure to examine adult trauma exposure, using a sum score that indicates the number of types of traumatic events participants experienced during adulthood (Gillespie et al., 2009).

The short form of the Childhood Trauma Questionnaire (CTQ) validated previously in both general and clinical populations (Forde, Baron, Scher, & Stein, 2012; Paivio & Cramer, 2004) was used to assess childhood exposure to physical, sexual and emotional abuse, as well as physical and emotional neglect (Bernstein et al., 2003). Higher scores on the measure are indicative of higher reported levels of childhood trauma.

The Beck Depression Inventory II, a 21-item measure of depressive symptoms in the past two weeks, was used to assess current depression symptom severity. This measure provides scores that indicate depressive severity (total score) and a likely diagnosis of depression (score >18) (Beck, Steer, Ball, & Ranieri, 1996). In the current study, the severity items (Likert Scale ranging from 0 to 3) were summed to calculate current depression symptom severity (Cronbach's  $\alpha=0.91$ ).

Current PTSD symptoms (in the last two weeks) were assessed via the 17-item self-report, psychometrically valid, modified PTSD Symptom Scale (PSS) for DSM-IV (Falsetti, Resnick, Resick, & Kilpatrick, 1993). We assessed re-experiencing, avoidance and numbing, and hyperarousal symptom severity, as well as overall symptom severity (PSS total score). The PSS is a widely used and psychometrically sound measure; Cronbach's  $\alpha=0.90$  for the present study.

The Difficulties in Emotion Regulation Scale (DERS) is a 36-item questionnaire that assesses various aspects of emotional dysregulation. This measure has excellent psychometric properties (Gratz & Roemer, 2008); Cronbach's  $\alpha=0.81$  for the current study. We used the DERS total and subscale scores for this study; subscales assess: non-acceptance of emotional responses (non-acceptance subscale); difficulties engaging in goal oriented behavior (goals subscale); impulse control (impulse subscale); lack of emotional awareness

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