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Short communication

Beyond alcohol and drug addiction. Does the negative trait of low distress tolerance have an association with overeating?☆

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ABSTRACT

Low distress tolerance is an inability to withstand negative emotions. The connection between low distress tolerance and addiction to cigarettes, alcohol, and illegal drugs has been established. The purpose of the current study was to extend this work to overeating, which is an important symptom of food addiction. We investigated whether low distress tolerance was related to overeating as measured by the emotional and external eating scales of the Dutch Eating Behavior Questionnaire and the disinhibition scale of the Three-Factor Eating Questionnaire. Participants were 225 college students with a median age of 19; 32% were overweight or obese. Linear regression models adjusting for sex and BMI demonstrated significant inverse associations among distress tolerance and emotional eating ($P = 0.001$), external eating ($P = 0.002$), and disinhibition ($P < 0.001$). These initial results suggest the importance of additional research in the area of low distress tolerance, overeating, and food addiction.

Introduction

Excess weight is clearly a serious problem in the U.S. as evidenced by the most recent combined estimate of overweight and obesity in adults at approximately 68% (Flegal, Carroll, Ogden, & Curtain, 2010). This preventable problem places people at higher risk of developing diseases such as type 2 diabetes and coronary artery disease (Kopelman, 2007). Overweight and obesity rates in the U.S. have grown immensely in a very short period of time, suggesting that genetic factors cannot explain these increases (Hill & Peters, 1998). Further, only approximately 20% of individuals are able to lose 10% of their weight through behavioral weight loss programs (e.g., low calorie diet, increased physical activity, and learning self-monitoring, assertiveness, and problem solving skills; Harvey-Berino et al., 2010) and maintain this loss for a minimum of one year (Wing & Phelan, 2005). Therefore, many people are not successful in losing weight and maintaining this loss for an extended period of time.

It is likely that a complex array of factors contribute to the development and maintenance of overweight and obesity. Unhealthy eating is one factor that has been under consideration for quite some time. Two unhealthy eating behaviors include overeating and dietary restraint. Overeating is the overconsumption of calories, which often come from refined foods high in fat and sugar (Corwin & Grigson, 2009; Ifland et al., 2009). Individuals high in restraint are focused on restricting calories as a method to manage their weight (Elfhag & Morey, 2008). Although restraint is linked to overeating (van Strien et al., 2007), there are likely other factors that are associated with overeating given how difficult it is to stop this behavior in order to lose weight or maintain weight loss. For example, snack foods that are high in sugar and fat are readily available, even in businesses that do not focus on selling food (Farley, Baker, Futrell, & Rice, 2009). Further, people have become accustomed to larger portion sizes in restaurants since the 1970s (Young & Nestle, 2002) and laboratory data support higher consumption when larger portion sizes are available (Rolls, Morris, & Roe, 2002; Wansink, van Ittersum, & Painter, 2006).

In addition to restrained eating and the environmental factors just mentioned, another factor potentially associated with overeating is low distress tolerance, which is defined as one's inability to handle aversive emotional states (Simons & Gaher, 2005) and can be demonstrated by one's behavior during a stressful situation (e.g., less persistence on physical and psychological tasks; Leyro, Zvolensky, & Bernstein, 2010). Distress tolerance has been conceptualized as a "meta-emotion construct" and considered to be a trait rather than state (Simons & Gaher, 2005). According to Simons and Gaher (2005), people with low distress tolerance have the following characteristics. They are

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aware of the fact that they cannot tolerate feeling upset, and they feel that others are better equipped to cope with negative emotions. As a result, they are embarrassed about their inability to tolerate negative emotions. Given their perceived lack of coping abilities and inability to handle aversive psychological states, they work hard to avoid experiencing negative emotions. If avoidance is not possible, then they use unhealthy ways to try and remove the aversive emotional state. If this unhealthy solution does not work, then it is quite likely that all of their energy will be focused on their emotions and this will impair their functioning.

Distress tolerance has been studied primarily in individuals who are addicted to cigarettes, but it has also been examined in patients receiving residential treatment for substance abuse and dependence (e.g., alcohol, marijuana, crack/cocaine, or heroin). Distress tolerance has been measured most often by assessing persistence on both psychological and physical tasks. Specifically, individuals who terminate addiction treatment early or are unable to remain abstinent from a substance have less persistence on psychological (i.e., mirror tracing and arithmetic) and physical tasks (i.e., breath holding, carbon dioxide inhalation) as compared to individuals who can remain abstinent or complete treatment (Abrantes et al., 2008; Daughters et al., 2005; MacPherson, Stipleman, Duplinsky, Brown, & Lejuez, 2008). A self-report measure of distress tolerance has also been developed in order to provide quick and reliable assessment of one's view of the ability to handle aversive emotions (Simons & Gaher, 2005).

In addition to substances such as drugs, low distress tolerance may be relevant to the consumption of food, and in particular, the behavior of overeating. According to Gearhardt, Corbin, and Brownell (2009), there is evidence to support "food addiction". One of the inherent difficulties surrounding this topic is that people need food to survive (Corwin & Grigson, 2009). Therefore, it has been suggested that some individuals are addicted to refined foods (Corwin & Grigson, 2009; Ifland et al., 2009). Ifland et al. (2009) provide compelling evidence for the "refined food addiction hypothesis" by demonstrating that over the past 40 years in the U.S., there have been parallel increases in refined food consumption and overweight and obesity. Additionally, empirical and observational studies with humans and empirical studies with non-humans (Ifland et al., 2009) have been put forth to support the idea that food addiction is the same as substance dependence as defined in the current version of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*; APA, 2000). Interestingly, criterion 3 of the *DSM-IV-TR* appears to be consistent with overeating and states that "the substance is often taken in larger amounts or over a longer period than was intended" (APA, 2000). Given the significant link between low distress tolerance and addiction to cigarettes, alcohol, and illegal drugs, it is plausible that low distress tolerance could also be associated with overeating as it manifests in food addiction. Environmental factors can make it easy for individuals with low distress tolerance to overeat when faced negative emotions.

To our knowledge, no studies have focused on determining whether low distress tolerance, as conceptualized by Simons and Gaher (2005), is associated with overeating in a non-eating disorder patient sample, but a study conducted by Anestis, Selby, Fink, and Joiner (2007) focused on the relationship between distress tolerance and bulimia nervosa. Anestis et al. (2007) found a significant inverse relationship between distress tolerance and scores on the Bulimia subscale of the Eating Disorder Inventory, which measured "the degree to which individuals experience a loss of control while eating large quantities of food and then subsequently purge" (Anestis et al., 2007). This finding demonstrates that individuals with low distress tolerance can struggle with binge eating and purging behavior. Binge eating involves consuming a tremendous amount of food in a short period of time and is characterized by feelings of being out of control (APA, 2000). Although it is likely that most binge eaters would endorse overeating, it is not as likely that most individuals who report overeating would meet diagnostic criteria for binge eating (Stice, Telch, & Rizvi, 2000). Examining the relationship between overeating and low distress tolerance is a worthy area of study given the strong rate of relapse from dieting and the relative lack of understanding of the phenomenon. Therefore, in this study we aimed to determine whether low distress tolerance was significantly related to overeating in a sample of individuals not seeking treatment for an eating disorder. We hypothesized that emotional and external eating as measured by the Dutch Eating Behavior Questionnaire (DEBQ; van Strien, Frijters, Bergers, & Defares, 1986) and disinhibition as measured by the Three-Factor Eating Questionnaire (TFEQ; Stunkard & Messick, 1985) would be negatively associated with distress tolerance.

Methods

Participants

After receiving approval to conduct the study from the Human Subjects Institutional Review Board at the university of the first author, participants were recruited via a Psychology Department subject pool. Two hundred and thirty-three students participated in the study. Data from eight participants were excluded from analysis. Six participants had missing data which did not allow the opportunity to score one of the questionnaires administered during this study. One participant could not be weighed since his weight exceeded the capacity of the balance beam scale. Another participant revealed at the end of the session that he had just found out about the death of a friend moments before the session started. He acknowledged that this sad news influenced his responses to the questionnaires. Therefore, the results of this study were based on data from 225 participants.

Procedure

Participants were scheduled for an individual session. When they arrived, they read the consent form and the research assistant answered any questions before the individual signed the form. Participants' height and weight were measured using a balance beam scale. They were measured without shoes and while wearing light clothing. BMI was calculated using the following formula: $(\text{weight in pounds}/[\text{height in inches}]^2) \times 703$. Participants then completed the questionnaires and were given credit for participating in the study.

Measures

Demographics questionnaire. A brief questionnaire was developed for this study. This questionnaire assessed participant characteristics that included date of birth, sex, marital status, year in college, race/ethnicity, number of people living in household, and average household income.

Distress tolerance scale (DTS). The DTS is a 15 item questionnaire. Questions are answered using the following scale: 1 = strongly agree, 2 = mildly agree, 3 = agree and disagree equally, 4 = mildly disagree, and 5 = strongly disagree (Simons & Gaher, 2005). The DTS provides a total score along with four scales that include tolerance ("perceived ability to tolerate emotional distress"), absorption ("attention being absorbed by negative emotions"), regulation ("regulation efforts to alleviate distress"), and appraisal ("subjective appraisal of distress"; Simons & Gaher, 2005). The total DTS score was used for this study since it has better internal consistency than the four scales (Leyro, Bernstein, Vujanovic,