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The role of negative reinforcement eating expectancies in the relation between experiential avoidance and disinhibition☆

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ABSTRACT

Objectives: Eating-related disinhibition (i.e., a tendency to overeat in response to various stimuli) is associated with weight gain and poorer long-term weight loss success. Theoretically, experiential avoidance (i.e., the desire or attempts to avoid uncomfortable internal experiences), may predispose individuals to developing negative reinforcement eating expectancies (i.e., the belief that eating will help to mitigate distress), which in turn promote disinhibition. Such relationships are consistent with an acquired preparedness model, which posits that dispositions influence learning and subsequent behavior. Drawing from this framework, the current study represents the first investigation of relations between negative reinforcement eating expectancies, experiential avoidance (both general and food-specific) and disinhibited eating. In particular, the mediating role of negative reinforcement eating expectancies in the relation between experiential avoidance and disinhibited eating was examined.
Method: Participants (N = 107) were overweight and obese individuals presenting for behavioral weight loss treatment who completed measures of general and food-related experiential avoidance, negative reinforcement eating expectancies, and disinhibition.
Results: Experiential avoidance and negative reinforcement eating expectancies significantly related to disinhibition. Furthermore, the relation between experiential avoidance and disinhibition was mediated by negative reinforcement eating expectancies.
Discussion: The current study supports an acquired preparedness model for disinhibition, such that the relation between experiential avoidance and disinhibition is accounted for by expectations that eating will alleviate distress. Findings highlight the potential role of eating expectancies in models accounting for obesity risk, and identify negative reinforcement eating expectancies as a potential treatment target for reducing disinhibition.

1. Introduction

Eating-related disinhibition refers to a tendency to overeat in response to a variety of stimuli (i.e., emotional, cognitive, and environmental cues; Hays & Roberts, 2008). A vast body of research suggests that disinhibition is an important construct for understanding maladaptive eating behavior (for review, see Bryant, King, and Blundell (2008)). For example, individuals who score higher on measures of disinhibition tend to eat more in response to a preload (Westenhoefer, Broeckmann, Münch, & Pudel, 1994), stress (Haynes, Lee, & Yeomans, 2003), and experimentally-induced negative affect (Yeomans & Coughlan, 2009). Disinhibition is also associated with overall daily caloric intake and the health value of food choices, with individuals higher in disinhibition exhibiting greater daily energy intake and consuming a greater proportion of daily calories from fat and sucrose (Contento, Zybert, & Williams, 2005; Lindroos et al., 1997). In addition, disinhibition is positively associated with body mass index (Bellisle et al., 2004; Dykes, Brunner, Martikainen, & Wardle, 2004), and disinhibition been shown to relate to weight gain across adulthood among women (Hays et al., 2002; Hays & Roberts, 2008),

Disinhibition plays an important role in successful weight loss and weight loss maintenance among overweight and obese individuals. In particular, lower levels of internal disinhibition (i.e., eating in response to emotional and cognitive cues) at baseline are associated with greater weight loss during behavioral treatment (Niemeier, Phelan, Fava, & Wing, 2007). Similarly, among individuals who have already successfully lost weight, disinhibition level relates to weight regain (Niemeier et al., 2007; Wing & Hill, 2001; McGuire, Wing, Klem, Lang, & Hill, 1999). Larger reductions in disinhibition during weight loss treatment also predict better weight loss maintenance and greater additional

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weight loss post-treatment (Butryn, Thomas, & Lowe, 2009; Cuntz, Leibbrand, Ehrig, Shaw, & Fichter, 2001). Together, these findings highlight the importance of disinhibition in weight management. Consequently, identification and improved understanding of factors that relate to disinhibition are important for both the prevention of excess weight gain and the promotion of successful long-term weight control.

One factor that may relate to disinhibition in the context of weight control is experiential avoidance. Experiential avoidance refers to a tendency to suppress or minimize uncomfortable internal experiences (e.g., thoughts, emotions, sensations, memories) (Chawla & Ostafin, 2007; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). A growing body of research implicates experiential avoidance in the development and maintenance of a variety of eating difficulties (Butryn et al., 2013; Hayaki, 2009; Lillis, Hayes, & Levin, 2011). Theoretically, experiential avoidance may confer risk for eating in response to situations or cues that prompt uncomfortable thoughts, feelings, or urges in an effort to mitigate distress. Although the relation between experiential avoidance and disinhibition has not yet been directly examined, disinhibition is negatively associated with distress tolerance and mindfulness (Kozak & Fought, 2011; Lattimore, Fisher, & Malinowski, 2011), two constructs that are inversely related to experiential avoidance (Bond et al., 2011).

The relation between experiential avoidance and disinhibition in eating behavior may be understood through learning processes. The acquired preparedness model (Smith & Anderson, 2001) suggests that individuals' dispositions and traits may put them at risk for developing maladaptive behavioral patterns by promoting learned expectations regarding consequences of behaviors. Both cross-sectional and longitudinal studies provide support for the relevance of expectancies in predicting maladaptive eating patterns (Fischer, Anderson, & Smith, 2004; Settles, Cyders, & Smith, 2010; Simmons, 1997; Smith, Simmons, Flory, Annus, & Hill, 2007; Hayaki, 2009). Research also supports the applicability of the acquired preparedness model, in particular, to describe numerous maladaptive behaviors, including eating disorder symptoms (Combs, Pearson & Smith, 2011; Combs, Smith, Flory, Simmons, & Hill, 2010; Combs, Smith, & Simmons, 2011; Pearson, Combs, Zapolski, & Smith, 2012). Taken together, there is support for the notion that the dispositional traits may influence behavior by encouraging certain types of learning (Caspi, 1993; Smith & Anderson, 2001). This learning then impacts the likelihood that an individual will engage in certain behaviors, such as specific eating behaviors. In accordance with an acquired preparedness model, experiential avoidance may influence an individual's readiness to learn that certain behaviors (e.g., eating) will assist in mitigating distress. Such learning could subsequently increase the likelihood that an individual would adopt expectancies about behaviors related to reductions in uncomfortable states. This may occur because experiential avoidance involves a desire to avoid distressing states (Hayes et al., 1996). Experientially avoidant individuals, then, may be particularly motivated to develop beliefs that are consistent with the hope that certain behaviors could decrease their experience of distress, in turn promoting disinhibition.

While negative reinforcement eating expectancies have been implicated in the development of bulimic behaviors, research has yet to evaluate the relation between such expectancies, experiential avoidance, and more general disinhibited eating. Examination of how such factors may relate in overweight and obese populations, in which disinhibited eating is elevated (Provencher, Drapeau, Tremblay, Després, & Lemieux, 2003), is also warranted. Finally, while experiential avoidance has been conceptualized as a general risk factor for problematic behavioral patterns, recent research has also identified domain-specific forms of this construct. With regard to eating, a measure of experiential avoidance specific to thoughts and urges about food has been developed (Juarascio, Forman, Timko, Butryn, & Goodwin, 2011). Evaluation of how disinhibition and eating expectancies may relate to both general and food-related experiential avoidance measures can inform understanding of these constructs.

The current study investigated an acquired preparedness model of disinhibition in an obese, treatment-seeking sample. We hypothesized that experiential avoidance, both general and food-related, would positively relate to disinhibition. Furthermore, we predicted that negative reinforcement eating expectancies would mediate the relations between measures of experiential avoidance and disinhibition. Food-related constructs should be associated with a tendency to develop negative reinforcement eating expectancies and overeating behavior most proximally; thus, we hypothesized that the strength of the relation between experiential avoidance and disinhibition would be greatest for food-related experiential avoidance.

2. Materials and methods

2.1. Participants and procedures

Participants were a specified cohort of 107 overweight and obese adults (11.2% men; $M_{age} = 53.3$ years, $SD = 9.7$; $M_{BMI} = 36.6$ kg/m^2, $SD = 5.1$) enrolled in a behavioral weight loss trial who completed the components of this substudy as part of the protocol for the larger parent study. Participants in the parent study were recruited from a large metropolitan area in the Northeastern United States through radio, newspaper, and postcard advertisements. Most participants were either White (56.1%), or African American (39.3%), but other races were also represented (0.9% American Indian or Alaskan Native, 0.9% Asian, and 2.8% multiracial). A minority (2.8%) of participants identified as Hispanic or Latino.

Eligibility required a BMI between 27.0 and 45.0 kg/m^2 and age between 18 and 70 years. Participants were excluded from the parent study if they: a) were lactating, pregnant, or planning to become pregnant during the course of the trial; b) reported taking a medication or having a medical or psychiatric problem known to cause weight loss or weight gain; c) reported a medical or psychiatric condition that could limit their ability to comply with the program's behavioral recommendations; d) reported having undergone weight loss surgery; e) required insulin for diabetes management; or f) had a current or lifetime history of an eating disorder, including binge eating disorder. All measures for the present study were completed prior to the start of treatment.

2.2. Measures

2.2.1. Disinhibition

Disinhibition was assessed by the Three-Factor Eating Questionnaire[1] (TFEQ; Stunkard & Messick, 1985). This measure evaluates individuals' eating behavior, and includes three subscales, one of which assesses disinhibition. A 26-item version of the disinhibition subscale (Niemeier et al., 2007) was utilized in the current study. The TFEQ has satisfactory internal consistency and predictive validity in obese samples (Stunkard & Wadden, 1990). The disinhibition subscale demonstrated acceptable internal consistency in this study, with a Cronbach's α of 0.73. Higher scores on the TFEQ-disinhibition subscale indicate higher levels of eating-related disinhibition.

2.2.2. General experiential avoidance

General experiential avoidance was assessed by the Acceptance and Action Questionnaire II (AAQ-II; Bond et al., 2011). The AAQ-II evidences adequate internal consistency and predictive validity (Fledderus, Oude Voshaar, ten Klooster, & Bohlmeijer, 2012). The AAQ-II also has good test–retest reliability, including stability across time, with 12-month reliability of .79 (Bond et al., 2011). In this study, the Cronbach's alpha for

[1] The Three-Factor Eating Questionnaire is also referred to in the literature as the Eating Inventory. It is identified here as the Three Factor Eating Questionnaire to facilitate clarity and to aid in distinguishing this measure from another key evaluation in this study, the Eating Expectancies Inventory.