



Which facets of mindfulness are related to problematic eating among patients seeking bariatric surgery?



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ABSTRACT

There has been growing research indicating the potential positive benefits of mindfulness-based interventions for obesity, but few studies have examined the relationship of mindfulness processes to obesity-related behaviors, particularly among clinical populations such as bariatric surgery candidates. The current study examined the relationship of specific mindfulness facets to a variety of problematic eating behaviors assessed through diagnostic interviews in a clinical sample of 820 patients seeking bariatric surgery. Results indicated that greater mindfulness on specific facets, particularly acting with awareness, was related to less binge and emotional eating. Greater mindfulness was also related, though less consistently, to less habitual overeating and grazing. The observing facet was generally unrelated to problematic eating, but in a few cases being more observant related to having greater eating problems. The results of the study and future directions are discussed in relation to research on problematic eating in obesity and mindfulness-based interventions.

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1. Introduction

There has been growing interest in incorporating mindfulness into interventions for obesity with promising results from initial studies. These interventions target obesity-related behaviors such as problematic eating (i.e., overeating, emotional eating, binge eating) by increasing nonjudgmental and accepting awareness of present moment experiences through meditative exercises (i.e., mindful breathing, mindful eating), mindfulness in daily activities, and eliciting and modeling mindful awareness within the therapeutic session. Positive results have been found in improving problematic eating, weight and other obesity outcomes through interventions that combine mindfulness with cognitive behavior therapy components (e.g., *Leahey, Crowther, & Irwin, 2008; Timmerman & Brown, 2012*) as well as standalone mindfulness-based interventions without other treatment components (*Alberts & Raes, 2012; Kristeller, Wolever, & Sheets, in press*). In addition, recent research with Acceptance and Commitment Therapy (ACT; *Hayes, Strosahl, & Wilson, 2011*), which incorporates mindfulness with other values, acceptance, and behavior change components, has also found beneficial effects in reducing problematic eating behaviors and improving outcomes for obesity (e.g., *Lillis, Hayes, Bunting, & Masuda, 2009; Forman et al., 2013; Weineland, Hayes, & Dahl, 2012; Weineland, Arvidsson, Kakoulidis, & Dahl, 2012*).

Although there have been a number of recent outcome studies evaluating mindfulness-based interventions for obesity, there has been a relative lack of research examining how these mindfulness processes relate to obesity and problematic eating in a non-intervention context with only a few studies conducted among non-clinical samples to date. Preliminary studies with college students have found that mindfulness deficits relate to binge eating (*Roberts & Danoff-Burg, 2010*) as well as uncontrolled and emotional eating (*Lattimore, Fisher, & Malinowski, 2011*). Variables closely related to mindfulness also have been found to predict problematic eating including thought suppression (e.g., *Barnes, Sawaoka, White, Masheb, & Grilo, 2013; Erskine & Georgiou, 2010*) and acceptance (e.g., *Juarascio, Forman, Timko, Butryn, & Goodwin, 2011; Lillis, Hayes, & Levin, 2011*). Additional research is needed to understand how mindfulness processes apply to obesity and problematic eating patterns, especially among treatment seeking populations, which could further inform mindfulness-based interventions for these problems.

Bariatric surgery candidates are a particularly important clinical population to focus such research on. Individuals seeking bariatric surgery often engage in problem eating behaviors (i.e., binge eating, emotional eating, grazing) and a significant proportion continues to do so following surgery (*Colles, Dixon, & O'Brien, 2008; Niego, Kofman, Weiss, & Geliebter, 2007; Stout, Applegate, Friedman, Grant, & Musante, 2007*). Engaging in these problematic eating patterns, particularly post-surgery, is predictive of poorer weight loss outcomes from surgery (e.g., *Canetti, Berry, & Elizur, 2009; Colles et al., 2008; Niego et al., 2007*). Recent studies indicate the potential efficacy of acceptance and mindfulness-based treatments for reducing emotional eating and binge

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eating among those who received bariatric surgery (Leahey et al., 2008; Weineland, Arvidsson, Kakoulidis, & Dahl, 2012; Weineland, Hayes, & Dahl, 2012). However, there has been less outcome research among this sub-sample of obese individuals and no research has been conducted to date examining the role of mindfulness deficits in problem eating behaviors within this clinical population.

The role of mindfulness may vary across the range of eating behaviors that contribute to obesity and poor post-surgery outcomes. There are a variety of problematic eating patterns such as habitual overeating, grazing, binge eating, and emotional eating, each of which may have different functions and causes (Carter & Jansen, 2012). There is a lack of research to inform which of these problematic eating patterns mindfulness applies to and how mindfulness-based interventions may impact these problems. Mindfulness may particularly apply to dysregulated forms of overeating in which individuals eat to cope with negative feelings or experience a loss of control while eating. Studies have found that mindfulness predicts the tendency to use substances to cope with negative affect (e.g., Bonn-Miller, Vujanovic, Twohig, Medina, & Huggins, 2010) and that mindfulness relates to a variety of dysregulated behaviors such as gambling, substance abuse, impulsivity, and self injury (Wupperman et al., 2012). Consistent with this, obesity research to date has primarily focused on the relationship of mindfulness to binge and disinhibited eating patterns (Lattimore et al., 2011; Roberts & Danoff-Burg, 2010). However, mindfulness also may apply to more “mindless” patterns of problematic eating such as grazing and habitual overeating, in which individuals automatically eat in response to environmental cues with little awareness of their eating or the internal signs of hunger and satiation. Consistent with this, research has highlighted the role of insensitivity to cues for hunger and fullness in binge eating as well as the beneficial impact of improving appetite awareness (e.g., Allen & Craighead, 1999).

In addition to questions regarding specific eating behaviors, it is unclear which aspects of mindfulness are particularly important to focus on in psychosocial interventions for obesity and bariatric surgery patients. Mindfulness is typically defined as a multifaceted construct including a combination of being aware of, observing, and describing the present moment and with qualities such as being nonjudgmental and nonreactive (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Research on facets of mindfulness in other problem areas suggests that there are variations in which facets are most relevant (e.g., Cash & Whittingham, 2010; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013). Consistent with this, a recent study found that acting with awareness, being nonjudgmental, nonreactivity, and to a lesser extent describing, were related to less disinhibited eating, while observing was unrelated or in some cases was related to greater disinhibited eating (Lattimore et al., 2011). Similarly, studies have found that the tendency to suppress thoughts about food and to be non-accepting of cravings is predictive of greater eating problems (Barnes et al., 2013; Erskine & Georgiou, 2010; Juarascio et al., 2011), which is consistent with mindful qualities of being nonjudgmental and nonreactive.

A key issue when examining specific facets of mindfulness is that observing tends to be unrelated to or predictive of greater problems (e.g., Baer et al., 2006; Cash & Whittingham, 2010; Desrosiers et al., 2013). Theoretically, a greater tendency to observe present moment experiences, independent of mindful qualities such as nonreactivity and being nonjudgmental, could be indicative of hypervigilance or other maladaptive attentional biases. Consistent with this, a recent study found that the observing facet interacted with the nonreactivity facet of mindfulness such that those who were high in observing and high in nonreactivity were less likely to abuse substances, but those who were high in observing and low in nonreactivity were more likely to do so (Eisenlohr-Moul, Walsh, Charnigo, Baer, & Lynam, 2012). Greater observing skills may similarly be a pathological process that contributes to problematic eating. For example, research indicates that greater sensitivity to external cues for eating is a predictor of problematic overeating (e.g., Van Strien, Herman, & Verheijden, 2012), suggesting being

more observant of such stimuli in the environment can contribute to eating problems. Overall, the research on specific facets of mindfulness suggest that deficits in acting with awareness, describing, being nonjudgmental and nonreactivity could be related to a variety of eating problems, while greater observing may be unrelated or predict greater problems. However, the available research is unclear with respect to which facets may be particularly related to which patterns of problematic eating.

The current report from the Rhode Island Bariatric Surgery (RIBS) study of the Methods to Improve Diagnostic Assessment and Services (MIDAS) project sought to examine the relationship of specific mindfulness facets to a range of problematic eating behaviors in a sample of patients being evaluated for bariatric surgery. This is the first study we are aware of that examined mindfulness facets in relation to problematic eating in a clinical sample of patients seeking treatment for weight problems. It was hypothesized that deficits in acting with awareness, being nonjudgmental, nonreactivity, and describing would be related to more dysregulated eating behaviors (i.e., binge eating, emotional eating) as well as habitual overeating and grazing. Given mixed findings with the observing facet, higher observing was hypothesized to relate to more problematic eating behaviors or to be unrelated to problem eating. The results of this study could further inform our understanding of how mindfulness may relate to problematic eating and ways to further refine and incorporate mindfulness-based interventions into treatment for obesity and bariatric surgery patients.

2. Methods

2.1. Participants

The current study included 820 participants seeking bariatric surgery who completed psychiatric diagnostic interviews and a self-report measure of mindfulness. The sample was 80.8% female with a median age of 43 ($M = 42.93$, $SD = 11.40$, Range = 18 to 72). The racial distribution of the sample was 81.7% White/Caucasian, 8.0% Black/African American, 8.2% Hispanic/Latino, 0.2% Asian and 1.8% other. Relationship status varied with 54.0% married, 9.5% co-habiting, 14.4% divorced or annulled, 1.7% widowed, 1.3% separated and 19.0% never married. Regarding sample education, 6.0% did not graduate high school, 71.1% graduated high school but not college, 14.3% graduated from a 4-year college, and 8.5% received a graduate degree. The average BMI was 46.40 ($SD = 7.07$, Median = 45.18) with BMI scores ranging from 30.45 to 80.58, indicating all of the participants were obese based on criteria from the National Institutes of Health (1998).

2.2. Procedure

Patients seeking bariatric surgery were referred by their surgeon for a comprehensive psychological assessment as part of the determination of appropriateness for surgery. The bariatric surgery assessments were conducted within the Rhode Island Hospital Outpatient Psychiatry practice. These assessments were integrated within the MIDAS research project and all patients who agreed to participate in the study provided informed consent. The study procedures for the RIBS were approved by the Rhode Island Hospital institutional review committee. Further descriptions of the RIBS project are outlined in Zimmerman et al. (2007).

Participants completed semi-structured diagnostic interviews conducted by psychologists and research assistants using the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1995) as well as a supplementary module assessing eating history and factors related to bariatric surgery (only diagnostic interview data from the bariatric module was used for the current study). Extensive training was provided to each diagnostic interviewer as well as ongoing monitoring to prevent rater drift. Training for psychologists included observing 5 interviews followed by being observed conducting 15–20 interviews, while research assistants observed 20 or more interviews

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