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# Does Mindful Eating Help You Eat Less or Just Better?

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The lack of effective interventions to address the obesity epidemic among all segments of the population suggests a need for a focus on innovative solutions to weight loss and management. In recent years, a number of studies have examined mindfulness training in relation to eating behaviors. A literature synthesis was performed to assess the current state of research on mindfulness and eating as well as to discover what these studies reveal about the mechanisms through which mindfulness may work to modify eating behaviors. Using the specified search criteria, 84 publications were identified, but only 22 met the criteria of acceptable quality or relevance to be included in the synthesis. Studies generally reported more positive findings when targeting clinical populations. Mindfulness may work in these populations by fostering an increased recognition of hunger and satiety cues, and an increased ability to manage negative affect and stress. Research to date does not suggest that mindfulness can be used as an effective weight loss or weight management intervention among the general population.

## INTRODUCTION

Globally, more than one billion adults are overweight, with at least 300 million of them obese (WHO, 2010). In the United States, obesity has reached epidemic proportions. Dramatic increases in obesity occurred during the 1990s across the United States in all demographic groups (CDC, 1999), with the percentage of older adults who were obese increasing from 22 percent to 31 percent between 1988 and1994 and 2005 and 2006. In the past two years, this trend appeared to have leveled off among all groups 20 and older with no measurable change between 2003 and 2004 and 2005 and 2006. Although obesity researchers predicted rates would remain stable, a recent report by the nonprofit Trust for America's Health and the Robert Wood Johnson Foundation found that obesity continued to increase from 2007 through 2009. In their review of state trends, the report revealed that in 38 states, at least one in four adult residents was obese. This stands in alarming contrast to 1991, when not a single state had an obesity rate above 20%. This paper will define and describe the problem of obesity among older adults, further describe its significance as a public health problem, and provide a synthesis of the literature on mindfulness training as a strategy to change eating behaviors and reduce obesity.

The United States population 65 and older is projected to double in size within the next 25 years, creating formidable challenges in policy, health care, and other sectors as society struggles to meet the needs of an aging population (Federal Interagency Forum on Aging-Related Statistics, ). In the health care sector, increasing rates of chronic disease threaten both the quality of life among this segment of the population as well as the long-term financial viability of our health care system. Numerous studies have demonstrated obesity to be positively associated with increased risk of a variety of chronic diseases and a greater need for health care services. These facts, along with dramatic increases in obesity rates over the last three decades, have created what can, at minimum, be considered a public health crisis. While children remain the primary target of obesity prevention programs and interventions, high rates of obesity and obesity-related disability among older adults have rightfully begun to garner more attention in social science research.

Still, more than three decades and millions of dollars later, solutions to the problem of obesity for any demographic remain elusive. Even the most promising weight-loss interventions are unable to prevent high percentages of individuals from regaining any weight lost within a short period of time. While some researchers argue that only macro-level environmental changes will bring out decreases in obesity rates, to date such changes have been no more successful than behavioral interventions (Cooper, Doll, Hawker, Byrne, Bonner, Eeley, O'Connor, & Fairburn, 2010; Brownwell, 2010). For these reasons, innovative approaches to obesity prevention and weight loss are needed at all levels.

## THE CASE FOR ADDITIONAL RESEARCH

Future research is needed in the face of what is essentially a collection of failed interventions. While a few studies have boasted modest decreases in BMI over short periods of time, no one has been able to identify even a stopgap solution that would stabilize obesity rates among any segment of the population. A thorough review of the literature on obesity-related interventions is beyond the scope of this paper; however, one only needs to look at the prevalence of obesity over the last 20 years to know that significant progress has not been made. In a review of obesity interventions, Jain states that "a thorough search of the evidence for obesity treatment and prevention reveals that the research to date shows clearly what does not work but fails to establish what does" (2005). In fact, none of the behavioral or environmental interventions included in his review demonstrate anything beyond a very modest effect on weight loss.

In a recent article, Cooper et al make the case against future studies focused on behavioral modification (Cooper, Doll, Hawker, Byrne, Bonner, Eeley, O'Connor, & Fairburn, 2010). The authors position their argument within a report of findings on a recent cognitive behavioral approach to treatment of obesity.In their discussion of non-findings, the authors suggest what they call far-reaching implications for a shift away from psychosocial treatment of obesity toward an exclusive dedication to preventive efforts.In a response to this proposal set forth by Cooper et al, Brownwell provides a more considered argument for the current state of obesity research (2010). She too notes the minimal gains in treatment and weight maintenance. Unlike Cooper, however, Brownwell does not argue for forgoing individually based interventions entirely. In an analogy to lung cancer treatment, she makes a cogent point for helping individuals. She notes that while lung cancer survival is poor, with only about 15% of people who receive treatment surviving five years, the importance of ongoing research is seldom challenged. Although lung cancer treatment is a medical rather than a public health intervention, the larger point is that individuals with serious conditions deserve attention and care.

In addition, there is some reason to believe that what seems like failure may actually be very limited success. For example, we now know that even temporary weight loss leads to health benefits for an individual. One study found that even when weight loss has been relatively modest or is not maintained long-term, the initial weight loss generally results in a decrease in risk factors and reduction of clinical symptoms associated with obesity (Xavier & Pi-Sunyer, 1996). The results of such

studies must be weighed with concerns of cost-effectiveness and any risks resulting from treatment. They also demonstrate, however, that small steps have in fact been taken in what may otherwise appear to have been a fruitless endeavor. In considering the legitimacy of various levels of interventions, Freidan's recent article comes to mind (2010). In his discussion of the "Health Impact Pyramid," Freidan argues that public health interventions tend to be most effective when they are implemented at a population level and address social and economic determinants of health, followed by interventions that change the context of behavior. Though sociobehavioral interventions are least effective and require the most effort, he says that implementing interventions at all levels leads to the greatest public health benefit (Freidan, 2010). The appropriate level and type of intervention are a matter for further exploration. What is already apparent is the urgent need for additional research into innovative interventions that effectively encourage weight reduction and weight management among older adults. The following discussion will focus on current research into mindfulness as a strategy for changing eating behavior and promoting weight loss.

## MINDFULNESS AND EATING: A SYNTHESIS OF THE LITERATURE

The concept of mindfulness dates back many centuries, originating in Buddhist practice. Jon Kabat-Zinn, who has been at the forefront of efforts to apply a secular understanding of mindfulness to mainstream research, defines the concept as "the awareness that emerges when paying attention in a particular way, that is, on purpose, in the present moment, non-judgmentally" (Kabat-Zinn, 2003, p.145). Huss and Baer further define the experience of mindfulness as one in which "[p]articipants learn to observe these phenomena without evaluating their truth, importance, or value and without trying to escape, avoid, or change them" (2007, p. 17). Bishop and colleagues describe it in similar terms, as "the self-regulation of attention, involving sustained attention, attention switching, and the inhibition of secondary processing" (Bishop, Lau, Shapiro, Carlson, Anderson, Carmody, et al, 2004, p. 29). Common to these definitions is the idea of purposeful and conscious attentiveness as opposed to automated reactions.

In the last few decades, mindfulness has increasingly gained the attention of practitioners and researchers in the fields of medicine and psychology. Much of the current research on mindfulness employs a program called Mindfulness Based Stress Reduction (MBSR), developed by Kabat-Zinn about 25 years ago as a pain management intervention. The focus of MBSR is on the cultivation of mindfulness through meditative practice. The program consists of eight two-and-one- half hour meetings concluding with an all-day meditation retreat. The effectiveness of MBSR in treatment of pain, depression, and anxiety disorders has since been well established with rigorous clinical trials (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher, Pbert, et al, 1992). In addition, recent metanalyses conclude that MBSR may help both clinicians (Irving, 2009) and others (Grossman, 2003) with a broad range of clinical and non-clinical problems.

Only recently has mindfulness been applied to the study of eating behaviors. Although this specific application is a nascent area of research, the relative consistency of findings is enough to suggest that it may be worthy of attention. The purpose of this paper is to review and synthesize the literature concerning mindfulness training as an approach to changing eating behaviors and promoting weight loss. Through a systematic examination of recent studies, two main aspects of the connection between mindfulness and eating will be explored. First, I will review the current state of research on mindfulness and eating. In addition, I will discuss what these studies suggest about potential mechanisms through which mindfulness may work to modify eating behavior.

## METHODS

Methods of the analysis and criteria for inclusion and exclusion were specified in advance as follows:

*Inclusion criteria*

1. Materials were published before 11/2010.
2. Only publications appearing in peer-reviewed journals were included.
3. Publications included, at minimum, an abstract in English language.
4. Publications included a focus relevant to awareness or mindfulness and weight or eating behavior.

*Exclusion criteria*

1. Publications appearing in lay journals for a primarily non-academic audience.
2. Publications that did not include a focus relevant to mindfulness and eating.
3. Publications with a strictly clinical focus.

*Literature research*

Several search strategies were employed:

**Databases:** An electronic search was conducted using the following databases: Medline; PsychInfo, including Digital Dissertations; World Cat; Health Source: Nursing Academic Edition; and the Cochrane Library.

**Search terms:**

1. Databases were searched for the occurrence of the following keyword pairings relating to awareness and eating: mindful or mindfulness *and* eating or weight
2. The reference sections of all retrieved studies and theoretical publications that met the inclusion criteria were inspected.
3. The Social Science Citation Index (SSCI) was searched for additional relevant publications linked to seminal articles.

The search resulted in 84 articles, although only 22 met the inclusion criteria.

## RESULTS

### Individuals with Eating Disorders and Morbid Obesity

Much of the research concerning mindfulness and eating has focused on clinical populations, including individuals who suffer from binge eating disorder (BED) and bulimia.

Of these, only two are empirical studies using validated measures, and neither include a control group (Kristeller & Hallett, 1999; Smith, Shelley, Leahigh, & Vanleit, 2006). In the first of these three studies, Kristeller et al implemented a pilot program on Mindfulness Based Eating Awareness Training (MB-EAT) among obese women with BED (Kristeller & Hallett, 1999). Although participants did not demonstrate weight loss, the six-week intervention resulted in a large and significant reduction in depression and the number of binge episodes per week. In addition, significant relationships were found between mindfulness and the outcome variables. Specifically, the number of binge episodes was inversely related to a sense of eating control ($r = 5\ .73$, $p < .001$), sense of mindfulness ($r = 5\ .76$, $p < .001$), and increased awareness of satiety cues ($r = 5\ .53$, $p < .025$), but not hunger cues ($r = 5\ .19$, $p < .$). Change in eating control was related to a reduction in Binge Eating Scale scores ($r = 5\ .54$, $p < .025$) and to lowering of depression ($r = 5\ .42$, $p < .10$) and anxiety scores ($r = 5\ .46$, $p < .06$) at a statistically marginal level.

A second study of mindfulness and binge eating echoes these findings. Smith and colleagues (Smith, Shelley, Leahigh, & Vanleit, 2006) recruited 25 individuals from the general public to participate in a modified version of the standard Mindfulness-Based Stress Reduction (MBSR) course. The revised course included a brief set of eating exercises at the conclusion. Study participants were assessed for binge eating with the Binge Eating Scale and other self-report measures administered pre- and post-intervention. As in the Kristeller study, this intervention resulted in significant decreases in binge eating ($d = .71$, $t = 4.82$, $p < .01$), state anxiety, and depressive symptoms. In addition, mindfulness was negatively associated with state anxiety (-.364), but this association was not significant. It was also negatively associated with depressive symptoms (.407, $p <.05$), offering one explanation for improved mental health and reduced binge eating.

Qualitative studies also support the notion of mindful eating as an intervention for individuals with eating disorders. Two of these studies utilized a phenomenological approach to understand how those with BED experience and react to mindfulness training (Proulx, 2008; (McIver, McGartland, & Halloran, 2009). In Proulx's study, six college-age women with bulimia nervosa described their experience with a mindfulness-based eating disorder (M-BED) treatment group through interviews and self-portraits (Proulx, 2008). McIver and colleagues used a similar approach in an analysis of personal journals of 25 obese women completing a 12-week yoga and mindfulness meditation course. There was considerable overlap in the findings from the two studies and with the empirical research described above. In both qualitative studies, as in the Smith study, participants described how the experience of the group resulted in their greater

self-awareness and acceptance. The women in Proulx's study also reported experiencing less emotional distress and improved ability to manage stress following the program, whereas McIver characterized the main shift in participants as one from disconnection to a "healthy reconnection" to food and to their bodies. Participants in McIver's study also reported reduced food intake, decreased eating speed, and healthier food choices throughout the program. It should be noted, however, that these studies are limited in their ability to support the efficacy of mindfulness as an intervention because of their reliance on subjective and self-reported data (McIver, McGartland, & Halloran, 2009).

One additional intervention designed to reduce binge eating through mindfulness is described in a case study by Baer and colleagues (Baer, Fischer, & Huss, 2005). The study assessed binge eating episodes, as well as characteristics of binge eating such as restraint, eating concern, weight concern, shape concern, and attention to internal verses external cues. Researchers further predicted that mindfulness, as measured by the Kentucky Inventory of Mindfulness Skills (Smith & Allen, 2004), would increase with treatment. Results showed a decrease in binge eating symptoms as well as increased mindfulness scores in the areas of attention to and acceptance of internal experience; however, some of the outcomes of the treatment were incongruous with this result. First, subjective binge eating episodes actually increased during the treatment. The authors argued that this resulted from the individual's increased ability to distinguish between hunger and external cues, and her consequent tendency to label any eating that occurred for reasons other than hunger as a binge eating episode, even when the quantity eaten was small. They further noted that these episodes ceased to occur by the six-month follow-up point. Also unexpected were increases in restraint and weight concern following treatment, and a self-reported increase of five to 10 pounds during treatment. The authors interpreted this slight increase as an expected result relative to the substantial amount of weight lost by the individual just prior to treatment. Although the authors offer reasonable explanations for these unexpected outcomes, the mixed nature of results should limit confidence in the study's generalizability.

Taken together, these studies offer some suggestion as to how mindfulness may work to reduce binge eating behavior. Binge eating is characterized by a tendency toward eating in response to emotions rather than hunger cues. Some research suggests that this "emotional eating" is due to a lack of awareness of hunger cues or an ability to distinguish between the hunger and emotional distress (Pinaquy, Chabrol, Simon, Louvet, & Barbe, 2003). If this is the case, the increased self-awareness associated with mindfulness, as found in the majority of the studies, may improve an individual's ability to distinguish between emotional distress and hunger, and help them avoid the tendency to eat when they are not hungry. Only Kristeller's study was somewhat at odds with this explanation given the lack of relationship demonstrated between mindfulness and awareness of hunger cues. At the same time, the study did find mindfulness to be related to recognition of internal satiety cues. By helping binge eaters become aware of these cues, mindfulness programs may reduce a tendency toward overeating (Lowe & Levine, 2005). Other studies have shown that binge eaters may be aware of distressing emotions

but may use eating as a way to alleviate this distress (Heatherton & Baumeister, 1991; Lynch, Everingham, Dubitzky, Hartman, & Kasser, 2000). Salmon (2004) discusses the way in which mindfulness may reduce the experience of stress by "interposing an element of conscious awareness into these otherwise automated reaction patterns." He argues that being able to recognize stress reactions as they are occurring provides an opportunity to develop more flexible, deliberate responses. Kabat-Zinn has further linked these types of response patterns to positive qualities, including heightened self-efficacy, a sense of personal agency, and coherence (Kabat-Zinn, Massion, Hebert, & Rosenbaum, 1998). Several of the studies reviewed found that participants in mindful eating interventions improved their abilities to manage stress post-group (Baer, Fischer, & Huss, 2005; Proulx, 2008). A final possibility is that, as Baer and colleagues suggest (2008), increased self-acceptance resulting from mindfulness interventions may also have further resulted in decreases in negative emotional states such as anxiety and depression that can lead to emotional eating.

Case studies of mindfulness eating interventions with morbidly obese individuals provide reason to think that some of the same mechanisms are at work with this population (Engstrom, 2007; Singh, Lancioni, Singh, Winton, Singh, McAleavey, Adkins, & Joy, 2008). In each of these studies, the individuals involved had long histories of failed weight loss efforts, which in one case included gastric bypass surgery. Both of the individuals involved in the studies substantially reduced and maintained their weight loss over time (54% reduction in body weight through 12 weeks follow-up and 18% reduction through 30 weeks respectively). In both cases, mindfulness was used to promote greater attentiveness to eating and increased awareness of internal hunger cues, both of which may help an individual to avoid overeating. A study comparing the reliance on internal vs. external cues for American and French populations further supports the importance of this (Wansink, Payne, & Chandon, 2007). The study demonstrated that normal-weight people were more likely to be influenced by internal cues of meal cessation ($p < 0.043$), while overweight people were more influenced by external cues ($p < 0.005$). In both of these cases, individuals were taught to eat more slowly. Reduced eating speed may have affected weight by supporting individuals' ability to recognize internal cues. This finding is consistent with a study by Maruyama and colleagues demonstrating a positive relationship between eating quickly and weight gain (Maruyama, et al, 2008).

## Cancer Patients

Cancer patients are another clinical population that has been targeted with mindful eating training (Meyers & Ott, 2008). Chemoradiation therapy for head and neck cancer can result in anorexia, weight loss, fatigue, and nausea. Patients often require nutrition support via gastrointestinal tubes during treatment and subsequently find it difficult to transition back to eating normally when treatment ends. In this case, mindful eating has been used to help individuals eat more. The article is a discussion of the author's clinical experience implementing mindfulness among this population for three years. Although the article does not strictly pertain to mindful eating as a weight loss intervention, it contributes to an understanding of how mindfulness affects eating behavior. Consistent with several of the studies

discussed above, the discussion lends support to the idea that mindfulness promotes changes in eating behavior through an increased ability to recognize and attend to internal rather than external cues. Patient reports also confirm the value of mindfulness in helping them deal with and manage emotional distress. More specifically, a fear of choking and general anxiety interfered with resuming oral intake of food and was ameliorated through the patients' practice of mindful eating. It must be noted that while the reported conclusions are plausible, there is not sufficient data (e.g. quotations or other) to fully support the author's claims.

## Non-clinical Populations

Studies of mindful eating among non-clinical populations are sparse. Although popular books and articles on the subject have proliferated over the last few years, only four research studies were identified, three of which were conducted by students as part of a senior thesis, master's thesis, and doctoral thesis respectively. The fourth is unpublished. In addition, findings were less consistent than those described for clinical populations (See Table 1). In one of these studies, researchers (Gilbert, 2010) used a cross-sectional design to examine whether mindfulness is related to diet, physical activity, and self-efficacy. Participants included 297 undergraduates from the University of Montana. They completed the Five Factor Mindfulness Questionnaire (FFMQ), the FFMQ modified for mindful eating, and measures of physical activity, diet, self-efficacy, and stress. Survey results suggest a relationship between mindfulness and some specific health behaviors. Degree of mindfulness in everyday life was positively correlated with physical activity, fruit and vegetable intake, and self-efficacy, and negatively correlated with fat intake for males. The cross-sectional nature of the study and omission of weight as a variable limit the impact of these findings relative to the current discussion; however, given the inverse relationship between weight and the identified health behaviors, this study may provide a basis for further investigation into the relationship between mindfulness and weight.

In the most rigorous intervention involving mindfulness and eating, researchers from the University of Georgia tested the effectiveness of mindfulness meditation and home-based resistance exercise when added to a standard behavioral intervention on weight loss and psychosocial outcomes. Seventy-one individuals participated in a randomized controlled trial consisting of three treatment groups: standard behavioral weight loss program (SBWL), SBWL plus resistance exercise, or SBWL plus mindfulness training. Program participation resulted in significant weight loss, increases in physical activity, and improved eating behaviors. There were no significant differences between groups ($p<0.05$), however. The study's failure to support the addition of resistance exercise or mindfulness training as a means toward these short-term outcomes raise questions about the potential of mindfulness for weight management in a general population (Davis, 2009).

A second intervention (Rott, Seaborn, Schmidt, Tafalla, Pejsa, & Evers, 2008) yielded better outcomes but failed to include an active control group. In this case, researchers designed and implemented an eight-week program to promote weight loss, healthy eating, and self-efficacy. Content included nutrition education,

mindful eating concepts, and promotion of portion control. The program was implemented with 21 hospital employees and volunteers, and included a control group (n = 10). The Weight Efficacy Lifestyle questionnaire (WEL) was administered to measure the following factors relating to food choices: negative emotion, availability, social pressure, positive activities, and physical discomfort. The analysis demonstrated that the experimental group lost significantly more weight ($p<0.04$) and improved significantly in the self-efficacy subcategory and positive activities ($p < 0.05$). Self-efficacy scores in the other four subcategories tended to be higher for the experimental group than the control group; however, those differences were not significant. Although mindful eating was one of several key program components, the authors' description of the study offers little to support the role of mindfulness in effecting the outcomes.

A final study also targeted changes in eating behavior rather than weight loss, but in this case researchers focused on the types of food chosen rather than factors affecting nutritional choices. Participants (N=180) were divided evenly between an intervention group and an active control group receiving a lifestyle education program. Individuals participated in a modified version of the MBSR program that included a focus on mindful eating (Sopko, 2010). A food frequency questionnaire (FFQ) was employed to test whether participants in the mindfulness group displayed greater changes in eating behavior and mindfulness than those in the control group. Mindfulness was measured pre and post with MAAS (mindfulness attention awareness scale), a validated scale measuring dispositional mindfulness and awareness in the present moment. Results were mixed. The active control group exhibited an increase in consumption of fruits and vegetables ($p < 0.01$), while the mindfulness group decreased consumption of breads ($p < 0.02$), meats ($p = 0.00$), and alcohol ($p < 0.06$), and was more mindful in eating patterns ($p < 0.01$). Both groups increased MAAS scores, which may be attributed to both programs increasing overall awareness. The researchers interpret these findings as meaningful given the mindfulness group received information regarding food and eating behaviors in one of the eight weeks of the program, while the active control group received similar lessons in six of the eight weeks. They argue that the mindfulness training allowed the information to be learned and applied in less time, but the lack of evidence for such a relationship between mindfulness and information retention renders this assertion untenable.

Finally, the development of a mindful eating questionnaire (MEQ) for use with clinical and non-clinical populations may contribute to an understanding of the mechanisms underlying the relationships between mindfulness and eating behaviors discussed above (Framson, Kristal, Schenk, Littman, Zeliadt, & Benitez, 2009). The scale was tested with seven convenience samples including individuals aged 18 to 80 years old. Exploratory factor analysis was used to identify factors, with the summary MEQ score comprised of the mean of all factors. Multiple regression analysis was employed to assess potential associations between demographic characteristics, obesity, yoga practice, and physical activity with MEQ scores. Domains of the final 28-item questionnaire were disinhibition, awareness, external cues, emotional response, and distraction. The subscales for each domain

demonstrated acceptable levels of reliability ranging from .64 to .83 (Cronbach's alpha). The covariate-adjusted MEQ score was positively associated with yoga practice and inversely associated with body mass index, providing some evidence of construct validity. Although the scale lends some support for components of mindfulness, further research is needed with non-clinical populations.

## DISCUSSION

Considering the studies as a whole it seems that mindfulness interventions are more effective among clinical populations than among the general population. The clinical studies reviewed in this analysis were relatively consistent in their findings regarding the relationship between mindfulness, eating behaviors, and psychosocial characteristics. In many of the studies, mindfulness was related to emotional eating or correlates of emotional eating such as emotional distress, ability to manage stress, and awareness of internal cues for hunger and satiety. These characteristics have particular salience for those with eating disorders, morbid obesity, and cancer patients having difficulty resuming normal intake following chemotherapy. While the lack of objective measures and self-reported nature of much of the data used in these studies warrants caution in interpreting their overall impact, the studies provide some indication that additional research might bring further support for mindfulness as an intervention among these populations.

Conversely, the relative lack of findings among non-clinical populations may reflect differences in factors affecting eating behavior and weight gain in clinical versus non-clinical populations. While emotional eating, stress, and mindlessness may all be experienced by the general public, this experience may not match the severity or play as a strong a role as it does in individuals with a clinically defined eating disorder. What does this suggest for mindfulness training as a weight loss intervention? Although the studies identified here fail to support the efficacy of mindfulness training, the paucity of current research is insufficient to conclude definitively that mindfulness does not work. It is possible that mindfulness training may be effective for certain subsets of the general public who may not suffer from an eating disorder but possess one or more of these traits. For example, considerable research demonstrates that while distress suppresses eating in non-dieters, the same experience leads chronic dieters to eat more (Baucom & Aiken, 1981; Herman, Polivy, Lank, & Heatherton, 1987; Ruderman, 1985). Thus mindfulness as a tool to reduce distress may be effective in helping this subset of the general population manage their weight while at the same time have no effect on non-dieters. Additional research could further explore the psychosocial characteristics among the general public that may make mindfulness a more or less effective intervention.

At the same time, one must weigh the potential of this line of research given the vast array of unsuccessful efforts in the area of behaviorally based weight loss and weight management. This does not mean, however, that research at the level of individuals need be abandoned in favor of policy studies. Although some authors suggest that only changes at a population level will have significant impact,

others offer alternative avenues for studying obesity prevention in individuals. For example, Jain remarks that there has been little research to date investigating the factors that protect high-risk people (e.g., those with obese parents) from becoming obese, and that such research may aid in our understanding of biological, social, and environmental factors leading to successful weight control (Jain, 2005). Research along these lines would necessitate involvement of individuals from different populations as protective factors are likely to vary according to race/ethnicity, age, gender, and other characteristics affecting one's culture and behavior. Given the scope and multifactorial nature of the problem, obesity research would likely benefit from careful and well-considered studies at the level of both individual and policy.

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**About Mather LifeWays**

Based in Evanston, Illinois, Mather LifeWays enhances the lives of older adults by creating Ways to Age Well.SM Founded in 1941 by entrepreneur and humanitarian Alonzo Mather, Mather LifeWays is a unique non-denominational, not-for-profit organization dedicated to providing a continuum of living and care; making neighborhoods better places for older adults to live, work, learn, contribute, and play; and identifying, implementing, and sharing best practices for wellness, workforce issues, memory care support, and empowering caregivers. To learn more about our senior residences, Community Initiatives, and Mather LifeWays Institute on Aging, call (847) 492.7500 or find your way to www.matherlifeways.com

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