Article

SAGE Open
April-June 2017: 1–8

DOI: 10.1177/2158244017704685
journals.sagepub.com/home/sgo
SAGE

Mindful Construal Diaries: A Less Anxious, More Mindful, and More Self-Compassionate Method of Eating

Misba Hussein[1], Helen Egan[1], and Michail Mantzios[1]

Abstract

Mindful construal diaries were found to assist in weight regulation during a long-term intervention. The current study attempted to expand previous findings by testing the consideration (or priming) of questions within the diary (instead of filling in the answers), and investigated levels of state mindfulness, state self-compassion, and state anxiety in an observational trial of pre- to postintervention. Forty-five participants completed State Mindfulness, State Self-Compassion, and State Anxiety scales before and after their meal and were asked to read and consider the mindful concrete construal diary questions. The results illustrate that state mindfulness, state self-compassion, and state anxiety levels were significantly improved (i.e., increased mindfulness and self-compassion, and decreased anxiety) after participation. Findings provide further evidence as to why the diaries might work in supporting weight regulation, and suggest another method of making eating more mindful. Current findings, limitations, and recommendations for future research are discussed.

Keywords

mindfulness, self-compassion, anxiety, mindful concrete construals, mindful eating

Introduction

Research suggests that mindfulness demonstrates notable benefits in both mental and physical health (Greeson, 2009; Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Gu, Strauss, Bond, & Cavanagh, 2015; O'Reilly, Cook, Sprujit-Metz, & Black, 2014). Mindfulness has been described as an awareness that emerges through purposefully paying attention to what is taking place in the present moment with a nonjudgmental attitude (Kabat-Zinn, 1990). The effects of mindfulness training through meditation have been investigated, with results suggesting that it is beneficial to mental health (e.g., reducing symptoms of depression, anxiety, and stress—Schreiner & Malcolm, 2008). Other researchers have found that mindfulness meditation assisted in weight loss (Dalen et al., 2010; Daubenmier et al., 2011; Mantzios & Wilson, 2015a). However, Mantzios and Wilson (2014) observed that although mindfulness meditation was effective in terms of assisting weight loss, the practice was not continued once weight loss had been achieved. It would appear that mindfulness meditation was used in the same way that restrictive diets are used, that is, achievable as a short-term solution for weight loss, but difficult to adhere to in the longer term. The authors considered that an alternative, event-based and eating-specific mindful method might assist people more effectively in both weight loss and maintenance (see Mantzios & Wilson, 2015b).

However, mindfulness adapted to fit into an eating context was described earlier in literature as mindful eating, which was defined as an association between eating and a nonjudgmental awareness of physical and emotional sensations (Framson et al., 2009). Present moment attention of taste, texture, and smell, as well as satiety cues and the presence of thoughts and emotions associated with the eating experience were described as key characteristics of eating mindfully. Mindful eating has been associated to lower body mass index (BMI; Moor, Scott, & McIntosh, 2013), lower servings of energy-dense foods (Beshara, Hutchinson, & Wilson, 2013), and healthier food choices (Kidd, Graor, & Murrock, 2013), which are relevant to obesity prevention and applicable to various weight groups. Therefore, in many ways, the event-based and eating-specific mindful method that was developed by Mantzios and Wilson (2014) assimilates the definition and characteristics of mindful eating, although these assumptions lack empirical findings.

More specifically, Mantzios and Wilson (2014) combined mindfulness with construal-level theory to develop a diary,

[1]Birmingham City University, UK

Corresponding Author:
Michail Mantzios, Faculty of Business, Law and Social Sciences, Department of Psychology, Birmingham City University, Room C307, The Curzon Building, 4 Cardigan Street, Birmingham B4 7BD, UK.
Email: michael.mantzios@bcu.ac.uk

and found that the use of these mindful construal diaries (MCDs) provided similar results in weight loss when compared with a group that used mindfulness meditation for 5 weeks, and delayed weight regain over meditation at a 3-month follow-up. Construal-level theory describes an identification on a close or distant continuum (Liberman & Trope, 1998). Whereas close objects, events, or individuals are represented as *concrete*, distant objects, events, and individuals are portrayed as *abstract*. Abstract construals consider "why"' actions are being performed, whereas concrete construals focus on "how" they carry out behavior (Freitas, Gollwitzer, & Trope, 2004). Mantzios and Wilson (2014) suggested that concrete construals (a) promoted attention to the present behavior and (b) they focus on the *how* of the current behavior rarely required or prompted further judgment or self-critical attitudes, factors that theoretically link mindfulness and self-compassion to concrete construals, and make it a suitable tool for cultivating mindfulness and self-compassion outside the traditional routes of meditation. Their results demonstrated that concrete construal diaries are significantly more effective in improving mindfulness and self-compassion than abstract construal diaries, which served them with justification as to how the diaries can assist weight management. Although the diaries have been found to assist weight regulation, the specific conduit of the effect, whether they decrease anxiety, depression, or increase mindfulness and self-compassion during each meal, are presently unknown and warrant further research.

Three topics are explored in the current study as possible mechanisms of aiding weight regulation with the use of MCD, namely, mindfulness, self-compassion, and anxiety. First, the original study used the Mindful Attention and Awareness Scale (MAAS), which measures an increase in present moment awareness, but does not explore the non-judgmental component of mindfulness. The authors and developers of this diary suggested that further research should be conducted with the help of other psychometric tools. Therefore, further research incorporating a more holistic measure of mindfulness was used to observe increases in mindfulness, and further explain previous weight regulation findings.

Second, previous research suggested that the use of the MCD could, over a period of 5 weeks, increase self-compassion (Mantzios & Wilson, 2014). Self-compassion is described as taking a kinder approach to oneself with a mindful awareness and consideration of personal difficulties as being part of a shared human experience (Neff, 2003). The diary prompted people to be more self-compassionate through priming, through the inclusion of self-compassionate questions. Adams and Leary (2007) conducted the initial research, which used priming (i.e., activation of the self-compassionate concept through text that was read to participants to elicit changes in later behaviors) to increase self-compassion. They replicated another original experiment, whereby people who broke their diet increased their food intake afterward (i.e., disinhibition—see Herman & Mack, 1975), but primed half of their participants to be more self-compassionate. They found that those who were induced with a self-compassionate message did not increase their food intake. Therefore, self-compassion can be used as a coping mechanism with personal failings (without overeating), and in turn, aid in weight regulation.

The role of self-compassion has been highlighted in relation to mindfulness and eating. For example, research has found that participation in mindfulness-based stress reduction (MBSR) programs increased self-compassion levels, which mediated reductions in stress (Shapiro, Astin, Bishop, & Cordova, 2005), although stress has been found to increase food consumption (Greeno & Wing, 1994). While self-compassion may strengthen the effectiveness of mindfulness, further research suggested that self-compassion relates to mindful eating (Webb, Jafari, Schoenefeld, & Hardin, 2013), intuitive eating (Schoenefeld & Webb, 2013), and increasing health behavior intentions (Sirois, 2015). Therefore, the increase of self-compassion may be a helpful component to assist and support mindfulness, which may further assist weight regulation. As such, recent research has found that interventions combining both mindfulness and self-compassion assist people in weight loss more than interventions involving mindfulness alone (Mantzios & Wilson, 2015a; Mantzios, Wilson, Linnell, & Morris, 2015). The present study further investigated whether using the diary in one session increases state levels of self-compassion.

Third, the possible reduction of anxiety, which is, the tendency to perceive stressors as threatening, therefore causing emotional, cognitive, and physiological reactions (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), may be another mechanism of the success of MCD that merits further research. Research has demonstrated that an increase in both mindfulness and self-compassion has been associated with reductions in trait and state anxiety (e.g., Bergen-Cico & Cheon, 2013), while anxiety has also been found to predict weight gain and obesity (Ostrovsky, Swencionis, Wylie-Rosett, & Isasi, 2013; Polivy, Herman, & McFarlane, 1994; Roberts & Duong, 2016). Therefore, the possibility of lowering anxiety through the MCD may further explain positive weight-related outcomes.

This study significantly differs in three ways from the original research conducted with MCD. First, the present research explores increasing mindfulness and self-compassion, and decreasing anxiety through state scales during a single meal (compared with a 5-week intervention). If one session can induce these elements and reduce distress, this would enable the reduction of training and cost in contemporary health care to treat and prevent problematic eating and overeating. To date, mindfulness interventions require several weeks or months of committed practice (e.g., Daubenmier et al., 2011), and single intervention sessions have been unsuccessful in improving eating behaviors, although vigorous methodologies and higher sample sizes may offer further support for single intervention sessions (e.g., Jacobs, Cardaciotto, Block-Lerner,

& McMahon, 2013). Second, measuring anxiety may provide another explanation for why the diaries may work given the positive relationship to overeating, and the negative relationship to mindfulness and self-compassion explored earlier. Third, participants were asked only to consider the questions, rather than write them down in their diary. The rationale for this change in methodology was to make the use of such diaries as easy as possible, and to create more of a priming tool. This consideration is more conducive to mindful eating, where commitment to writing in the diaries may be more likely to distract from the actual behavior performed. Previous research has demonstrated that distractions such as watching television or socializing can lead to mindless eating behaviors (Ogden et al., 2013). Overall, this type of engagement with the diary is more user friendly, requires even less effort, and may, therefore, improve the adherence to mindful eating after weight loss in future interventions.

Therefore, the present study explored whether MCD can improve state mindfulness, state self-compassion, and state anxiety. The following was hypothesized:

> **Hypothesis 1:** The use of the MCD will increase levels of state mindfulness and state self-compassion, and reduce state anxiety.

Method

Participants

Forty-five students attending a university in Birmingham, the United Kingdom, were invited to participate in the present study via email invitations or were approached face to face. Three participants did not meet the set BMI (i.e., BMI < 18.5), and were excluded from the final analyses. Another two participants were excluded, one did not complete any post questionnaires, whereas another failed to engage with the diary and adhere to the study protocol (i.e., participant had a phone conversation throughout the entire duration of the study, which created a multitasking and mindless context). As a result, five participants were excluded in total from the final analysis. The final sample consisted of 28 females and 12 males with an overall BMI of $M = 22.83$ ($SD = 3.47$, range = 19.04-35.86), and an age $M = 21.83$ years ($SD = 2.92$ years). The sample consisted of different ethnicities: White British ($n = 8$), Black ($n = 6$), Mixed ($n = 2$), Indian ($n = 9$), Pakistani ($n = 13$), and Arab ($n = 2$).

Eligibility. Participants were not eligible to participate if they had been diagnosed with an eating disorder and if they were below the age of 18.

Instruments

Participant information form. This form asked for participant's age, weight, height, gender, and ethnicity, as well as the last time they ate a meal and their smoking/exercising habits.

State Mindfulness Scale. The State Mindfulness Scale is a 21-item self-report measure that assesses mindfulness with scores ranging from 1 (*not at all*) to 5 (*very well*), with total scores varying from 21 to 105 (Tanay & Bernstein, 2013). This scale reflects on traditional and contemporary psychological science models of mindfulness. It includes items such as *I noticed emotions come and go* and *I felt in contact with my body*. Higher scores indicate higher levels of mindfulness, and the scale has shown to be stable over time when investigated in mindfulness interventions, as well as high construct and predicted criterion validity (Tanay & Bernstein, 2013). In the current study, the alpha was .922 pre- and .942 postinterventions.

State Self-Compassion Scale. The State Self-Compassion Scale is an adapted version of the Neff's (2003) original State Self-Compassion Scale with an internal consistency of .76 (Breines & Chen, 2013). The scale was adapted to adjust the statements to the present moment. For example, instead of stating "I'm trying to be kind and reassuring to myself," the statement was worded as "Right now, I am trying to be kind and reassuring to myself." The scale is composed of six subscales: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Overidentification. It consists 16 items and is reworded to reflect a state scale. It includes items such as *Right now, I am trying to be understanding towards myself* or *It's okay to make mistakes*, and responses range from 1 (*strongly disagree*) to 7 (*strongly agree*), with overall scores ranging from 16 to 112 (Breines & Chen, 2013). In the current study, the alpha was .774 preintervention and .758 postintervention.

State Anxiety Scale. A shortened version of the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) was used, which consisted of six items to measure state anxiety. Responses range from 1 (*not at all*) to 4 (*very much*) and overall scores range from 6 to 24, with higher scores indicating higher levels of anxiety (Marteau & Bekker, 1992). Sample items are *I am tense* or *I feel content*. In the current study, the alpha was .836 preintervention and .815 postintervention.

Mindful concrete construal diary. A diary of questions based on concrete construals, mindful awareness, and self-compassionate messages was given to participants during a mealtime, which required them to consider how to eat, with questions such as, "How does it smell?" "How do I show kindness to myself now that I am eating healthily?" or "How do you feel and what passes through your mind now that you are eating this meal?" (Mantzios & Wilson, 2014; please see the appendix).

Procedure

Participants either responded to an advertisement of a study regarding state psychological dimensions of personality and

eating behavior or were approached face to face. Participants received a participant information sheet and those who agreed to take part in the study gave informed consent before the start of the experiment. Once informed consent was gained, a set of demographic questions and three scales on state mindfulness, state self-compassion, and state anxiety were given to participants before their meal. Next, participants were given a food diary to use during their mealtime and were asked to consider the questions in the diary while eating their own provided meal in the laboratory. To avoid any distractions, the experimenter was sitting behind the participant during the meal to allow full engagement with the diary and food, and tested one participant at a time. The food consumed varied among participants, as the researcher instructed them not to change or alter their usual eating behaviors and choices. Most participants chose to purchase their meal while on university grounds, which consisted of a sandwich, with or without a small bag of chips, and a soft drink or water. Other participants brought in other foods that were purchased from local supermarkets or homemade meals, such as couscous with roasted vegetables, pasta salads, pasta with sauce, or different curries with rice. A record of food and amounts consumed during the experiment was not kept. Once they considered the questions in the diary and finished their meal, they were then asked to complete another set of the state mindfulness, state self-compassion, and state anxiety scales. The initial advertisement of the study and information in the participant information sheet about the true purpose and aim of the study was intentionally left vague to prevent participant bias. Therefore, a funneled debriefing also occurred with four questions, beginning with a general format ("During the process of completing the questionnaires, did you notice anything in particular?") to more specific questions ("If you were to guess, what would you assume the aim of this study was?") to inform the researchers whether or not participants were aware of the aims of the study. Finally, the participants were debriefed and thanked for their participation. Note that participants volunteered and did not receive any incentives.

Design and Statistical Analysis

Three repeated measures analyses (paired sample *t* tests) were conducted on pre- and postdiary scores of self-compassion, mindfulness, and anxiety.

Results

The funneled debriefing procedure indicated that the participants were not aware of the aims of the study. Three separate paired sample *t* tests were conducted between pre- and postmeasurements on mindfulness, self-compassion, and anxiety. For mindfulness, the paired sample *t* test showed that post–state mindfulness scores ($M = 71.88$, $SD = 17.33$) significantly increased from pre–state mindfulness scores ($M = 61.43$, $SD = 18.47$), $t(39) = 3.82$, $p < .001$. The mean difference between the pre- and posttime conditions was 10.45 ($SD = 17.32$) and the 95% confidence interval for the estimated population mean differences is between 4.91 and 15.99. The effect size was medium ($d = 0.58$).

For self-compassion, the paired sample *t* test showed that post–state self-compassion scores ($M = 82.93$, $SD = 10.52$) significantly increased from pre–state self-compassion scores ($M = 78.03$, $SD = 9.83$), $t(39) = 3.34$, $p = .002$. The mean difference between the pre- and postconditions was 4.90 ($SD = 9.27$) and the 95% confidence interval for the estimated population mean difference is 1.93 and 7.87. The effect was moderate ($d = 0.48$).

Last, for anxiety, the paired sample *t* test showed that post–state anxiety scores significantly improved ($M = 20.66$, $SD = 3.62$) from pre–state anxiety scores ($M = 18.30$, $SD = 4.32$), $t(39) = 4.40$, $p < .001$. The mean difference between the pre- and postconditions was 6.38 ($SD = 8.54$), and the 95% confidence interval for the estimated population mean difference is between 1.28 and 3.47. The effect was medium ($d = 0.59$). Note that controlling for BMI and gender did not differ the outcomes reported above.

Discussion

The present study suggests that the mindful concrete construal diary intervention increased state mindfulness and state self-compassion and decreased state anxiety. Current findings are significant for three main reasons. First, past research found that the participants who report greater mindfulness in everyday life have positive eating behaviors and healthier eating practices (Bowlin & Baer, 2012) and are able to regulate their weight (Mantzios & Wilson, 2015b; Mantzios, Wilson, Linnell, & Morris, 2015). Mindfulness-based interventions targeting eating behaviors have gained popularity in recent years with a specific focus placed upon obesity-related behaviors (Mantzios & Wilson, 2015b). Such interventions aim to facilitate the repatterning of automatic behavior by encouraging oneself to distinguish between emotional arousal and physical hunger cues (Sojcher, Gould-Fogerite, & Perlman, 2012).

However, for such interventions to be successful, they require several weeks or months of sessions (Daubenmier et al., 2011; Mantzios & Wilson, 2015b), and to date, exercises employing a single intervention session have found to be ineffective in improving eating behaviors (Jacobs et al., 2013). This research, although practically different from previous studies, has been found to be effective after a single session. Second, this experiment attempted to test the effectiveness of the diary without writing the answers, but by simply considering the items. The use of priming has become a prevalent method of inducing state psychological dimensions of personality such as mindfulness and self-compassion (Leary, Tate, Adams, Batts-Allen, & Hancock, 2007; Mantzios & Wilson, 2014; Zabelina & Robinson, 2010).

Participants are often required to think about items or negative events and are then prompted to write, think, or listen to messages in a mindful or self-compassionate manner. For example, when inducing a self-compassionate state to evoke a common humanity perspective, participants would be required to write about the event in ways that other people would also experience a similar event (Leary et al., 2007; Zabelina & Robinson, 2010). The findings from studies utilizing such methodologies of priming were found to significantly increase levels of self-compassion (Leary et al., 2007; Zabelina & Robinson, 2010). However, the act of writing may be felt as consciously effortful, and in turn, may not be adhered to. A study found that listening to a speech endorsed with components of self-compassion was substantial to increase levels of self-compassion, and in turn, improved restrictive eaters' attitudes toward eating after a preload of unhealthy food (Adams & Leary, 2007). Similarly, in the current study, it was found that the simple method of considering items was sufficient to induce mindfulness and self-compassion and to reduce anxiety. This makes the mindful concrete construal diary more user friendly as it requires less conscious effort. Not writing and eating may allow the participants to place a higher focus upon their food, and in turn, be more mindful. Research has shown that the act of multitasking may lead to participants' cognitive processes becoming less mindful and more automatic, which partially explains the strict adherence and exclusion of participants in the current study.

Limitations and Future Direction

Overall, six limitations have been identified that require further research. First, future research should use a comparison/control group, to enhance our understanding of variances between a diary and nondiary group. Second, the use of students, who tend to be more anxious than the general population (Bayram & Bilgel, 2008), which in turn, may make them less self-compassionate and mindful as a group may be problematic. In addition, the ethnic diversity further limits the generalization of results, especially when considering the variety of foods, at times atypical of Western diets, as well as homemade meals that were consumed during the experiment. However, the food was typical to their everyday eating behaviors, which adds some ecological validity to the classic laboratory setting that is utilized in these types of experiments. Generalizing and interpreting the current results should occur with caution until further research becomes available.

Third, the current study did not investigate the amount of food consumed, and therefore, was unable to investigate the extent and potential relationship between mindfulness, self-compassion, anxiety, and overeating during the experiments. Past research has revealed differences in food intake between restrictive and nonrestrictive eaters in terms of the disinhibition effect (i.e., the shame of consuming high caloric food and in turn overeating; Herman & Mack, 1975). Self-compassion has in turn shown to mediate the effect of disinhibition among highly restrictive eaters (Adams & Leary, 2007).

Fourth, the majority of the participants within the current study had a healthy weight, and follow-up research with overweight and obese individuals is required. Finally, as the participants in the current study did not write out answers, they may not have fully adhered to the guidelines of the experiment, in terms of possibly failing to adequately consider the questions 5 min before the meal or rereading the questions once completing the first set.

Future research needs to methodologically control for such possible nonengagement, to allow for the possibility of exclusion from the final analyses of experiments. Keeping a time record would allow for a fuller understanding of the interaction of time taken to complete the meal with other factors such as anxiety, mindfulness, and degree of engagement. Furthermore, future research investigating the effectiveness of the mindful concrete construal diary intervention should utilize both restrictive and nonrestrictive eaters, conducting the experiment at similar times and days, and provide a standardized meal to each participant recruit members of the general population.

Conclusion

To conclude, the use of an MCD with self-compassionate messages in the present study was significantly effective in improving state mindfulness, state self-compassion, and state anxiety. However, further research is required, experimental and with populations of a higher weight, given the limitations suggested earlier. Possible explanations of why the diaries work may assist in making recommendations of improvement and effectiveness, which may assist implementation of future weight regulation tools in clinical practice.

Appendix

Mindful Construal Diary (Mantzios & Wilson, 2014)

Please try answering the following questions with as much detail as you can, considering emotions and thoughts that come up during the meal.

Some questions may not relate to the food, but are there for you to consider what you might think or feel during the meal. Please try answering the following questions with as much detail as you can, considering your emotions and thoughts that come up during the meal.

There is no need to sound smart or make an impression as those diaries will stay with you after the end of this study and there is no need to show them to anyone.

You may have the questions in front of you and consider them without writing until you finish the meal. If writing is distracting you from the meal, then consider them without writing. However, keep those questions in mind by revisiting them as often as you can. Ideally, you should look at the questions and consider them prior to your meal.

Initially, let's get into the experience of eating. Focus on the next three questions for the first 2 minutes and take your time to incorporate the smell, taste, and texture of this meal.

How does this meal taste?

How does this meal smell?

What are the colors and texture of it?

OK, now it is all about you! Try to revisit the questions above every 2 or 3 minutes.

How important is it for me and all people to eat healthy?

How do you feel and what passes through your mind now that you are eating this meal?

How kind are you to yourself now that you eat this meal?

How understanding and kind are my thoughts and feelings now that I am eating this meal?

How understanding and patient am I now that thoughts and feelings are intruding this pleasurable experience?

How understanding and patient am I now that this meal is not a satisfying experience?

How do I show kindness to myself now that I am eating healthily?

How important is this meal right now?

Please note that spaces were wider apart for participants in the original study. Questions were spread in 2 × A5 size pages in the diary, where participants could see all of them while eating.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Adams, C., & Leary, M. (2007). Promoting self-compassionate attitudes toward eating among restrictive and guilty eaters. *Journal of Social & Clinical Psychology*, *26*, 1120-1144. doi:10.1521/jscp.2007.26.10.1120

Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social Psychiatry & Psychiatric Epidemiology*, *43*, 667-672. doi:10.1007/s00127-008-0345-x

Bergen-Cico, D., & Cheon, S. (2013). The mediating effects of mindfulness and self-compassion on trait anxiety. *Mindfulness*, *5*, 505-519. doi:10.1007/s12671-013-0205-y

Beshara, M., Hutchinson, A. D., & Wilson, C. (2013). Does mindfulness matter? Everyday mindfulness, mindful eating and self-reported serving size of energy dense foods among a sample of South Australian adults. *Appetite*, *67*, 25-29. doi:10.1016/j.appet.2013.03.012

Bowlin, S. L., & Baer, R. A. (2012). Relationships between mindfulness, self-control, and psychological functioning. *Personal Individual Differences*, *52*, 822-848. doi:10.1016/j.paid.2011.10.050

Breines, J. G., & Chen, S. (2013). Activating the inner caregiver: The role of support-giving schemas in state self-compassion. *Journal of Experimental Social Psychology*, *49*, 58-64. doi:10.1016/j.jesp.2012.07.015

Dalen, J., Smith, B., Shelley, B., Sloan, A., Leahigh, L., & Begay, D. (2010). Pilot study: Mindful Eating and Living (MEAL): Weight, eating behavior, and psychological outcomes associated with a mindfulness-based intervention for people with obesity. *Complementary Therapies in Medicine*, *18*, 260-264. doi:10.1016/j.ctim.2010.09.008

Daubenmier, J., Kristeller, J., Hecht, F. M., Nicole, M., Kuwata, M., Jhaveri, K., . . . Epel, E. (2011). Mindfulness Intervention for stress eating to reduce cortisol and abdominal fat among overweight and obese women: An exploratory randomized controlled study. *Journal of Obesity*, *1*, 1-13. doi:10.1155/2011/651936

Foerde, K., Knowlton, B., & Poldrack, R. (2006). Modulation of competing memory systems by distraction. Proceedings of the National Academy of Sciences *of the United States of America*, *103*, 11778-11783. doi:10.1073/pnas.0602659103

Framson, C., Kristal, A. R., Schenk, J. M., Littman, A. J., Zeliadt, S., & Benitez, D. (2009). Development and validation of the Mindful Eating Questionnaire. *Journal of the American Dietetic Association*, *109*, 1439-1444. doi:10.1016/j.jada.2009.05.006

Freitas, A. L., Gollwitzer, P. M., & Trope, Y. (2004). The influence of abstract and concrete mindsets on anticipating and guiding others self-regulatory efforts. *Journal of Experimental Social Psychology*, *40*, 739-752. doi:10.1016/j.jesp.2004.04.003

Greeno, C. G., & Wing, R. R. (1994). Stress-induced eating. *Psychological Bulletin*, *115*, 444-464.

Greeson, J. M. (2009). Mindfulness research update: 2008. *Journal of Evidence-Based Complementary & Alternative Medicine*, *14*, 10-18. doi:10.1177/1533210108329862

Grossman, P., Tiefenthaler-Gilmer, U., Raysz, A., & Kesper, U. (2007). Mindfulness training as an intervention for Fibromyalgia: Evidence of post intervention and 3-year follow-up benefits in well-being. *Psychotherapy and Psychosomatics*, *7*, 226-233. doi:10.1159/000101501

Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and well being? A systematic review and meta-analysis of mediation studies. *Clinical Psychological Review*, *37*, 1-12. doi:10.1016/j.cpr.2016.09.011

Herman, C., & Mack, D. (1975). Restrained and unrestrained eating. *Journal of Personality*, *43*, 647-660. doi:10.1111/j.1467-6494.1975.tb00727.x

Jacobs, J., Cardaciotto, L., Block-Lerner, J., & McMahon, C. (2013). A pilot study of a single-session training to promote mindful eating. *Advances in Mind-Body Medicine*, 27(2), 18-23. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23709408

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. New York: Delacourt.

Kidd, L. I., Graor, C. H., & Murrock, C. J. (2013). A mindful eating group intervention for obese women: A mixed methods feasibility study. *Archives of Psychiatric Nursing*, *27*, 211-218. doi:10.1016/j.apnu.2013.05.004

Leary, M., Tate, E., Adams, C., Batts-Allen, A., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology*, *92*, 887-904. doi:10.1037/0022-3514.92.5.887

Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, *75*, 5-18. doi:10.1.1.321.9656

Mantzios, M., & Wilson, J. C. (2014). Making concrete construals mindful: A novel approach for developing mindfulness and self-compassion to assist weight loss. *Psychology & Health*, *29*, 422-441. doi:10.1080/08870446.2013.863883

Mantzios, M., & Wilson, J. C. (2015a). Exploring mindfulness and mindfulness with self-compassion-centered interventions to assist weight loss: Theoretical considerations and preliminary results of a randomized pilot study. *Mindfulness*, *6*, 824-835. doi:10.1007/s12671-014-0325-z

Mantzios, M., & Wilson, J. C. (2015b). Mindfulness, eating behaviours, and obesity: A review and reflection on current findings. *Current Obesity Reports*, *4*, 141-146. doi:10.1007/s13679-014-0131-x

Mantzios, M., Wilson, J. C., Linnell, M., & Morris, P. (2015). The role of negative cognition, intolerance of uncertainty, mindfulness, and self-compassion in weight regulation among male army recruits. *Mindfulness*, *6*, 545-552. doi:10.1007/s12670-0414-0286-2

Marteau, T., & Bekker, H. (1992). The development of a Six-Item Short-Form of the State Scale of the Spielberger State-Trait Anxiety Inventory (STAI). *British Journal of Clinical Psychology*, *31*, 301-306. doi:10.1111/j.2044-8260.1992.tb00997.x

Moor, K. R., Scott, A. J., & McIntosh, W. D. (2013). Mindful eating and its relationship to body mass index and physical activity among university students. *Mindfulness*, *4*, 269-274. doi:10.1007/s12671-012-0124-3

Neff, K. (2003). The Development and Validation of a Scale to measure self-compassion. *Self and Identity*, *2*, 223-250. doi:10.1080/15298860309027

Ogden, J., Coop, N., Cousins, C., Crump, R., Field, L., Hughes, S., & Woodger, N. (2013). Distraction, the desire to eat and food intake. Towards an expanded model of mindless eating. *Appetite*, *62*, 119-126. doi:10.1016/j.appet.2012.11.023

O'Reilly, G. A., Cook, L., Sprujit-Metz, D., & Black, D. S. (2014). Mindfulness-based interventions for obesity-related eating behaviours: A literature review. *Obesity Reviews*, *15*, 453-461. doi:10.1111/obr.12156

Ostrovsky, N. W., Swencionis, C., Wylie-Rosett, J., & Isasi, C. R. (2013). Social anxiety and disordered overeating: An association among overweight and obese individuals. *Eating Behaviors*, *14*, 145-148. doi:10.1016/j.eatbeh.2013.01.009

Polivy, J., Herman, C., & McFarlane, T. (1994). Effects of anxiety on eating: Does palatability moderate distress-induced overeating in dieters? *Journal of Abnormal Psychology*, *103*, 505-510. doi:10.1037/0021-843x.103.3.505

Roberts, R., & Duong, H. (2016). Do anxiety disorders play a role in adolescent obesity? *Annals of Behavioral Medicine*, *50*, 613-621. doi:10.1007/s12160-016-9786-8

Schoenefeld, S. J., & Webb, J. B. (2013). Self-compassion and intuitive eating in college women: Examining the contributions of distress tolerance and body image acceptance and action. *Eating Behaviors*, *14*, 493-496. doi:10.1016/j.eatbeh.2013.09.001

Schreiner, I., & Malcolm, J. (2008). The benefits of mindfulness meditation: Changes in emotional states of depression, anxiety, and stress. *Behaviour Change*, *25*, 156-168. doi:10.1375/bech.25.3.156

Shapiro, S., Astin, J., Bishop, S., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, *12*, 164-176. doi:10.1037/1072-5245.12.2.164

Sirois, F. M. (2015). A self-regulation resource model of self-compassion and health behavior intentions in emerging adults. *Preventive Medicine Reports*, *2*, 218-222. doi:10.1016/j.pmedr.2015.03.006

Sojcher, R., Gould-Fogerite, S., & Perlman, A. (2012). Evidence and potential mechanisms for mindfulness practices and energy psychology for obesity and binge-eating disorder. *Explore: The*

Journal of Science and Healing, *8*, 271-276. doi:10.1016/j.explore.2012.06.003

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologist Press.

Spielberger, C. D., Gorsuch, R. L., Lushene, R. E., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Tanay, G., & Bernstein, A. (2013). State Mindfulness Scale (SMS): Development and initial validation. *Psychological Assessment*, *25*, 1286-1299. doi:10.1037/a0034044

Webb, J. B., Jafari, N., Schoenefeld, S. J., & Hardin, A. S. (2013, March 20-23). *Examining a model of self-compassion, body shame, and mindful eating*. Poster presented at the Society of Behavioral Medicine's 34th Annual Meeting and Scientific Sessions, San Francisco, CA.

Zabelina, D., & Robinson, M. (2010). Don't be so hard on yourself: Self-compassion facilitates creative originality among self-judgmental individuals. *Creativity Research Journal*, *22*, 288-293. doi:10.1080/10400419.2010.503538

Author Biographies

Misba Hussein is a doctoral student at Birmingham City University exploring mindfulness and self-compassionate inteventions for healthier eating through experimental and longitutinal research.

Helen Egan is a lecturer in Health Psychology interested in various aspects of health.

Michail Mantzios is a lecturer in Health Psychology and the deputy director of Research for the School of Social Sciences. He has been leading a supervisory team assigned to Miss Hussein for her doctoral research.