



Short communication

Coping with food cravings. Investigating the potential of a mindfulness-based intervention[☆]Hugo J.E.M. Alberts^{*}, Sandra Mulkens, Maud Smeets, Roy Thewissen

Maastricht University, The Netherlands

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ABSTRACT

The present study examined whether mindfulness-based strategies can effectively reduce food cravings in an overweight and obese adult population. Individuals participating in a dietary group treatment for overweight received an additional 7-week manual based training that aimed to promote regulation of cravings by means of acceptance. The control group did not receive this additional training program. The results showed that participants in the experimental group reported significantly lower cravings for food after the intervention compared to the control group. The findings are discussed in terms of possible mechanisms like prevention of goal frustration, disengagement of obsessive thinking and reduction of automatic relations between urge and reaction.

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Food cravings, defined as an intense desire or urge to eat a specific food (Weingarten & Elston, 1990) are not essentially pathological, but can nevertheless lead to a diverse range of negative outcomes. For instance, past research has demonstrated a relation between food cravings and the development of obesity (Schlundt, Virts, Sbrocco, & Pope-Cordle, 1993) and eating disorders (Mitchell, Hatsukami, Eckert, & Pyle, 1985). Establishing what constitutes effective food craving regulation can be therefore considered as an important challenge.

Coping with food cravings is often accomplished by means of control-based strategies such as suppression or distraction. These strategies aim to decrease the frequency and intensity of cravings and strongly rely on active self-regulation. Self-regulation has been identified as a process in which one attempts to reduce the discrepancy between a current state and a desired goal state (Carver & Scheier, 1981). A novel alternative to control-based craving strategies is acceptance-based strategies. Acceptance-based regulation entails an important aspect of mindfulness-based interventions. That is, individuals who practice mindfulness experience and accept their cravings fully without actively attempting to change, avoid or control them (Hayes, Strosahl, & Wilson, 1999). Acceptance involves a nonjudgmental attitude towards cravings and requires willingness to stay in contact with the uncomfortable, often negative feelings that accompany craving. In this respect, acceptance is fundamentally different from the self-regulation process underlying control-based strategies, since it is not primarily aimed at altering responses or inner states. It does not involve the reduction of a discrepancy

between current and goal state. Instead, acceptance is aimed at promoting willingness to experience the current state, the craving, without acting upon it.

Recently, a treatment study by Tapper et al. (2009) illustrated the potential of applying acceptance-based practice in the context of eating behaviour. Participants who actively engaged in a mindfulness-based weight loss intervention showed greater reductions in BMI and greater increases in physical activity than control participants. Today, however, only few studies have addressed the effectiveness of acceptance as a strategy to cope with food cravings specifically. A study by Forman et al. (2007) showed that for participants who were highly susceptible to the presence of food, acceptance was more effective in reducing food cravings compared to control-based strategies such as distraction and cognitive restructuring. However, acceptance was found to cause greater cravings among those with the lowest susceptibility to presence of food. Moreover, a recent study by Alberts and Papies (2010)¹ showed that hungry participants who were instructed to accept their cravings during exposure to tempting food, reported significantly higher cravings compared to those who suppressed their cravings. At first sight, these findings may seem incompatible with the positive effects of acceptance-based coping found in other domains such as social anxiety (Goldin, Ramel, & Gross, 2009), depression (Coelho, Canter, & Ernst, 2007) and chronic pain (Vowles, Wetherell, & Sorrell, 2009). It has to be noted however, that most studies highlighting the benefits of acceptance concern interventions with several sessions. In contrast, studies on acceptance and food cravings so far have only used single session interventions and did not involve training. Since acceptance

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^{*} Corresponding author.

E-mail address: h.alberts@maastrichtuniversity.nl (Hugo J.E.M. Alberts).

¹ Alberts, H. J. E. M., & Papies, E. (2010). Unpublished data. A copy of the data can be obtained by contacting the first author.

requires people to overcome the automatic tendency to avoid internal states such as negative emotions, thoughts or bodily sensations (Hayes et al., 1999), repeated and more extensive exercise may be necessary in order to successfully acquire this skill (Oaten & Cheng, 2006). The present study was designed to address this issue and tested whether food cravings can be reduced by training acceptance-based regulation. In doing so, a training program was developed that used mindfulness-based strategies to increase awareness of food cravings and foster willingness to accept these cravings. This program consisted of an instruction manual that required participants to work through independently.

Method

Participants

A total of 19 participants (2 men; aged from 28 to 74, $M = 51.88$, $SD = 12.76$) participated in the study. Participants enlisted for a dietary group treatment for overweight and obesity in a Dutch community Centre (GroeneKruis Domicura, "Green Cross Care"). The mean weight of the participants was 85.4 kg ($SD = 14.2$; range 68.1–116.8) and the mean body mass index (BMI) was 31.3 ($SD = 4.1$; range 25.3–40.9). All participants received the same dietary treatment. This treatment consisted of 10 weekly meetings of 1.5 h each. During these meetings, information on healthy food choices was provided by a dietician. After receiving this information, participants also performed physical exercise for 1 h. In addition to this standard treatment, the experimental group ($n = 10$) received a 7-week manual based training that aimed to teach regulation of cravings by means of acceptance. Participants were randomly assigned to one of the two groups. The control group did not receive this additional training program. The experimental and control group did not differ significantly with respect to age, $t(17) = 1.90$, $p = .08$, weight, $t(17) < 1$ (M experimental group = 86.86, $SD = 17.04$, control group = 83.86, $SD = 10.12$), or BMI, $t(17) = 1.15$, $p = .27$ (M experimental group = 32.51, $SD = 5.96$, control group = 30.01, $SD = 2.35$). In order to gain insight in the dieting behaviour of participants, they completed a Dutch version of the Restraint Scale before onset of the intervention period (RS; Herman & Polivy, 1980). The RS is a 10-item questionnaire that assesses dieting and weight fluctuation. Scores on the Restraint Scale can range from 0 (least restrained) to 35 (most restrained). No significant differences in RS score between both groups were found, $t(17) < 1$ (M experimental group = 13.60, $SD = 3.06$, control group = 14.77, $SD = 5.36$). The study was approved by the standing ethical committee of the Faculty of Psychology and Neuroscience (Maastricht University).

Materials

Instruction manual

To train participants' acceptance skills, a manual was constructed, consisting of 8 chapters. The first chapter was an introduction that provided participants with general information on acceptance. The remaining 7 chapters focused on the implementation of acceptance and each chapter referred to a specific week of the intervention. During the first 3 weeks, the 'body scan' was introduced. In this technique, attention is brought to each area of the body, starting with the toes and moving up to the top of the head. Performing the body scan helps to increase awareness and acceptance of bodily sensations, including hunger, satiety and craving related cues (Baer, Fischer, & Huss, 2005). Week 4 focused on increasing awareness of eating behaviour and craving related thoughts by means of general mindfulness meditation (Kristeller & Hallett, 1999). During these exercises, participants learned to become aware of thoughts. They were instructed to accept whatever arises in the mind, without judging it or identifying with the content of it. By observing, rather

than identifying with thoughts, one can experience their transient nature and learn that they eventually will fade. In this way, participants not only learned to notice food related thoughts, but also to observe and accept them without acting upon them. Finally, weeks 5–7 focused on the total experience of food cravings by practicing awareness and acceptance of both bodily sensations and thoughts related to these cravings. During these weeks, participants learned to decrease reactivity with regard to cravings. Whenever they experienced food cravings, they were thought to not immediately give in to the urge to consume food, but rather focus on and accept the bodily sensations and thoughts that accompany this urge. The primary aim of this approach was not to limit food intake, but to increase awareness of the automatic pattern that usually emerges in case of food cravings. The structure of each week was kept as consistent as possible and contained three components: a short example, an exercise and background information on the exercise.

MP3-player

In order to facilitate practice, participants received a portable MP3-player. This player contained instructions on how to perform the body scan, meditation and deal with food cravings or thoughts about food cravings in an accepting manner.

Daily e-mail

In order to enhance commitment, participants in the experimental group received a daily e-mail. This daily mail contained quotes about acceptance-based craving regulation.

Procedure

Before participants signed the informed consent, the experimenter provided general information on the content and requirements of the intervention. More specifically, participants in the experimental condition received information on acceptance and were told that the study required them to use the instruction guide on a daily basis and complete a questionnaire twice. Participants in the control condition were only told that they had to complete the questionnaire at two time points. When participants agreed to participate, they received the first questionnaire. The acceptance intervention started 3 weeks after the start of the standard treatment. Both groups received the first questionnaire (pre-test) after the third week of the standard treatment. Also, at this point in time, the weight of participants was recorded. Seven weeks later, all participants received the second questionnaire (post-test) and their weight was measured again.

Measures

Weight

Weight (kg) was recorded by the dietician at pre- and post-test. Participants were weighed in street clothes, without shoes.

General Food Craving Questionnaire

Food cravings were measured by means of a Dutch version of the General Food Craving Questionnaire Trait (G-FCQ-T). The G-FCQ-T is a reliable and valid 21-item self-report measure of a general 'desire for food' or 'desire to eat' (Cronbach's $\alpha = .94$) (Nijs, Franken, & Muris, 2007) consisting of the following four subscales (1) preoccupation with food (i.e., obsessively thinking about food and eating), (2) loss of control (i.e., experiencing difficulties in regulating eating behaviour when exposed to food cues), (3) positive outcome expectancy (i.e., believing eating to be positively reinforcing), and (4) emotional craving (i.e., the tendency to crave food when negative emotions are present). Participants were asked to rate how frequently each statement 'would be true for you in

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