



Contents lists available at SciVerse ScienceDirect

Eating Behaviors



Comparing thought suppression and acceptance as coping techniques for food cravings

Nic Hooper ^{a,*}, Emily K. Sandoz ^b, Jennifer Ashton ^c, Amelia Clarke ^c, Louise McHugh ^d

^a Middle East Technical University, Northern Cyprus Campus

^b University of Louisiana at Lafayette

^c University of Kent

^d Swansea University

ARTICLE INFO

Article history:

Received 13 June 2011

Received in revised form 2 September 2011

Accepted 12 October 2011

Available online xxxx

Keywords:

Thought Suppression

Acceptance

Defusion

Cravings

ABSTRACT

Handling food cravings seems to play a major role in weight management. Many try to simply avoid cravings. However, avoidance based techniques like thought suppression can make attempts to deal with cravings more difficult. Recent research suggests that acceptance based techniques, such as defusion, may be a plausible alternative. The current study aimed to compare these two techniques. Participants were instructed in either a thought suppression or defusion technique at the beginning of a week-long period of attempted chocolate abstinence. A control group was given no instruction. It was predicted that the participants given the defusion intervention would eat less chocolate during six days and during a final taste test. It was found that participants in the defusion group ate significantly less chocolate during the taste test than other groups. However, no difference was found in the amount of chocolate eaten throughout the duration of the experiment. The results are discussed in terms of the possible utility of acceptance based techniques in promoting weight management.

© 2011 Elsevier Ltd. All rights reserved.

One of the biggest obstacles people face in diet control is the management of food cravings; the intrusive and often distressing thoughts of food a person experiences when they abstain from eating certain foods (Lowe, 2003; Lowe & Levine, 2005). A commonly reported strategy for coping with cravings is thought suppression. Thought suppression involves a conscious effort to ignore, or deny the existence of an unwanted thought and often results in a paradoxical rebound effect after the period of suppression has ended (Clark & Purdon, 2009; Hooper, Davies, Davies & McHugh, 2011; Wegner, Schneider, Carter, & White, 1987). Indeed, Erskine (2008) found that those asked to suppress all thoughts of eating chocolate experienced a post suppression rebound (i.e. they ate more chocolate than controls) in a subsequent 'taste test'.

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) interventions have produced positive outcomes for reducing eating pathology across a number of studies (e.g., Juarascio, Forman, & Herbert, 2010; Lillis, Hayes, Bunting, & Masuda, 2009). One component of ACT, which may serve as an alternative to thought suppression for coping with unwanted cravings, is 'cognitive defusion'. Defusion involves experiencing thoughts from a distance and without any implication for action, and is contrasted with fusion, which involves a dominance of particular thoughts in influencing

behavior. Food fusion involves susceptibility to food-related cues in the environment, and predicts cravings, consumption of avoided foods, and sensitivity to acceptance-based interventions (Forman et al., 2007). The specific impact of a defusion intervention on food cravings and craving-related consumption has yet to be explored.

The current study aims to compare the effects of a short instruction in defusion versus suppression for food cravings. It is predicted that a thought defusion technique will reduce the impact of the cravings on behaviour without lowering the number of experienced cravings.

1. Method

1.1. Participants and design

Fifty-four undergraduate students participated (Age $M=21.37$, $SD=4.29$; 32 female and 22 male) in return for course credit. The study involved a between subjects experimental design with three conditions; thought suppression, defusion and control. The dependent variables were the number of cravings experienced and the amount of chocolate eaten across the abstinence period, and the number of chocolates eaten in the taste test. Participants were excluded from the study if they were on a diet. This resulted in the withdrawal of 7 participants, leaving 17 participants in the thought suppression condition, 16 participants in the defusion condition and 14 participants in the control condition.

* Corresponding author at: Department of Psychology, Middle Eastern Technical University, Northern Cyprus Campus.

E-mail address: Nichooper7@gmail.com (N. Hooper).

1.2. Measures

1.2.1. Control question

Participants were asked how many times in an average week they ate chocolate. Their reported weekly chocolate intake served as a covariate in the subsequent analysis.

1.2.2. Daily questionnaires

All participants were required to complete a short questionnaire at the end of each day of the experiment. Participants visited the lab twice and completed five days of chocolate abstinence for a total of 7 completed questionnaires. The questionnaire asked participants (i) how many times they had experienced cravings each day and (ii) how many times they ate chocolate. Additionally the participants were asked two treatment adherence questions to ascertain how they dealt with their cravings on a daily basis. Participants indicated the degree to which (i) they stepped back from their cravings and (ii) they paid attention to their cravings. Participants in the defusion condition would be expected to score higher on both of these questions, when compared to thought suppression and control. Indeed this was the case, the average amount of times participants stepped back and paid attention throughout the week is included below. (Stepped back: defusion – 10.56, thought suppression – 7.88, control – 7.71. Paid attention: defusion – 10.93, thought suppression – 7.47, control – 8.42)

1.2.3. Taste test

A brief taste test was employed at the end of the abstinence period to measure any behavioral rebound effect in terms of chocolates eaten. 40 'Minstrel' chocolates were placed in a bowl on the desk in front of the participants, and counted once the participant had finished the experiment. Participants also answered questions regarding the taste of the chocolate.

1.2.4. Intervention instructions

A scripted intervention was used for all participants in the thought suppression and defusion conditions. A short explanation of how to use the technique (either defusion or suppression) was read aloud by the experimenter and a printed copy was also provided for participants to read. Participants were given an opportunity to ask questions afterwards to ensure they understood the information. This process took between 5 and 10 minutes. Furthermore, small 'cue cards' were given to the participants which had the two main concepts of the intervention on them. Participants in the control group received no intervention. For interested readers copies of the exact instructions can be obtained from the corresponding author.

1.3. Procedure

Part 1: Participants completed the consent forms and the control questions. All participants were then instructed to refrain from eating chocolate until the second part of the study in 6 days time. Participants in the thought suppression and defusion groups received technique relevant instructions and cue cards to aid them in their abstinence. In the control condition, participants were instructed to 'deal with chocolate cravings in whatever way you feel suitable'. Each participant was given a sheet of daily questionnaires to complete each evening at 10 pm. It was made clear that whilst participants should try their hardest to refrain from eating chocolate, any time they did have cravings or eat chocolate they should record this truthfully.

Part 2: Participants returned to the lab 6 days later to complete the final cravings questionnaire, and were then told that they were 'going to complete a short chocolate taste test'. Participants were told to take as long as they needed and eat as much chocolate as they would like in order to answer the questions. The experimenter left the room

whilst the taste test was done, and counted the number of chocolates missing from the bowl after the participant had left. Once the taste test was completed participants were fully debriefed.

2. Results

The data from 47 participants were included in analyses. No data manipulation was required except to sum the number of times chocolate was eaten on each day of the chocolate abstinence period, to produce the variable 'Chocolate eaten'. Additionally, in order to control for the amount of chocolate the participants ate in a standard week the covariate 'Average consumption' was utilized. Means and standard deviations for all variables tested are included in Table 1.

Table 1 suggests that the defusion group ate fewer minstrels in the final taste test than the thought suppression and control groups. Additionally, there appears to be little difference between the groups in chocolate consumption during the abstinence week, whilst the defusion group seemed to experience more cravings throughout this period of time when compared to the other groups.

A one way between subjects MANCOVA was conducted on the data where the between subjects variable consisted of three levels (thought suppression, defusion and control). There were three dependent variables (the amount of minstrels eaten post experiment, the amount of chocolate eaten throughout the week and the amount of cravings experienced throughout the week). The covariate was the amount of chocolate participants ate in a normal week. The results revealed a significant main effect for minstrels eaten, $F(2,43) = 7.98$, $p < .005$, partial $\eta^2 = .27$, a near to significant main effect on chocolate cravings, $F(2,43) = 2.53$, $p = .091$, partial $\eta^2 = .10$, and no significant main effect of chocolate eaten, $F(2,43) = .44$, $p = .64$, partial $\eta^2 = .02$.

These results suggest that, when the amount of chocolate participants ate in a normal week was accounted for, the three groups did not differ significantly in the amount of chocolate eaten or the amount of cravings experienced across the week. However the near to significant effect of chocolate cravings suggests that the defusion group may have experienced slightly more cravings during their abstinence period. Nevertheless the results suggest that the groups did differ in terms of post experiment chocolate eaten during the taste test. Indeed post-hoc Tukey HSD tests revealed a significant difference between the defusion group ($p < 0.05$), the thought suppression group ($p < 0.05$) and the control group ($p < 0.05$) suggesting that the defusion group ate significantly fewer minstrels than those in the thought suppression and control groups, and the thought suppression group ate significantly more minstrels than those in the control group.

3. Discussion

Over the course of the week the thought suppression group appeared relatively successful in their attempts to suppress cravings and control subsequent behavior. However, upon completing the study, they experienced a behavioral rebound effect; eating significantly more chocolates than the other groups on the taste test.

Table 1

Descriptive statistics for cravings, chocolate eaten, minstrels eaten and average consumption in thought defusion, thought suppression and control groups.

	Defusion group		Thought suppression group		Control group	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Cravings	13.25	(4.12)	9.29	(4.96)	11.71	(8.54)
Chocolate eaten	5.88	(5.63)	7.29	(6.19)	9.64	(11.87)
Minstrels eaten	3.31	(2.47)	14.59	(8.95)	10.93	(10.97)
Average consumption	3.21	(2.15)	3.32	(2.38)	4.03	(2.21)

Interestingly, the defusion group ate the least amount of chocolates on the taste test by a significant margin. Additionally, over the course of the week, despite experiencing around four extra cravings per day, the defusion group reported eating about the same amount of chocolate as the other groups. This suggests that the number of cravings experienced is less relevant to the control of eating behavior than how the cravings are received. Overall these findings suggest that defusion may be more effective than thought suppression for dealing with food cravings. Although a full ACT intervention has had promising success in improving weight management (Lillis et al., 2009), this was the first investigation of thought defusion on food cravings and eating behavior. The defusion instruction was brief and could be easily disseminated to those currently struggling to manage food cravings.

Despite the encouraging results it was predicted that the defusion group would eat less chocolate than the thought suppression and control groups over the course of the week, and yet they did not. As mentioned above, the defusion group did have more cravings to resist. Indeed, when considering the episodes of chocolate consumption in proportion to the number of cravings, the defusion group ate in response to 50% of their cravings, whereas the control and suppression groups ate chocolate in response to 61% and 78% of their cravings respectively. The data were not analysed formally in this way because it was not entirely clear if participants counted cravings that resulted in eating in their total number of cravings. A replication of this study might require participants to report this in the daily questionnaires.

There were also several weaknesses in the study that point to potential directions for future research. First, the number of cravings and chocolate consumption were measured by self-report, leaving room for inaccuracy. Second, details such as the intensity of the cravings or a direct measure of amount of chocolate consumed were not assessed. A replication of this study might record more details about chocolate cravings and include a direct measure of eating behavior (see Forman et al., 2007, for an example of the latter). In addition, the defusion instructions provided bore little similarity to defusion training in ACT. While it is encouraging that a simple didactic instruction could result in significant differences, it is not certain that these results would generalize to the therapeutic interventions that target defusion. It could be that elaborating the instructions into a brief experiential training would improve and extend the results.

In sum, the current study tentatively suggests defusion interventions are worth exploring in the domain of dietary compliance and weight management. The results, which are consistent with previous defusion research conducted in other domains (Healy et al., 2008; Masuda, Hayes, Sackett, & Twohig, 2004), suggest that defusion

prevents a rebound in eating an avoided food from occurring following a period of abstinence, while thought suppression only serves to increase the rebound.

Role of funding sources

The current study was not funded by any external body.

Contributors

Authors 1, 2 and 5 designed the study and gathered the materials. Author 1 conducted the study with the help of author 3 and 4 (see below). Authors 2 and 5 provided feedback during the writing process. All authors have contributed and subsequently approved the final manuscript.

Conflict of interest

None.

Acknowledgements

None.

References

- Clark, D. A., & Purdon, C. (2009). Mental control of unwanted intrusive thoughts: A phenomenological study of nonclinical individuals. *International Journal of Cognitive Therapy, 2*, 267–281. doi:10.1521/ijct.2009.2.3.267.
- Erskine, J. A. K. (2008). Resistance can be futile: Investigating Behavioral Rebound. *Appetite, 50*, 415–421. doi:10.1016/j.appet.2007.09.006.
- Forman, E. M., Hoffman, K. L., McGrath, K. B., Herbert, J. D., Brandsma, L. L., & Lowe, M. R. (2007). A comparison of acceptance- and control-based strategies for coping with food cravings: An analog study. *Behavior Research and Therapy, 45*, 2372–2386. doi:10.1016/j.brat.2007.04.004.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York, NY, US: Guilford Press.
- Healy, H. A., Barnes-Holmes, Y., Barnes-Holmes, D., Keogh, C., Luciano, C., & Wilson, K. (2008). An experimental test of a cognitive defusion exercise: Coping with negative and positive self-statements. *Psychological Record, 58*, 623–640.
- Hooper, N., Davies, N., Davies, L., & McHugh, L. (2011). Comparing thought suppression and mindfulness as coping techniques for spider fear. *Consciousness and Cognition, 20*, 1824–1830. doi:10.1016/j.concog.2011.05.013.
- Juarascio, A. S., Forman, E. M., & Herbert, J. D. (2010). Acceptance and commitment therapy versus cognitive therapy for the treatment of comorbid eating pathology. *Behavior Modification, 34*, 175–190. doi:10.1177/0145445510363472.
- Lillis, J., Hayes, S. C., Bunting, K., & Masuda, A. (2009). Teaching acceptance and mindfulness to improve the lives of the obese: A preliminary test of a theoretical model. *Annals of Behavioral Medicine, 37*, 58–69. doi:10.1007/s12160-009-9083-x.
- Lowe, M. R. (2003). Self-regulation of energy intake in the prevention and treatment of obesity: Is it feasible? *Obesity Research, 11*, 445–459. doi:10.1038/oby.2003.223.
- Lowe, M. R., & Levine, A. S. (2005). Eating motives and the controversy over dieting: Eating less than needed versus less than wanted. *Obesity Research, 13*, 797–806. doi:10.1038/oby.2005.90.
- Masuda, A., Hayes, S. C., Sackett, C. F., & Twohig, M. P. (2004). Cognitive Defusion and self-relevant negative thoughts: examining the impact of a ninety year old technique. *Behavior Research and Therapy, 42*, 477–485. doi:10.1016/j.brat.2003.10.008.
- Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53*, 5–13. doi:10.1037/0022-3514.53.1.5.