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A qualitative analysis of the role of emotions in different patterns of long-term weight loss

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Abstract

Objective—To explore participant perspectives of the impact emotions have on weight loss.

Design—A qualitative design gathered data through semi-structured interviews with participants in a weight management programme. The interview addresses the following research questions: (1) how do individuals working to lose weight perceive the impact emotions have on their long-term success, and (2) what strategies do more or less successful participants use to regulate their emotions? Researchers conducted and transcribed the interviews then completed content analysis to create and organise themes.

Results—Two broad themes emerged through the interviews with 21 participants: emotional impact and emotional regulation. Further subthemes captured emotions blocking action toward goals, strategies for regulating emotions (e.g. exercise, food) and the need for new strategies to regulate emotions. Themes were also split in to three groups based on weight outcomes: regainer, moderate success (3–6% loss) and large success (>7% loss). More successful participants, compared to regainers, shared being aware of the impact of their emotions and made efforts to develop healthy regulation strategies.

Conclusions—Emotional awareness and regulation play an important role in participant's weight management experience. Taking time to build emotional awareness and strategies to manage emotions is important to participants in weight management.

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Supplementary material

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Disclosure statement

No potential conflict of interest was reported by the authors.

Keywords

weight loss maintenance; emotions; self-regulation; qualitative

Introduction

Currently over 75% of the population in the United States are classified as overweight or obese (Fryar, Carroll, & Ogden, 2016). The increase in average weight of Americans has created a need for effective treatment options, with many lifestyle interventions effectively lowering weight of those who participate (Abildso, Zizzi, & Reger-Nash, 2010; Knowler et al., 2002). A systematic review of reviews of interventions focused on diet and/or physical activity found these interventions resulted in weight loss of three-five kilograms at 12 months (Greaves et al., 2011); yet maintaining these losses over time was inconsistent (Abildso et al., 2014; Peirson et al., 2015; Toobert, Strycker, Barrera, & Glasgow, 2010). However, a recent meta-analysis found maintenance programmes can be effective in slowing weight regain for two years following a weight loss intervention (Dombrowski, Knittle, Avenell, Araújo-Soares, & Sniehotta, 2014). Despite the challenge of weight maintenance, there are participants who have been able to lose and maintain significant weight loss (Thomas, Bond, Phelan, Hill, & Wing, 2014; Weiss, Galuska, Kettel Khan, Gillespie, & Serdula, 2007). For example, those who regained are more likely than those who maintained their loss to show decreases in leisure time physical activity, caloric restriction and self-weighing (Thomas et al., 2014). Overall, these results show that programmes can lead to successful weight loss, that maintaining loss is a challenge, and despite the challenge of maintenance certain individuals are able to sustain lasting weight loss.

Qualitative research methods have been used to understand the experiences of successful maintainers vs. those who regain weight (Abildso, Zizzi, Gilleland, Thomas, & Bonner, 2010; Kozica et al., 2015; McKee, Ntoumanis, & Smith, 2013; Stuckey et al., 2011). A mixed method study found that those who maintained, compared to those who regained, were more likely to plan ahead, to focus on improvement, and to have a flexible approach to eating and barrier management (Dibb-Smith, Brindal, Chapman, & Noakes, 2016). Those who regained weight seemed to lack awareness of the need to change habits around dietary lapses, and instead spoke of needing more willpower to follow their diet. In another study, interviews and focus groups with 10 maintainers and 19 regainers revealed maintainers were more likely to continue to self-monitor weight, exhibit productive problem solving skills and use positive-self talk (Reyes et al., 2012).

Further, a thematic analysis of semi-structured interviews with 28 women identified that those who maintained changes held themselves accountable, while those who relapsed or struggled looked outside themselves for accountability (Kozica et al., 2015). Another study comparing nine maintainers to nine regainers revealed that maintainers focused on long-term, lifestyle change instead of short-term, diet and weight loss-related goals, and maintainers spoke of the importance of setting realistic goals and having the ability to exert self-control (McKee et al., 2013). Within the self-control theme, maintainers emphasised the importance of having a routine, monitoring behaviour, managing feelings of missing out on

food items and were able to cope with dietary lapses without viewing them as a complete failure.

Emotions have been found to impact eating behaviours and impact behaviours related to weight loss. Emotional eaters have been found to be more susceptible to over eating in response to stress (Manzoni et al., 2009; Wallis & Hetherington, 2009). Interviews with 76 women found that those who regained weight were more likely to speak of regulating emotions with food (Byrne, Cooper, & Fairburn, 2003). A cross-sectional survey of 2236 women in a community-based weight management programme revealed that negative self-evaluations about weight status (e.g. shame, self-criticism, self-hate) increased weight focused negative affect, and this in turn was an important predictor of difficulties in regulating eating behaviour and a higher predisposition to feeling hungry (Duarte et al., 2017). Further, weight-focused negative affect was negatively associated with body mass index (BMI) change, so as negative affect increased BMI losses decreased. A second survey of 2,765 of successful weight losers found that inability to regulate emotions led to weight regain (Niemeier, Phelan, Fava, & Wing, 2007). These results highlight the impact emotions; especially negative emotions can have on individuals working to change their eating behaviours.

Past studies exploring the experiences of those in weight management have highlighted that internal processes, like motivation, attitude and self-regulation, are important to success (Byrne, Cooper, & Fairburn, 2004; Byrne et al., 2003; McKee et al., 2013; Reyes et al., 2012). The current study aims to build upon these prior studies in three important ways. First, it was conducted with participants who have participated in a community-based weight management programme for at least 18 months. This timeframe allows for exploration of the experiences of participants with different patterns of weight loss within a large, multi-site programme. Second, it will specifically focus on the role of emotions in the process of weight management. This will allow for a better understanding of how participants perceive emotions to impact their weight loss success and how they attempt to manage their emotions. Finally, the study will compare participant perspectives across more and less successful participants. This will allow us to better understand how participant perspectives of the role of emotions in weight loss differ across more vs. less successful participants.

Research questions

1. How do individuals working to lose weight perceive the impact emotions have on their long-term success?
2. What strategies do more or less successful participants use to regulate their emotions?

Design

Participants

Participants were selected from the Weight Management Programme as part of the Public Employees' Insurance Agency (PEIA) in West Virginia. To be eligible for the study participants must have had at least 18 months pass since they first started the programme.

Due to the focus on understanding experiences of successful maintainers, those who dropped out were still included, provided it had been at least 18 months since their start date.

Weight management programme—The PEIA weight management programme is a two-year programme open to any state employee with PEIA insurance, or their families, who have either a BMI over 25 or a waist circumference over 35 inches for women, or over 40 inches for men. Participants pay a \$20 monthly co-payment to their participating fitness facility while enrolled. This programme gives them access to an eligible gym of their choosing, medical nutrition therapy with a registered dietician, fitness assessments with an exercise physiologist, personal training and phone coaching. As long as participants are active in the programme (>8 visits to their facility per month) and show progress they can remain in the programme for two years. Participants can choose from over 70 facilities throughout the state of WV. See Zizzi et al. for further details on the PEIA weight management programme (Zizzi, Abildso, Henderson, & Cobb, 2014).

Recruitment—The PEIA research staff conduct voluntary programme evaluation surveys at six-, 12- and 18-month post baseline. During the data collection period, the response rate to these web-based or mailed surveys was 52%. Weight loss and anthropometric data were entered into a secure database by staff at each of the participating fitness facilities and is accessible by members of the research team. Members of the institutional review board at West Virginia University approved the survey design and implementation prior to data collection. All PEIA members who participated in the weight management programme completed informed consent upon programme initiation, and voluntarily agreed to participate in the surveys and follow-up interviews.

A list of participants who completed at least 18 months in the programme were split into groups in order to capture perspectives across a range of weight outcomes. Three groups were formed to compare participants with large loss (over 7% weight loss), moderate loss (3–6% weight loss) and regainer (those with no loss or weight gain at 18 months). The moderate group aimed to capture participants who had achieved weight loss that is a common goal weight management programmes (Greaves et al., 2011). A second weight loss group was created to capture participants whose weight loss met the weight loss goal of 7% followed by the diabetes prevention programme (Knowler et al., 2002). Due to a sufficient number of participants without weight loss at 18 months, it was decided to omit those with zero to three percent loss from those eligible to participate.

Of the 1170 participants who completed at least the 12- or 18-month survey, 439 agreed to participate in a follow up interview. A group of 77 participants who met inclusion criteria and who had most recently completed the 12- or 18-month surveys were contacted via email to request participation, with the goal of five participants per weight change group. Twenty-eight participants agreed to participate and completed interviews; thus, no further participants were contacted. The final analysis included 21 interviews after seven participants were excluded for either not being in the programme long-enough ($n = 2$), not completing all surveys ($n = 4$), or poor audio quality ($n = 1$).

Interview

Interviews lasted 20–40 min, were conducted over the phone and audio recorded. Participants were told the conversation would be recorded and that their responses would remain anonymous. In addition, participants were told they could end the interview at any time, for any reason. A semi-structured format was used to ensure that all areas were covered, while allowing flexibility to follow the participant's story. Four broad areas were covered, generally in this order: (1) experience in programme; (2) role of stress/emotions; (3) experience with personal trainer; and (4) their 'dream' programme. Most of the data for this study came from responses to the questions dealing with the role of emotions, stress and challenge in the process of lifestyle change. These questions were generally presented in the follow order: (1) how have you handled setbacks or challenges? (how has this changed, if at all); (2) what do you notice doing when stressed or worried? (how has this changed, if at all); and (3) what role does how you feel emotionally play in your success in losing weight, exercising more or eating healthier?

Interviewer—The interviewer was a male, in his early 30 s, who has worked within the weight management field for five years. He has training in counselling, motivational interviewing, and qualitative data collection and analysis. He has spent time working as a personal trainer and health coach for several weight and diabetes management programmes. His experience in these settings has informed his beliefs about what it takes to maintain weight and lifestyle change. In his experience those who are successful maintainers had a different attitude, are more aware of the necessary changes and are committed to working towards these changes themselves. Finally, while the interviewer had prior experiences that informed his view of weight maintenance, he was unsure how participants perceive the role of emotions in weight management and was careful to ask questions in a neutral, non-biased manner.

Data analysis

The data were viewed through a realist paradigm as the goal was to use participant perception to understand the role of emotions in weight loss. Realism acknowledges that there are differences between reality and people's perceptions of reality, yet understanding individual perceptions is an important tool for furthering our knowledge of reality (Krauss, 2005). According to (Fletcher, 2017), reality is split into three levels: (1) empirical (perception of lived experience); (2) actual (actual events without filter of perception); and (3) real (true reality with causal structures). The goal of realism is to extend beyond perceptions to develop theories that explain the underlying causal mechanisms that impact reality. The perceptions shared in this study provided valuable data at the empirical level, which were analysed to inform our understanding of how emotions impacted individuals in a weight management programme. Thematic analysis was an ideal fit within a realist paradigm because it lays out guidelines for how to move from the mass of transcripts to a set of themes or patterns that organise and understand the values that underlie participant perceptions of reality (Braun & Clarke, 2006). These organised themes were then used to build a theory of the role of emotions in weight management.

Effort was made within each transcription to accurately capture each participant's story by using his or her own words, with less attention being paid to fully capture every pause, filler or encourager used. Three research assistants completed all transcriptions, and the primary author reviewed transcripts for accuracy by re-listening to audio files and comparing to what was transcribed. As the focus of this study was to explore the perception of emotions in weight management, no pre-existing themes or codes were used to analyse data; instead all codes were created inductively from the responses of the participants. All coding was completed without knowledge of which group the participant was in. The first author created initial themes by reading each interview in its entirety and making notes focused on identifying topics that were connected to the research questions. With this initial map of themes and subthemes, the first author read through the transcripts a second time to refine the themes by combining themes that overlapped or expanding on themes that differed. After this reading, the two authors reviewed the themes and subthemes, and further refined by discussing discrepancies between the first and second authors interpretation of participant responses. This process resulted in a further refined codebook, which was then used to code responses into a spreadsheet. Transcript codes were reviewed one final time by both researchers to review the frequency of codes across all participants with the focus on simplifying and combining themes that overlapped or did not provide improved understanding. After this final review, participants were grouped by weight loss to explore the pattern of themes across varying levels of success. These data are displayed in Table 2 with frequency of themes across weight success groups. Organising and displaying the empirical data in this manner informed the building of a model of how emotions impact weight management.

Results

The 21 interviewees were primarily women (86%), with a mean age of 50.72 (± 12.87), mean initial BMI 33.87 (± 5.98), and mean of 21.6 months since starting programme. See Table 1 for participant demographics across weight loss groups.

Two themes emerged from the analysis of the data: emotional impact and emotional regulation. See Table 2 for the summary of participant responses across weight change groups.

Emotional impact

The focus of this theme was answering research question one: how do individuals working to lose weight perceive the impact emotions have on their long-term success? This theme emerged from participants talking about the impact emotions had through- out the process of weight management and was split into two sub-themes: (1) blocking action, and (2) awareness of emotional impact.

Blocking action—Participants spoke about how their feelings would block progress toward their goals. For example, 'if you're down or, you know, you're having a tough go it's hard to focus on yourself and make as healthy choices and be healthier' (P10, large success), 'I would blame the stress on not keeping a food journal' (P2, large success), or 'when you

get into that blah like ah I don't feel like doing anything today' (P14, regainer). These participants were aware of how a feeling can block progress toward healthier choices.

Awareness of emotional impact—This sub-theme is focused mostly on responses to the question 'what role do emotions play in weight loss/being healthier?' and captured the importance of emotions during participants' weight loss journey. For example:

it was a big, huge part. It was the biggest role for me ... throughout the whole programme, it is more mental than physical, because if your heads not in it, then your not gonna make that commitment, your not gonna feel like doing things. (P7, large success)

or 'it (how one feels emotionally) has a great impact. That should be everyone's answer. You know, if you feel good emotionally you're gonna be doing more things and becoming more involved and feel better' (P5, moderate success). These are also examples of blocking action, as they talk about emotions keeping them from doing things.

Emotional regulation

This theme captured responses that focused on answering the second research question: What strategies do participants use to regulate their emotions? Two sub-themes emerged: new strategies and strategies.

New strategies—The awareness theme focused on responses that exhibited an understanding of the need for new strategies for emotional regulation. Participants talked of needing to develop alternate strategies, usually in the place of using food to regulate their mood. For example one participant described their 'outlook towards food has changed... food is fuel, and you have to have the right kind in the right amounts...just to run your body...so food is fuel, it's not necessarily for emotions, it's not for fun' (P26, large success) and 'if I'm feeling stressed or frustrated I could go to the gym and I could work through that vs. eating through it. Exercise class does wonders' (P10, large success), while a regain participant stated that they 'noticed that if I can get to the gym or even when I don't feel like it...I feel a lot better afterwards than I did prior to so you know learning that I can use exercise as a means to relieve stress, not just sit and binge eat' (P25, regain). These participants are aware of the pitfalls of relying on food for emotional regulation and the need for a new strategy for regulating their emotions.

Strategies—Three sub-themes emerged as common strategies used, either currently or in the past to regulate emotions: exercise, food and support.

Exercise: Participants spoke of using exercise for emotional regulation. 'Cause you know I don't really want to workout today but I know it's gonna to help when I do because then that's gonna release all that stress' (P2, large success), 'I think the exercise definitely helps with stress, absolutely, there's no question about it' (P15, moderate success), or 'I felt better when I was exercising the way I should' (P3, regain).

Food: Participants spoke of using food to regulate emotions. ‘I also eat to keep down those feelings I can’t let out’ (P19, regainer), ‘I’m somewhat back into my old ways of using food, for stress’ (P26, large loss), or

for whatever reason the foods make me feel better. So I tend to eat them and eat too much...they tend to be foods that are bad for me like cake ... they make me feel better so I’m just going to stuff my face (P20, moderate success)

Support: Participants spoke of relying on others for support in regulating their emotions. ‘my husband and I try to stay accountable for each other. So if I get in one of those moods, it’s like “why are you really feeling like this?” And you know, then we start talking about it’ (P18, moderate success), or ‘if I felt like I was becoming discouraged then I would talk to (someone)’ (P19, regain), while another participant explained how their trainer would ‘still talk to me and work with me when I was emotionally distraught over this plateau’ (P2, large success).

Discussion

Interviews with participants in a long-term weight management programme revealed that emotions played a key role in their weight loss journey. Participants spoke of emotions keeping them from actions that were consistent with their weight loss goals, such as exercising. Further, they shared a variety of strategies used to regulate emotions, and the importance of developing new strategies for regulating emotions. When comparing participant responses across weight loss success groups, more successful participants shared being aware of the impact emotions and of the importance of new emotional regulation strategies, compared to those who regained weight. The subsequent discussion of results first focuses on different themes that emerged across the weight loss groups, then offers a conceptual model to guide work with similar participants. Finally, limitations of the research and future research are presented.

Awareness of emotional impact and emotions blocking action were common themes. The awareness participants spoke of fit with prior research highlighting the importance of awareness in weight success (Dibb-Smith et al., 2016). Further, prior research has noted the importance of self-awareness in sustaining behaviour changes, such as self-monitoring and self-regulation (Abildso et al., 2010; Kozica et al., 2015; McKee et al., 2013). Participant responses in the current study add to these results by showing that blocking action toward weight loss goals is one way emotions can impact participants.

Past research has found that regainers are more likely to use food to regulate emotions (Byrne et al., 2003; Epiphaniou & Ogden, 2010) and that emotional eaters are more likely to overeat in response to stress (Manzoni et al., 2009; Wallis & Hetherington, 2009). Themes from participants in the current study supports overeating as a common emotional regulation strategy, but also revealed participant use of exercise and support in regulating emotions in a functional way. The important role of support in regulating emotions builds on results from a meta-analysis which found that programs which included a support component resulted in improved weight loss (Huisman, Gucht, Dusseldorp, & Maes, 2009). Further, practitioners in weight management may serve an important support role by helping their clients’ process

and regulate emotions, and may increase awareness among fitness professionals of the well-established emotional benefits of exercise among clients with depression (Schuch et al., 2016). Teaching these support and emotional regulation strategies to may help participants sustain efforts toward their health goals, and reduce frustration, stress, and setbacks.

All participants in the regain group lost over six percent of baseline weight during the programme but regained all or more of that weight by 18 months, which is a common experience in weight management (Dibb-Smith et al., 2016; Toobert et al., 2010; Weiss et al., 2007). A comparison of participant themes across weight success groups revealed a potential pathway regarding how emotions may influence these participants' weight regain. Fewer regain participants shared being aware of emotions or needing to develop new regulation strategies. It is possible that these participants lacked an awareness of emotional impact and thus failed to develop new strategies for regulating emotions. This hypothesis is consistent with prior studies that have shown that those who regain weight struggle with regulating emotions (Byrne et al., 2003; Duarte et al., 2017; Niemeier et al., 2007).

A Conceptual guide for weight management practice

Based on the findings of the current study, a conceptual guide of the role of emotions in long-term weight loss was developed. Overall results from the current study, along with prior studies, suggest those who were more successful had increased awareness of the role of emotions in weight loss and this awareness contributed to changes in regulation strategies (see Figure 1). Increased awareness leads to the acknowledgement that new self-regulation strategies are needed for long-term success. So awareness of emotional impact can be seen as a critical first step towards long-term changes needed for sustained weight loss. In contrast, a lack of awareness effectively blocks this cycle in those who regain weight (see Figure 2). The lack of deeper understanding of the impact emotions have on behavioural choices, such as food and exercise, blocks regainers from the opportunity to engage in the change process in a way that leads to self-regulation development that is important for sustained change. Those who regain stay stuck in their old ways, seemingly powerless to make change, as they lack the skills (and possibly the motivation or self-efficacy) needed to manage and regulate their emotions.

Though this model is based on data from this study, it also fits within prior research that highlights the importance of self-regulation in successful weight loss (Baumeister & Heatherton, 1996; Maes & Karoly, 2005). A 2009 meta-analysis of 34 studies found that interventions including a self-regulation component showed increased success in weight loss, with goal reformulation and emotional control being the two key moderators to success (Huisman et al., 2009). For those professionals working in this setting, this finding has important implications. First, building awareness of the role of emotions could be viable starting point for behaviour change, and subsequently providing effective social support. Second, the data highlight the importance of developing new strategies to regulate emotions. We can help clients by asking them what they notice about their behaviour when feeling a range of emotions (e.g. stress, frustration, or boredom), and about their default methods of coping. Then, we can guide them toward building awareness of their habits and help them explore options for new strategies that will create a more flexible approach to change.

'Failure as learning' seems an appropriate approach to potentially reduce the emotional reaction to these slips and slides. Finally, it is important to note that this model is not meant to be comprehensive, and that there are likely multiple factors that contribute the behaviour change and weight maintenance. For example, a individual may be aware of the impact of emotions but still fail to change their regulation patterns to due to external forces, such as family or work, that limit their ability to actually implement new strategies.

Practitioners can take questions from the current study to assess their client's awareness and current strategies. For example asking your clients 'what role does how you feel emotionally play in losing weight and exercising more?' will help assess their level of awareness, while asking 'how do you typically react to setbacks or challenges (e.g. stress) to eating healthy?' will start to explore what strategies they typically use. If they rely primarily on food, then perhaps the focus should be on developing alternative methods for managing negative mood states, especially if physical activity is a viable alternative. Alternatively, if participants are not aware of the impact their emotions have on their food choices then focus building awareness through discussion or activity. For example, adding an emotional reflection to food journaling where clients reflect on how they felt before and after eating can help build awareness around how emotions impact food choices and how food is used to make them feel better vs. eating for physical nourishment. Building awareness can help clients better understand their relationship with food and lead to commitment to the lifestyle changes that are needed for long-term health.

Limitations

The results should be interpreted within the context and restrictions of this study. First, only those who chose to participate in follow-up interviews were included in the subsample, thus there is a self-selection bias. However, multiple groups of success were included so there is diversity among participant experiences. Second, all participants were from the same weight management programme, and this programme is located in a primarily rural and Caucasian state in the United States. It is possible that participants from other geographic areas and programmes may report different experiences. Third, the male interviewer could have impacted the responses in a primarily female sample. It is possible that female participants were hesitant to reveal their true perspectives; however, the interviewer's counselling training enabled him to build rapport with all participants, as evidenced by the gratitude expressed by many participants for having someone listen to their experience. Future research should focus on exploring the role of emotions in other populations to confirm these results. Further research could use a quantitative measure to assess emotional awareness and regulation strategies across a large sample prior to a weight loss attempt and assess whether these variables are associated with weight loss outcomes.

Conclusion

Emotional regulation and awareness play a large role in weight management. Taking time to explore and build emotional awareness and strategies to manage emotions is an important component to long-term success in weight management. Professionals, such as fitness and

health professionals, are in a unique position to guide clients to build awareness and regulation strategies that support their weight loss goals.

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References

- Abildso CG, Schmid O, Byrd M, Zizzi S, Quartirola A, Fitzpatrick SJ. Predictors of weight loss maintenance following an insurance-sponsored weight management program. *Journal of Obesity*. 2014; 2014(736080):1–12. DOI: 10.1155/2014/736080
- Abildso CG, Zizzi S, Gilleland D, Thomas J, Bonner D. A mixed methods evaluation of a 12-week insurance-sponsored weight management program incorporating cognitive-behavioral counseling. *Journal of Mixed Methods Research*. 2010; 4(4):278–294. DOI: 10.1177/1558689810376949
- Abildso CG, Zizzi SJ, Reger-Nash B. Evaluating an insurance-sponsored weight management program with the RE-AIM Model, West Virginia, 2004–2008. *Preventing Chronic Disease*. 2010; 7(3):1–12.
- Baumeister RF, Heatherton TF. Self-regulation failure: An overview. *Psychological Inquiry*. 1996; 7(1):1–15. DOI: 10.1207/s15327965pli0701_1
- Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006; 3(2):77–101.
- Byrne SM, Cooper Z, Fairburn CG. Weight maintenance and relapse in obesity: A qualitative study. *International Journal of Obesity*. 2003; 27(8):955–962. DOI: 10.1038/sj.ijo.0802305 [PubMed: 12861237]
- Byrne SM, Cooper Z, Fairburn CG. Psychological predictors of weight regain in obesity. *Behaviour Research and Therapy*. 2004; 42(11):1341–1356. DOI: 10.1016/j.brat.2003.09.004 [PubMed: 15381442]
- Dibb-Smith AE, Brindal E, Chapman J, Noakes M. A mixed-methods investigation of psychological factors relevant to weight maintenance. *Journal of Health Psychology*. 2016:1–13.
- Dombrowski SU, Knittle K, Avenell A, Araújo-Soares V, Snihotta FF. Long term maintenance of weight loss with non-surgical interventions in obese adults: Systematic review and meta-analyses of randomised controlled trials. *BMJ*. 2014; 348(g2646):1–12. DOI: 10.1136/bmj.g2646
- Duarte C, Matos M, Stubbs RJ, Gale C, Morris L, Gouveia JP, Gilbert P. The impact of shame, self-criticism and social rank on eating behaviours in overweight and obese women participating in a weight management programme. *PLoS ONE*. 2017; 12(1):1–14. DOI: 10.1371/journal.pone.0167571
- Epiphaniou E, Ogden J. Successful weight loss maintenance and a shift in identity: From restriction to a new liberated self. *Journal of Health Psychology*. 2010; 15(6):887–896. DOI: 10.1177/1359105309358115 [PubMed: 20472607]
- Fletcher AJ. Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*. 2017; 20(2):181–194.
- Fryar, CD., Carroll, MD., Ogden, CL. Prevalence of overweight, obesity, and extreme obesity among adults aged 20 and over: United States, 1960–1962 through 2013–2014 (Health E-Stats). National Center for Health Statistics; 2016. p. 6 Retrieved from https://www.cdc.gov/nchs/data/hestat/obesity_adult_13_14/obesity_adult_13_14.pdf
- Greaves CJ, Sheppard KE, Abraham C, Hardeman W, Roden M, Evans PH, Schwarz P. Systematic review of reviews of intervention components associated with increased effectiveness in dietary and physical activity interventions. *BMC Public Health*. 2011; 11(1):119–130. DOI: 10.1186/1471-2458-11-119 [PubMed: 21333011]

- Huisman SD, Gucht VD, Dusseldorp E, Maes S. The effect of weight reduction interventions for persons with Type 2 Diabetes: A meta-analysis from a self-regulation perspective. *The Diabetes Educator*. 2009; 35(5):818–835. DOI: 10.1177/0145721709340929 [PubMed: 19687258]
- Knowler WC, Barrett-Connor E, Fowler SE, Hamman RE, Lachin JM, Walker EA, Nathan DM. Reduction in the incidence of type 2 diabetes with lifestyle intervention or Metformin. *New England Journal of Medicine*. 2002; 346(6):393–403. DOI: 10.1056/NEJMoa012512 [PubMed: 11832527]
- Kozica S, Lombard C, Teede H, Ilic D, Murphy K, Harrison C. Initiating and continuing behaviour change within a weight gain prevention trial: A qualitative investigation. *PLoS ONE*. 2015; 10(4): 1–14. DOI: 10.1371/journal.pone.0119773
- Krauss SE. Research paradigms and meaning making: A primer. *The Qualitative Report*. 2005; 10(4): 758–770.
- Maes S, Karoly P. Self-regulation assessment and intervention in physical health and illness: A Review. *Applied Psychology: An International Review*. 2005; 54(2):267–299. DOI: 10.1111/j.1464-0597.2005.00210.x
- Manzoni GM, Pagnini F, Gorini A, Preziosa A, Castelnovo G, Molinari E, Riva G. Can relaxation training reduce emotional eating in women with obesity? An exploratory study with 3 months of follow-up. *Journal of the American Dietetic Association*. 2009; 109(8):1427–1432. DOI: 10.1016/j.jada.2009.05.004 [PubMed: 19631051]
- McKee H, Ntoumanis N, Smith B. Weight maintenance: Self-regulatory factors underpinning success and failure. *Psychology & Health*. 2013; 28(10):1207–1223. DOI: 10.1080/08870446.2013.799162 [PubMed: 23767689]
- Niemeier HM, Phelan S, Fava JL, Wing RR. Internal disinhibition predicts weight regain following weight loss and weight loss maintenance. *Obesity*. 2007; 15(10):2485–2494. DOI: 10.1038/oby.2007.295 [PubMed: 17925475]
- Peirson L, Fitzpatrick-Lewis D, Ciliska D, Usman Ali M, Raina P, Sherifali D. Strategies for weight maintenance in adult populations treated for overweight and obesity: A systematic review and meta-analysis. *CMAJ Open*. 2015; 3(1):47–54. DOI: 10.9778/cmajo.20140050
- Reyes NR, Oliver TL, Klotz AA, LaGrotte CA, Vander Veur SS, Virus A, Foster GD. Similarities and differences between weight loss maintainers and regainers: A qualitative analysis. *Journal of the Academy of Nutrition and Dietetics*. 2012; 112(4):499–505. DOI: 10.1016/j.jand.2011.11.014 [PubMed: 22709701]
- Schuch FB, Deslandes AC, Stubbs B, Gosmann NP, da Silva CTB, de Almeida Fleck MP. Neurobiological effects of exercise on major depressive disorder: A systematic review. *Neuroscience & Biobehavioral Reviews*. 2016; 61:1–11. DOI: 10.1016/j.neubiorev.2015.11.012 [PubMed: 26657969]
- Stuckey HL, Boan J, Kraschnewski JL, Miller-Day M, Lehman EB, Sciamanna CN. Using positive deviance for determining successful weight-control practices. *Qualitative Health Research*. 2011; 21(4):563–579. DOI: 10.1177/1049732310386623 [PubMed: 20956609]
- Thomas JG, Bond DS, Phelan S, Hill JO, Wing RR. Weight-loss maintenance for 10 years in the national weight control registry. *American Journal of Preventive Medicine*. 2014; 46(1):17–23. DOI: 10.1016/j.amepre.2013.08.019 [PubMed: 24355667]
- Toobert DJ, Strycker LA, Barrera M, Glasgow RE. Seven-year follow-up of a multiple-health-behavior diabetes intervention. *American Journal of Health Behavior*. 2010; 34(6):680–694. [PubMed: 20604694]
- Wallis DJ, Hetherington MM. Emotions and eating. Self-reported and experimentally induced changes in food intake under stress. *Appetite*. 2009; 52(2):355–362. DOI: 10.1016/j.appet.2008.11.007 [PubMed: 19071171]
- Weiss EC, Galuska DA, Kettel Khan L, Gillespie C, Serdula MK. Weight regain in U.S. adults who experienced substantial weight loss, 1999–2002. *American Journal of Preventive Medicine*. 2007; 33(1):34–40. DOI: 10.1016/j.amepre.2007.02.040 [PubMed: 17572309]
- Zizzi, S., Abildso, C., Henderson, N., Cobb, K. The West Virginia PEIA weight management program: An innovative approach to obesity prevention and treatment in appalachian communities. In: Brennan, VM, Kumanyika, SK, Zambana, RE, Brennan, VM, Kumanyika, SK., Zambana, RE.,

editors. Obesity interventions in underserved communities: Evidence and directions. Baltimore, MD: Johns Hopkins University Press; 2014. p. 282-289.

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Figure 1.
Process of successful, sustained weight loss.
Notes: Increased awareness of the role of emotions leads to the development of new strategies for regulating emotions.

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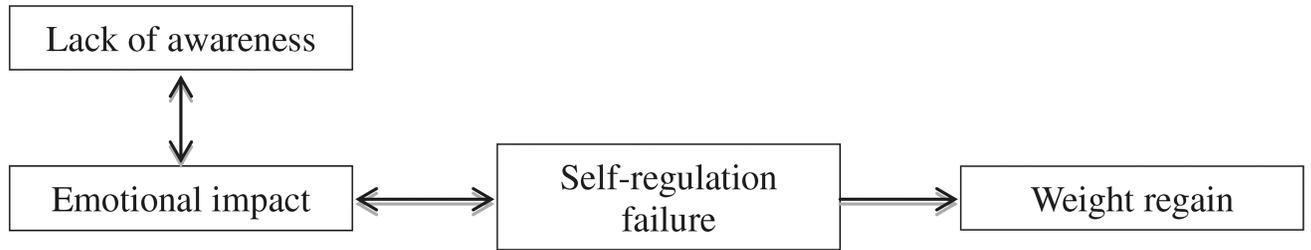


Figure 2.

Process of weight regain.

Notes: A lack of awareness prevents the development of new self-regulation strategies, which contributes to weight regain.

Table 1

Descriptive statistics by success group. Large >7% and moderate 3–6% weight loss, and those who regained.

	Regain (n = 6)	Mod. loss (n = 8)	Large loss (n = 7)
Median years in program	1.74	1.95	1.72
Number of males (%)	0 (0)	2 (25)	1 (14)
Age (SD)	52.67 (13.45)	52.25 (11.94)	47.29 (13.45)
Number completed program (%)	2 (33)	3 (38)	3 (43)
Number active in program (%)	1 (17)	1 (12)	2 (29)
Number dropped program (%)	3 (50)	4 (50)	2 (29)
Mean initial BMI (SD)	31.35 (4.79)	33.05 (6.27)	36.96 (6.66)
Mean final BMI (SD)	31.83 (4.33)	31.66 (6.02)	32.00 (5.05)
Mean percent weight change at time of interview (SD)	1.63 (2.20)	-4.14 (1.31)	-12.88 (7.13)
Mean percent change at lowest point in program (SD)	-6.56 (3.96)	-6.66 (0.93)	-16.07 (7.78)

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Table 2

Number of participants who discussed themes within each weight change group.

<i>Impact of emotion</i>	Regain (<i>n</i> = 6)	Mod. loss (<i>n</i> = 8)	Large loss (<i>n</i> = 7)
Blocking action	5	8	7
Aware of emotional impact	2	5	7
<i>Regulation of emotion</i>			
Need new regulation strategy	2	6	6
Use of food for regulation	5	4	5
Use of exercise for regulation	4	6	7
Use of support for regulation	2	1	4

Notes: Moderate loss corresponds to weight loss of 3–6%, large loss to weight loss greater than 7%.