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Current Opinion in Psychology

Acceptance-based behavioral treatment for weight control: a review and future directions

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Although standard behavioral weight control programs are successful in the short-term, nearly all lost weight is regained within two to five years. Acceptance-based behavioral treatments (ABBTs) represent an alternative to standard behavioral treatments. ABBT is fundamentally a behavioral treatment, but integrates skills in several interlocking areas including experiential acceptance (of cravings, emotions, fatigue), mindful awareness of decision making processes, behavioral commitment and values clarification. Across a series of laboratory and clinical trials, evidence for the efficacy of ABBT has been accumulating, particularly for individuals with higher reactivity to internal and external cues that drive eating. However, in order to continue to advance the field, future research must investigate moderators and mediators of treatment effects (including those involved in moment-to-moment decision-making), as well as ABBT's effect on longer-term weight loss maintenance.

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Current Opinion in Psychology 2015, **2**:87–90

This review comes from a themed issue on **Third wave behavioural therapies**

Edited by **Kevin E Vowles**

For a complete overview see the Issue and the Editorial

Available online 19th December 2014

http://dx.doi.org/10.1016/j.copsyc.2014.12.020

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Review of rationale and current evidence for ABBT for obesity

Obesity has grown to become a global epidemic, with more than one billion adults overweight and 300 million obese [1]. While medication and surgical options are utilized in some circumstances, behavioral (lifestyle) interventions are the first line of treatment. Behavioral treatments include techniques such as self-monitoring and stimulus control to facilitate behavior change (i.e., decreased calorie intake, increased physical activity). These interventions are relatively successful in the short-term, with average weight losses of approximately 7–10% of initial body weight [2], and associated improvements in obesity-related co-morbidities (e.g., diabetes, cardiovascular risk factors; [3,4]). However, when measured in the long-term, outcomes are only minimally successful in that nearly all lost weight is regained within two to five years [2]. Recently, researchers have attempted to enhance these standard behavioral interventions to improve long-term weight loss maintenance.

One such enhancement includes acceptance-based behavioral treatment (ABBT). ABBT for obesity is based on principles of the 'Third Wave' of behavior therapy, including Acceptance and Commitment Therapy (ACT; [5]) and Dialectical Behavior Therapy [6]. Specifically, ABBT teaches individuals to behave in a way that is in line with their life values regardless of the internal experiences (e.g., thoughts, feelings, urges, cravings) they are having. In this paper we review the rationale for utilizing ABBT for weight control and the current research evaluating its effectiveness.

Rationale for ABBT for obesity

Weight regain largely results from inadequate adherence to dietary and exercise prescriptions. Enhancements to the standard behavioral treatments for obesity must therefore target the causes for this diminished compliance over the long-term. Researchers have suggested two core reasons for decreased adherence including: (1) biological predisposition of humans to prefer high calorie foods and minimal energy expenditure, (2) constant exposure to an 'obesogenic' environment (i.e., being surrounded by easily accessible high-calorie foods and labor-saving devices).

The combination of our biology and our environment makes adhering to dietary and physical activity prescriptions very difficult. For example, many individuals face the challenge of coping with a near-constant drive to eat high-calorie, delicious foods that are always available. While some individuals can implement and sustain dietary adherence under these circumstances, doing so over long periods of time is increasingly difficult, especially once weight loss slows or stops.

ABBT may be a particularly good fit for these challenges. One core component of ABBT is 'willingness' which is conceptualized as the ability to choose behavior on the basis of a chosen life value (e.g., being a vibrant grandparent) rather than on the basis of the most comfortable internal experience. Thus, the ability to 'tolerate' or

'accept' internal experiences (e.g., food cravings, decreased pleasure, physical discomfort) is thus seen as a critical skill, as is clarifying core values and holding these mind while making decisions. 'Mindful-decision making' is a closely related skill that involves ensuring that eating and physical activity decisions are made deliberately based on longer-term goals and value, rather than 'mindlessly' (i.e., automatically, in reaction to internal and external eating and physical activity cues). Learning and practicing these skills facilitate long-term maintenance of weight control behaviors, even in the face of countervailing forces.

Although the model of ABBT for weight control developed by our research group [7••] is consistent with other 'Third Wave' behavioral interventions, there are two notable differences. First, whereas traditional acceptance-based intervention may emphasize tolerating aversive experiences (e.g., anxiety, depression), our model of ABBT has a focus on accepting decreased short-term pleasure associated with healthy choices (e.g., forgoing high calorie foods). Second, many mindfulness and 'mindful eating' interventions teach participants to pay close attention to sensory experiences during eating, with a goal of having one's 'inner wisdom' (i.e., cues from the body) guide eating behavior. Our model of ABBT, in contrast, teaches participants how to *override* the body's messages that typically produce a drive to overeat. Perhaps even more importantly, ABBT for weight control is fundamentally behavioral, and focuses on mindfulness in moments of *behavioral decisions* (e.g., awareness of internal and external cues), in order to reduce automaticity. Recognizing distinctions between various acceptance and mindfulness interventions is important in order to interpret emerging research. For example, thus far, mindful eating interventions produce less weight loss than do behaviorally oriented interventions [8••].

Research evaluating ABBT for obesity

To date, there has been one randomized controlled trial evaluating ABBT for weight control [9••]. The Mind Your Health Project randomized 128 overweight and obese participants to receive a standard behavioral treatment (SBT) or ABBT, which both included 30 group sessions. Weight loss at post-treatment and six-month follow-up did not significantly differ between SBT and ABBT. However, when delivered by expert interventionists (rather than novice providers), weight losses were significantly greater in ABBT compared to SBT at post-treatment (13.2% versus 7.5%) and follow-up (11.0% versus 4.8%). In addition, moderation analyses revealed ABBT to be significantly more efficacious for participants displaying greater responsivity to food cues (e.g., emotions, environment, cravings) and higher levels of depressed mood.

Two uncontrolled studies also provide support for ABBT for weight control. One study revealed significant weight loss after 12 group sessions (6.6%), with weight losses continuing through the six-month follow-up (9.6%; [10]). Another study evaluated ABBT specifically for those with high levels of internal disinhibition [11••]. Weight losses were impressive at post-treatment and three months after treatment completion (12.0 kg and 12.1 kg, respectively). Additional support for ABBT for obesity comes from two studies demonstrating significant weight losses following the attendance of ABBT workshops [12,13].

Complementary research

Recent research has also shown ABBT to be efficacious in preventing weight gain in a female college population [14•]. In addition, ABBT has been shown to be more effective than a cognitive control intervention for coping with food cravings, specifically for those demonstrating high responsivity to the food environment, high disinhibition, and emotional eating [15•]. ABBT has also been utilized for increasing physical activity, with one study demonstrating greater increases in participants assigned to ABBT compared to an education control group [16].

Current accomplishments of ABBT

Thus far, ABBT has shown to be efficacious in producing weight losses. These interventions appear to be particularly beneficial for individuals with higher reactivity to internal and external cues that drive eating. However, there are significant gaps in the current literature, as outlined below.

Gaps in the current literature and future directions

While ABBTs show considerable promise for improving weight loss and maintenance outcomes (especially for certain subgroups), gaps remain in the current literature. Our review of the extant body of work suggest five broad areas of need: firstly, replication of existing findings and design of targeted trials; secondly, further investigation of moderators of efficacy; thirdly, better understanding of mechanisms of action; fourthly, further study of long-term weight loss maintenance; and finally, investigations of moment-by-moment decision making.

Replication of extant findings and study of long-term outcomes

As mentioned, only one large-scale RCT of ABBT for obesity has been completed. While available data on the data on the overall effectiveness ABBT for weight loss are robust, the relative efficacy of ABBT, that is, compared to gold standard behavioral treatments, remains unclear. Happily, a number of trials are underway and thus more definitive conclusions are forthcoming. These trials are evaluating long-term outcomes of treatment, which is critical because, as described earlier, even the very best behavioral treatments have minimal long-term effectiveness. Thus, improving long-term weight loss outcomes is of the utmost priority. ABBT may have the ability to enhance

long-term outcomes, given specific strategies provided to enhance commitment in the face of persistent counterforces (e.g., biology, environment, declining reinforcement of salient weight loss). However, we currently have follow-up data only until six months post-ABBT intervention. Additional research needs to determine the differential impact of ABBT versus SBT on weight loss maintenance in the longer-term (e.g., one to two years post-treatment).

Moderators of efficacy

As reviewed above, there are intriguing theoretical and empirical grounds for hypothesizing that an individual's response to ABBT will differ based on specific baseline characteristics. Replication of previous findings (e.g., that ABBT is more effective that SBT for those with higher responsivity to eating-related cues) has the potential to lead to improved treatments, tailored treatments and the ability to match treatments to individuals. Moreover, early response to treatment should also be investigated as a potential moderator. Robust evidence exists that early treatment response is a strong predictor of long-term weight loss outcomes. Thus, it is possible that identifying early non-responders and reassigning them to an alternative treatment could improve their outcomes. One notion currently under investigation in a Sequential Multiple Assignment Randomized Trial (SMART) is that participants who show poor early nonresponse to standard treatment would show improved outcomes if switched to ABBT.

Need for understanding of treatment mechanisms

While ABBTs generally have strong evidence for their putative mechanisms of action [17], such evidence is sparse within the field of weight control. Moreover, what evidence exists tends to come from self-report measures, which are subject to biases and inaccuracies (e.g., the demand characteristics of the experimenters). Assessment of ABBT's mechanisms, especially with more objective measurement tools, would allow us to examine whether active ingredients are distinct from that of SBT, and could potentially point the way toward paring down ABBT to its most essential parts, resulting in a more efficient and potent treatment. However, this work is handicapped by the paucity of well-validated objective measures of ABBT-specific mediators such as distress tolerance, psychological acceptance, values clarity and behavioral commitment. For example, many behavioral distress tolerance measures are, in fact, frustration tolerance measures or are specific to a particular domain (e.g., pain tolerance).

A related crucial point is the underdevelopment of the construct of acceptance of reduction in pleasure. Acceptance-based treatments such as ACT were originally designed to improve the ability to accept *aversive* internal experiences (e.g., pain, depression, anxiety). However, modifying eating and physical activity behavior appear to have less to do with the acceptance of aversive experience, and more with tolerance of a *less pleasurable* option. At this time we have no method available to test this notion or to determine whether the construct is a mediator of the effectiveness of ABBTs.

Nearly all the information we have about treatment mechanisms, including ABBT mechanisms, comes from measures of general tendencies, over long periods of time, such as, a person's overall tendency to eat in response to emotions. However, to be successful, obesity interventions must alter the processes that govern moment-by-moment decisions about eating and physical activity, such as whether a person in a state of heightened anxiety did or did not eat the birthday cake that a co-worker offered her. Yet, in reality we know very little about these momentary decisions, let alone how ABBT affects them. Thus, we should be using methodologies such as ecological momentary assessment (EMA), which gathers data multiple times a day from users in their natural environments (normally via a smartphone). Information that can be gathered from EMA include the type, location, and time of dietary lapses, the affective and cognitive triggers for lapses, and factors associated with motivation and self-efficacy. Such information could inform the development of new ABBT treatment components that specifically target these factors.

Conclusion

In recent years, acceptance-based treatments have gained scientific traction in the treatment of many types of problems. As reviewed above, the initial evidence for ABBTs for weight control is strong and continues to grow. ABBT's emphasis is on achieving long-term adherence to dietary and physical activity prescriptions through increasing values-based motivation, tolerating discomfort and loss of short-term pleasure associated with healthy eating and physical activity, and for decreasing the automaticity of eating decisions. As such, strategies are developed that appear to be limitations of standard behavioral interventions for weight control. Despite the theoretical and preliminary empirical promise of such interventions for improving weight outcomes, gaps remain in the literature. The presence of few controlled RCTs of ABBT, and lack of investigation of long-term outcomes, moderators and mechanisms, limit the ability to derive strong conclusions about the relative effectiveness and efficacy of ABBT for obesity. Future investigations in these areas will result in significant advancement in the study of ABBT for weight control.

References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- • of special interest
- •• of outstanding interest

1. Flegal KM, Carroll MD, Kit BK, Ogden CL: **Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999–2010**. *JAMA* 2012, **307**:491-497.

2. Wadden TA, Webb VL, Moran CH, Bailer BA: **Lifestyle modification for obesity: new developments in diet, physical activity, and behavior therapy**. *Circulation* 2012, **125**:1157-1170.

3. Crandall JP, Knowler WC, Kahn SE, Marrero D, Florez JC, Bray GA, Nathan DM: **The prevention of type 2 diabetes**. *Nat Clin Pract Endocrinol Metab* 2008, **4**:382-393.

4. Wing RR, Lang W, Wadden TA, Safford M, Knowler WC, Bertoni AG, Wagenknecht L: **Benefits of modest weight loss in improving cardiovascular risk factors in overweight and obese individuals with type 2 diabetes**. *Diabetes Care* 2011, **34**:1481-1486.

5. Hayes SC, Strosahl KD, Wilson KG: *Acceptance and Commitment Therapy: An Experiential Approach to Behavior Change*. New York: Guilford Press; 1999, .

6. Linehan MM: *Cognitive-Behavioral Treatment of Borderline Personality Disorder*. New York: Guilford Press; 1993, .

7. •• Forman EM, Butryn ML: **A new look at the science of weight control: how acceptance and commitment strategies can address the challenge of self-regulation**. *Appetite* 2015, **84**:171-180.

This theoretical paper provides a framework for the utilization of ABBTs for enhancing self-regulation as well as reviewing preliminary evidence for their efficacy.

8. •• O'Reilly GA, Cook L, Spruijt-Metz D, Black DS: **Mindfulness-based interventions for obesity-related eating behaviours: a literature review**. *Obes Rev* 2014, **15**:453-461.

This manuscript is the first comprehensive review of the efficacy of mindfulness-based interventions for weight-related behaviors (i.e., a wide range of interventions, including many non-behavioral approaches). The authors concluded that although these interventions are useful in targeting obesity-related behaviors (e.g., binge eating, emotional eating, eating in response to external cues), effect sizes for weight loss were small.

9. •• Forman EM, Butryn ML, Juarascio AS, Bradley LE, Lowe MR, Herbert JD, Shaw JA: **The mind your health project: a randomized controlled trial of an innovative behavioral treatment for obesity**. *Obesity* 2013, **21**:1119-1126.

This is the first comparison of ABBT to a standard behavioral weight control intervention, demonstrating the efficacy of ABBT for weight loss, particularly in those with high levels of depression, responsivity to food cues, emotional eating, and disinhibition.

10. Forman EM, Butryn ML, Hoffman KL, Herbert JD: **An open trial of an acceptance-based behavioral intervention for weight loss**. *Cogn Behav Pract* 2009, **16**:223-235.

11. •• Niemeier HM, Leahey T, Palm Reed K, Brown RA, Wing RR: **An acceptance-based behavioral intervention for weight loss: a pilot study**. *Behav Ther* 2012, **43**:427-435.

This open trial demonstrated effectiveness of an acceptance-based behavioral treatment among individuals who reported a tendency to eat in response to emotions and thoughts (i.e., individuals high on internal disinhibition, a group that has shown poor response to behavioral treatments in previous trials).

12. Lillis J, Hayes SC, Bunting K, Masuda A: **Teaching acceptance and mindfulness to improve the lives of the obese: a preliminary test of a theoretical model**. *Ann Behav Med* 2009, **37**:58-69.

13. Tapper K, Shaw C, Ilsley J, Hill AJ, Bond FW, Moore L: **Exploratory randomised controlled trial of a mindfulness-based weight loss intervention for women**. *Appetite* 2009, **52**:396-404.

14. • Katterman SN, Goldstein SP, Butryn ML, Forman EM, Lowe MR: **Efficacy of an acceptance-based behavioral intervention for weight gain prevention in young adult women**. *J Context Behav Sci* 2014, **3**:45-50.

This study demonstrates the efficacy of ABBT in a group at risk for weight gain.

15. • Forman EM, Hoffman KL, Juarascio AS, Butryn ML, Herbert JD: **Comparison of acceptance-based and standard cognitive-based coping strategies for craving sweets in overweight and obese women**. *Eat Behav* 2013, **14**:64-68.

This analog study compared acceptance-based strategies to distraction/cognitive reappraisal strategies for coping with food cravings in an overweight sample, showing that acceptance-based strategies resulted in decreased cravings and consumption specifically for participants with greater levels of emotional eating and susceptibility to food cues.

16. Butryn ML, Forman E, Hoffman K, Shaw J, Juarascio A: **A pilot study of acceptance and commitment therapy for promotion of physical activity**. *J Phys Act Health* 2011, **8**:516-522.

17. Levin ME, Hildebrandt MJ, Lillis J, Hayes SC: **The impact of treatment components suggested by the psychological flexibility model: a meta-analysis of laboratory-based component studies**. *Behav Ther* 2012, **43**:741-756.