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

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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 1 billion adults overweight and 300 million obese (Flegal et al., 2012). 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 (Wadden et al., 2012), and associated improvements in obesity-related co-morbidities (e.g., diabetes, cardiovascular risk factors; Crandall et al., 2008; Wing et al., 2011). However, when measured in the long-term, outcomes are only minimally successful in that nearly all lost weight is regained within 2-5 years (Wadden et al., 2012). 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; Hayes et al., 1999) and Dialectical Behavior Therapy (Linehan et al, 1993). 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

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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 (Forman & Butryn, 2015) 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), this treatment 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 (O’Reilly et al., 2014).

### Research Evaluating ABBT for Obesity

To date, there has been one randomized controlled trial evaluating ABBT for weight control (Forman et al., 2013). 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 6-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% vs. 7.5%) and follow-up (11.0% vs. 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 6-month follow-up (9.6%; Forman, Butryn, Hoffman & Herbert, 2009). Another study evaluated ABBT specifically for those with high levels of internal disinhibition (Niemeier et al., 2012). Weight losses were impressive at post-treatment and 3 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 (Lillis et al., 2009; Tapper et al., 2009).

### **Complementary Research**

Recent research has also shown ABBT to be efficacious in preventing weight gain in a female college population (Katterman et al., 2014). 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 (Forman et al., 2007). 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 (Butryn et al., 2011).

### **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: (1) replication of existing findings and design of targeted trials, (2) further investigation of moderators of efficacy, (3) better understanding of mechanisms of action, (4) further study of long-term weight loss maintenance, and (5) investigations of moment-by-moment decision making.

### **Replication of extant findings and study of long-term outcomes**

As of this writing, only one large-scale RCT of ABBT for obesity has been completed. While available data on the overall effectiveness ABBT for weight loss are robust, the relative efficacy of ABBT, i.e., 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 counter-forces (e.g., biology, environment, declining reinforcement of salient weight loss). However, we currently have follow-up data only until 6 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-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 than 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 (Levin et al., 2012), 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 towards 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 under-development 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, e.g., 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 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.

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### Highlights

1. Acceptance-based behavioral treatment (ABBT) may address weight loss challenges.
2. Targets include willingness, values clarity, and mindful decision making.
3. ABBT has shown to be efficacious in producing weight losses.
4. Future research must examine long-term outcomes, moderators, and mechanisms of action.