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Research review

A new look at the science of weight control: How acceptance and commitment strategies can address the challenge of self-regulation

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ABSTRACT

The current manuscript proposes an acceptance-based, self-regulation framework for understanding the challenge of weight maintenance and describes how this framework can be integrated into the behavioral treatment of obesity. According to this framework, intrinsic drives to consume palatable, high-calorie food interact with a modern environment in which high calorie foods are easily accessible. This combination produces a chronic desire to eat unhealthy foods that exists in opposition to individuals' weight control goals. Similarly, low energy expenditure requirements reduce physical activity. We suggest that individuals vary in their responsivity to cues that motivate overeating and sedentary behavior, and that those higher in responsivity need specialized self-regulatory skills to maintain healthy eating and exercise behaviors. These skills include an ability to tolerate uncomfortable internal reactions to triggers and a reduction of pleasure, behavioral commitment to clearly-defined values, and metacognitive awareness of decision-making processes. So-called "acceptance-based" interventions based on these skills have so far proven efficacious for weight control, especially for those who are the most susceptible to eating in response to internal and external cues (as predicted by the model). Despite the current empirical support for the postulated model, much remains to be learned including whether acceptance-based interventions will prove efficacious in the longer-term.

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Current status of obesity problem and obesity interventions

Obesity is associated with serious health problems and with a high proportion of the nation's annual health care budget (Cawley & Meyerhoefer, 2012; Centers for Disease Control and Prevention, 2012; Danaei et al., 2009; Finkelstein, Trogdon, Cohen, & Dietz, 2009). Yet, a full two-thirds of adults in the United States are overweight (body mass index or BMI > 25 kg/m^2) or obese (BMI > 30 mg/m^2; Flegal, Carroll, Kit, & Ogden, 2012). Individuals who attempt to lose weight on their own commonly report that they abandon their efforts due to frustration with amount or rate of weight loss (Levy & Heaton, 1993; C. F. Smith, Burke, & Wing, 2000). Fewer than 20% of overweight adults in the general population have reported success with long-term weight loss (i.e., a reduction in weight of at least 10% maintained for at least 1 year; McGuire, Wing, & Hill, 1999).

Several categories of interventions have been aimed at the obesity epidemic with mixed success. For example, pharmacological and surgical treatments are moderately successful, but have considerable safety and efficacy concerns in the long-term and are considered second-line treatments and only for the most obese (Low, Bouldin, Sumrall, Loustalot, & Land, 2006; National Institutes of Health, 2000; Wadden, Crerand, & Brock, 2005; Yanovski & Yanovski, 2002). Public health interventions (e.g., taxing sugary drinks) have the potential to be highly impactful in the long-term, but only to the (so far minimal) extent that public/political support are in place (Wadden, Brownell, & Foster, 2002).

Cognitive-behavioral treatments have emerged as the gold standard and the first line of intervention for obesity (Jensen et al., 2013). These treatments (which we refer to as standard behavioral treatments to distinguish them from newer forms of behavioral treatments discussed later) typically include dietary and physical activity (PA)-related psychoeducation and prescriptions, behavioral skills such as self-monitoring and stimulus control, and cognitive strategies such as thought restructuring. Standard behavioral treatments commonly produce body weight reductions of 7–10% that are accompanied by decreases in risk factors for heart disease and diabetes (Butryn, Webb, & Wadden, 2011). Those who fully adhere to these regimens experience large weight losses and minimal weight regain (Klem, Wing, McGuire, Seagle, & Hill, 1997; Shick et al., 1998).

For all its successes, standard behavioral treatments yield relatively low adherence rates to calorie and PA prescriptions, and, as a result, participants receiving behavioral treatment lose far less weight than is achieved by individuals in a controlled environment in which adherence to these same prescriptions is guaranteed (Brownell & Jeffery, 1987; Hall, 2010; Heymsfield et al., 2007; K. G. Wilson, 1994). Moreover, most experience significant weight regain within a year of treatment ending and substantial, if not full, regain within 5 years (Fontaine & Cheskin, 1997; Jeffery et al., 2000; Kramer, Jeffery, Forster, & Snell, 1989; Stalonas, Perri, & Kerzner, 1984; Wadden & Butryn, 2003; Wadden & Frey, 1997; Wadden, Sternberg, Letizia, Stunkard, & Foster, 1989). Some weight regain appears attributable to changes in metabolic efficiency that are known to occur during and following weight loss (Rosenbaum, Kissileff, Mayer, Hirsch, & Leibel, 2010). However, these metabolic changes only account for a small degree of observed weight regain (de Boer, van Es, Roovers, van Raaij, & Hautvast, 1986; Heymsfield et al., 2007; Weinsier et al., 2000). Fundamentally, the disappointing long-term results of standard behavior treatment stem from difficulty making and/or maintaining recommended changes in dietary and PA behavior (Lowe, 2003). In the current manuscript, we argue that the difficulty maintaining adherence stems from an inability to exert behavioral self-control in the face of biologically-based responses to internal and external (environmental) cues.

Challenge of behavior change

A priority for addressing the obesity epidemic is to better understand the difficulty of successfully modifying and maintaining desired dietary and PA behaviors. Those who participate in obesity interventions are usually motivated to lose weight and receive extensive education in the behavioral changes that are required for successful weight control. However, it has been hypothesized that these motivations are (eventually) overwhelmed by a biological predisposition to consume high-energy foods, which are universally available in the modern environment. A large body of literature, which began with work of Schachter (1968), has established the importance of external environmental cues in influencing eating behavior. The modern environment is filled with readily available, high-energy, palatable foods, and labor-saving devices also appear to exploit a predisposition to conserve energy (Church et al., 2011; Diliberti, Bordi, Conklin, Roe, & Rolls, 2004; French, Story, & Jeffery, 2001; Hill & Peters, 1998; Hill, Wyatt, Reed, & Peters, 2003; Raynor & Epstein, 2001; Wansink, 2004). Susceptibility (or responsivity) to food cues has been shown to vary across individuals, and is a robust predictor of the ability to resist cravings (Appelhans et al., 2011), dietary success (Epstein et al., 2004; Stroebe, Papies, & Aarts, 2008), and BMI (Schultes, Ernst, Wilms, Thurnheer, & Hallschmid, 2010). In the modern environment, expending a sufficient amount of energy requires, for many individuals, purposeful and consistent choices to engage in lifestyle and/or structured PA (Catenacci et al., 2011; Jeffery, Wing, Sherwood, & Tate, 2003; Weinsier et al., 2002). This deliberate choice to be active is likely at odds with our intrinsic preference to conserve energy, and can be easily overridden by internal or external cues prompting sedentary behavior.

Our biology makes us highly susceptible to these internal and external cues for inactivity and overeating. Most individuals experience strong enough intrinsic cue responsiveness such that attempts to resist reactions to these cues are met with failure. Overeating in response to internal (e.g., emotional experiences) and external (presence of palatable high-calorie food) cues and/or engaging in inadequate amount of physical activity can be understood as a failure of self-regulation.

Psychological skills necessary for successful weight control

In the modern environment, the chronicity of our desires combined with the pervasive ability to eat and be at rest suggest that overeating and sedentariness are *default* positions, i.e., the decisions we will make (whether implicitly or explicitly) unless we deliberately apply psychological skills designed to resist the powerful forces at work (Schulz et al., 2006; Tordoff, 2002; Wansink, 2006). Our synthesis of the literature and our recent work suggest several specific psychological skills that are needed to succeed at self-regulation in this regard.

Achieving values clarity and committing to values-linked behavioral goals. Pressure from the environment and innate tendencies degrade motivation to engage in weight control behaviors. In the most global sense, non-default, effortful choices are not likely to be made unless the individual has clearly linked these choices to goals that are part of an articulated, deeply felt values system (Eccles & Wigfield, 2002; Halpern, Ubel, & Asch, 2007). Thus, someone is less likely to forego a favorite dessert or get up early to walk unless she is clearly aware of and has committed to a value such as "being a physically active and fit grandparent" (Deci & Ryan, 2000; Hayes, Strosahl, & Wilson, 1999; Lillis, Hayes, Bunting, & Masuda, 2009; K. G. Wilson & Murrell, 2004). Motivation also may decrease after weight loss ends because there are fewer reinforcers for weight control behaviors (Wadden & Bell, 1992). Several studies have linked autonomous motivation and commitment to change with weight loss outcomes (M. H. Kearney, Rosal, Ockene, & Churchill, 2002;