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SHORT REPORT

A preliminary investigation of the role of self-control in behavioral weight loss treatment

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Self-control;
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Summary Self-control is associated with positive health outcomes; however, there is limited information on self-control and weight loss. Thus, the purpose of this preliminary research was to examine how objectively measured self-control operates within the context of a behavioral weight loss program (BWL). Results showed that greater self-control and increases in self-control during BWL treatment were associated with greater weight loss (r's ≥ 0.26; p's < 0.05), better treatment attendance (r's ≥ 0.26; $p < 0.05$), adherence to a low fat diet (r's $\leq$-0.37; p's < 0.05), and greater increases in physical activity (r's ≥ 0.46; p's < 0.05). These preliminary findings suggest that self-control may play an important role in weight loss success.

Self-control is the ability to inhibit a desired, prepotent response in service of goal attainment [1,2]. Trait self-control is associated with reduced risk for obesity and substance abuse [3]. Similarly, cross-sectional studies have shown that high levels of self-control are associated with less consumption of high fat foods [4]. In addition, dietary restraint, a construct linked to self-control, is consistently associated with successful weight control [5].

According to the self-control strength model [6], self-control can be enhanced through practice [7,8]. For example, repeatedly engaging in acts of self-control, such as resisting tempting foods, increases self-control over time [8]. In a smoking cessation trial, participants who, prior to quitting, enhanced their self-control via practice (resisted sweets) achieved superior abstinence rates compared to active treatment controls [9].

Self-control has obvious implications for weight loss — the ability to resist calorically dense foods and persevere with physical activity, despite discomfort and fatigue, are important for weight loss success [10]. In this investigation, two preliminary studies were conducted to examine how self-control operates within the context of behavioral weight loss (BWL) treatment. In Study 1, self-control was assessed at post-treatment; we hypothesized that self-control would be positively associated with weight loss and adherence

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Table 1 Study 1, Study 2, and Study 1 + Study 2 combined participant characteristics.

	Study 1 ($N = 40$)	Study 2 ($N = 23$)	Study 1 + Study 2 ($N = 63$)
Sex: female, *n* (%)	34 (85)	18 (78)	52 (83)
Age (years; $M \pm SD$)	53.5 ± 4.3	44.1 ± 8.8	50.0 ± 7.7
Race, *n* (%)			
Asian	1 (3)	0 (0)	1 (2)
Black/African American	1 (3)	1 (4)	2 (3)
White	38 (94)	18 (78)	56 (89)
Other	0 (0)	4 (17)	4 (6)
Ethnicity, *n* (%)			
Hispanic/Latino	1 (2)	1 (4)	2 (3)
Not Hispanic/Latino	39 (98)	22 (96)	61 (97)
Baseline BMI (kg/m^2; $M \pm SD$)	35.6 ± 3.1	45.3 ± 4.0	39.2 ± 5.8

metrics. Given the positive results from the first study, a second study was conducted in which self-control was measured at both pre- and post-treatment. Consistent with evidence that practicing acts of self-control increases self-control [8], we hypothesized that adherence to treatment recommendations (i.e. behaviors that inherently require self-control, such as eating a low fat diet) and overall weight loss would be associated with increases in self-control from pre- to post-treatment.

Methods

Two studies were conducted to examine whether self-control is associated with weight loss and adherence parameters in BWL treatment. All participants ($N = 63$) were recruited through advertisements placed in local newspapers or online. To be eligible, participants had to be obese ($BMI \geq 30\,kg/m^2$) with no history of recent weight loss and no medical conditions that would contraindicate weight loss or their likelihood to complete a weight loss trial (e.g., pregnancy, cancer, substance abuse, dementia). See Table 1 for baseline participant characteristics.

In Study 1, participants ($N = 40$) received a 6 month BWL intervention consistent with traditional BWL programs [11]. Treatment was group-based; included weekly sessions led by dietitians, exercise physiologists, and/or behavioral psychologists; and involved private weigh-ins. All participants were given a reduced calorie, low-fat diet designed to produce a weight loss of 1—2 pounds per week; a physical activity prescription that involved a gradual increase from 50 min per week to 250 min per week, with a particular focus on brisk walking; and instruction in behavior change strategies, including self-monitoring of dietary intake and physical activity, stimulus control, goal setting, problem solving, assertiveness training, and relapse prevention. Weight, treatment attendance, dietary intake, and physical activity were assessed, and participants completed an objective measure of self-control at post-treatment.

Study 2 extended the findings from Study 1. In Study 2, we examined whether *changes* in self-control are associated with weight loss outcomes and treatment adherence. Participants ($N = 23$) in a 6 month BWL program, similar to that in Study 1, had their weight, calorie intake, physical activity, and attendance assessed and completed the same objective measure of self-control used in Study 1 at both pre- *and* post-treatment.

Measures. All assessments were conducted by trained research assistants.

Demographics. Participants reported gender, age, race, and ethnicity.

Self-control. The handgrip task, a widely used objective measure of global self-control [8,9,12], was used to assess self-control at post-treatment in Study 1 and at both pre- and post-treatment in Study 2. After accounting for individual grip strength, participants squeeze a handgrip for as long as possible, thereby enduring aversive stimuli (pain, muscle fatigue) and overriding the desire to end discomfort in service of goal attainment. This self-control task is consistently responsive to self-control manipulations [e.g., 8,12—15]. Moreover, results from this task are strongly correlated with other self-control tasks, including cognitive measures of self-control [16,17].

The Lafayette Hand Dynamometer (Model 78010) was used in this study. This device contains a handgrip and a dial that indicates the force with