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The Role of the Self in Physical Health: Testing the Effect of a Values-Affirmation Intervention on Weight Loss

Christine Logel[1] **and Geoffrey L. Cohen**[2]
[1]Renison University College, University of Waterloo, and [2]Stanford University

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Obesity is a major risk factor for chronic disease (World Health Organization, WHO, 2000). Maintaining a healthy body mass index (BMI) requires two things: the ability to cope with stress, which increases caloric consumption (Dallman, 2009), and the ability to maintain self-control, which is needed to avoid overeating in a society with an abundance of calorie-dense food. Given these requirements, an intervention that bolsters psychological resources for well-being and self-control could promote healthful weight loss.

One such intervention is a values affirmation. Participants write about self-defining values, such as relationships or religious beliefs. This affirms their sense of personal worth or self-integrity (Sherman & Cohen, 2006; Steele, 1988). Affirmations can bolster self-control by focusing people on higher values rather than on immediate impulses (Schmeichel & Vohs, 2009; Sherman & Cohen, 2006). By reminding people of what is really important, affirmation also buffers people against mundane stressors that might otherwise sap mental resources, which are needed for self-regulation and effective coping (Creswell et al., 2005; Koole, Smeets, Van Knippenberg, & Dijksterhuis, 1999). Even when brief, affirmations can have lasting effects if they interrupt ruminative cycles that worsen outcomes over time (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009).

Because women are likely to be especially vulnerable to weight-related stress (Miller & Downey, 1999), this study focused on females. Participants completed either an affirmation or a control exercise, and BMI was assessed at baseline and 2.5 months later. Working memory, a critical component of self-control (Hofmann, Friese, Schmeichel, & Baddeley, 2010), was also assessed, on the assumption that an affirmation of a person's values should free his or her working memory from stressful preoccupations (Klein & Boals, 2001).

Method

Session 1

Forty-five female university students participated in a "values and health" study. Participants' weights were representative of North American women's weights in general (WHO, 2000); 58% of participants were overweight or obese, and 42% were of normal weight (mean BMI = 26.38, $SD = 3.07$). All reported some dissatisfaction with their weight. Most participants were Caucasian (71%). They participated individually and were randomly assigned to either an affirmation or a no-affirmation condition. The experimenters were blind to condition.

Following validated procedures (Sherman & Cohen, 2006), we gave participants a list of important values (e.g., close relationships, music), none of which were related to health. We then asked participants in the affirmation condition to select the most important value and write about why it was important to them. Participants in the no-affirmation condition wrote about why their ninth-ranked value might be important to someone else.

Forty participants (89%) consented to be weighed. Self-reported weight was obtained from the 5 participants (2 in the no-affirmation condition, 3 in the affirmation condition) who did not consent. Other tasks, not reported here, were also completed in Session 1.[1]

Session 2

Approximately 2.5 months after Session 1 ($M = 76$ days, $SD = 26$ days, range = 30–117), 37 Session 1 participants (82%) attended Session 2. Attrition did not differ by condition: Eighteen of 23 participants in the affirmation condition returned, and 19 of 22 participants in the no-affirmation condition returned, Yates-corrected $\chi^2(1, N = 45) < 0.2$, n.s. Session 2 attendees and nonattendees did not differ in baseline weight, $F < 1$, n.s.

Because a large waist circumference can be a health risk independent of the health risks of high BMI (WHO, 2000), Session 2 included measures of both weight and waist circumference (WHO, 2000). All but 2 participants consented to waist

Corresponding Author:
Christine Logel, Renison University College, University of Waterloo, 240 Westmount Rd. North, Waterloo, Ontario N2L 3G4, Canada
E-mail: christine@logel.ca

measurement (95%). To reduce participant discomfort, experimenters weighed participants while they held a box of unknown weight and measured participants' waistline with nonelastic string. A different researcher later measured each string and subtracted the box's weight from the recorded weights. The degree of BMI change between participants who were weighed and participants who reported their weight in Session 1 did not differ between sessions, $F(1, 35) = 0.03$, $p = .86$. Working memory was measured with the 2-back version of the *N*-back task, which requires participants to hold a number in memory over multiple trials (in this case, two; see Jonides et al., 1997).

Results

Because previous research has uncovered ethnicity effects on health and cognitive performance (Lear, James, Ko, & Kumanyika, 2010; Walton & Spencer, 2009), we controlled for ethnicity when it significantly predicted outcomes. Randomization was successful; baseline BMI did not differ between the two conditions, Fs < 1, n.s. (See Table S1 in the Supplemental Material available online for correlations between variables.)

Figure 1 displays the results for BMI and weight over time. Both variables yielded the expected Session × Condition interaction in a repeated measures analysis of covariance (ANCOVA)—BMI: $F(1, 35) = 6.98$, $p = .012$; weight: $F(1, 34) = 6.31$, $p = .017$. BMI and weight increased among participants in the no-affirmation condition (mean BMI = +0.51, mean weight = +2.76 pounds) and decreased among participants in the affirmation condition (mean BMI = −0.56, mean weight = −3.41 pounds). An ANCOVA on Time 2 BMI controlling for baseline BMI and on Time 2 weight controlling for baseline weight and height revealed the predicted affirmation effect—BMI: $F(1, 34) = 7.49$, $p = .010$, $d = 0.93$; weight: $F(1, 33) = 6.66$, $p = .015$, $d = 0.90$. The effect of affirmation on BMI remained robust even among the most at-risk participants (i.e., those with baseline BMIs ≥ 25), $F(1, 17) = 4.97$, $p = .040$, $d = 1.08$.

Controlling for baseline BMI and ethnicity, we found that participants in the affirmation condition had smaller waist circumferences ($M = 33.29$ in.) than participants in the no-affirmation condition did ($M = 35.11$ in.), $F(1, 31) = 4.71$, $p = .038$, $d = 0.78$. Participants in the affirmation condition also displayed better working memory than participants in the no-affirmation condition: Analyses controlling for ethnicity revealed that the former group made fewer errors on the 2-back test ($M = 11.37$) than the latter group did ($M = 13.86$), $F(1, 34) = 4.18$, $p = .049$, $d = 0.70$. Among participants in the affirmation condition only, greater working memory also predicted greater weight loss, Working Memory × Condition interaction, $\beta = 0.14$, $t(32) = 2.18$, $p = .04$.

Discussion

In the study reported here, women who completed a values affirmation weighed less, had lower BMIs, and had smaller waistlines than women who had not completed a values affirmation when the two groups were examined after a 2.5-month interval. The magnitude of the effects averaged 0.90 standard deviations, and this weight-loss effect held among overweight participants. These results provide the first evidence that affirming the value a person finds most important can reduce health risks as measured by molar physical markers.

Moreover, working memory, which is important for self-regulation (Hofmann et al., 2010), was higher among participants in the affirmation condition than among participants in the no-affirmation condition after the 2.5-month interval; this finding suggests that affirming values freed up attentional resources. Working memory did not mediate effects of condition on BMI. Instead, affirmation appeared to harness working memory to health-related goals.

How can brief interventions have long-term effects? As previous research has shown, brief interventions can interrupt recursive cycles that would otherwise produce cumulative costs (Cohen et al., 2009; see also Epton & Harris, 2008). Research also suggests that affirming people's values helps them maintain self-control in difficult situations (Schmeichel & Vohs, 2009) or buffers them against life stressors (Creswell et al., 2005; Sherman, Bunyan, Creswell, & Jaremka, 2009). If this is the case, then the affirmation may have interrupted a feedback loop in which failure to achieve health goals worsens

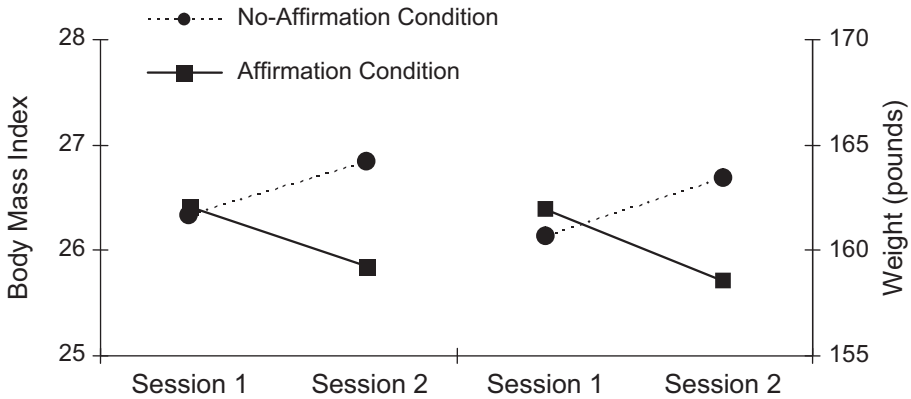

Fig. 1. Mean body mass index and mean weight controlling for height as a function of time of measurement and condition.

psychological functioning, which in turn increases the risk of further failure (Herman & Mack, 1975), in a repeating cycle. Brief interventions can have lasting benefits when they slow the accumulation of costs.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Supplemental Material

Additional supporting information may be found at http://pss.sagepub.com/content/by/supplemental-data

Note

1. Additional details are available from the authors.

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