



Brief research report

Does short-term fasting promote changes in state body image?

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ABSTRACT

Fasting, or going a significant amount of time without food, is a predictor of eating pathology in at-risk samples. The current study examined whether acute changes in body image occur after an episode of fasting in college students. Furthermore, it evaluated whether individual difference variables might inform the relationship between fasting and shifts in body image. Participants ($N = 186$) included male (44.7%) and female college students who completed the Body Image States Scale (BISS) and other eating-related measures before a 24-h fast. Participants completed the BISS again after fasting. While no overall changes in BISS scores emerged during the study, some individuals evidenced body image improvement. Baseline levels of disinhibition and self-reported fasting at least once per week uniquely predicted improvement in body image. Individual difference variables may play a role in how fasting could be reinforced by shifts in body image.

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Introduction

Dieting behaviors are common in Western culture. One way in which individuals may restrict their caloric intake is through skipping meals or fasting. One recent study found that over half of college students endorsed skipping meals in order to induce weight loss, and 23% endorsed fasting for weight loss (Kelly-Weeder, 2011). Fasting may enhance eating disorder risk for vulnerable individuals. For example, a study by Stice, Davis, Miller, and Marti (2008) found that the incidence of fasting in middle school girls was a stronger predictor of eating pathology onset than scores on dietary restraint scales. Biologically, acute dietary restraint depletes tryptophan, a precursor to serotonin, and subsequently increases the likelihood of binge eating to restore tryptophan levels (Kaye, Gendall, & Strober, 1998). Thus, fasting may physiologically promote pathological eating patterns.

Fasting can be distinguished from dietary restraint in that restraint refers to the cognitive effort to reduce caloric intake (Lowe, Whitlow, & Bellowar, 1991), which may or may not result in a negative energy balance. Fasting is the behavioral act of not eating for a period of time, and individuals who report high levels of dietary restraint may engage in fasting as a caloric restriction strategy. However, a number of motivations may precipitate fasting, and

fasting is not always utilized for weight control. For instance, many religions include intermittent fasting as a spiritual practice.

The transdiagnostic cognitive behavioral model of eating disorders posits that individuals engage in dieting as a result of shape and weight concerns (Fairburn, 2008). Thus, this model implies that individuals hold the expectation that dieting behaviors will reduce such concerns. To date, no studies have yet examined how body image might change in individuals after a short-term fast. Individuals who seek to lose weight by fasting may experience a feeling that one's body shape has shifted over a relatively short period of time, and it is possible that immediate improvements in one's body image after acute caloric restriction could reinforce problematic behaviors such as meal skipping and fasting.

Body image appears to have state as well as trait properties, and fluctuates over relatively short periods of time (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002; Melnyk, Cash, & Janda, 2004). Many factors may induce changes in state body image, including social comparison and physiological changes that occur after eating (Espeset, Gulliksen, Nordbo, Skarderud, & Holte, 2012; Salk & Engeln-Maddox, 2012; van den Berg & Thompson, 2007). One study, for example, found that individuals with anorexia nervosa reported eating food as a trigger for body image changes (Espeset et al., 2012). Over time, individuals may pair eating with feelings of fullness and body dissatisfaction. In such instances, fasting could prevent negative self-evaluations that may occur after eating. Additionally, individuals who report high levels of disinhibition may utilize fasting as a body image management strategy after experiencing a period of overeating.

Individual difference variables may also inform the relationship between fasting and change in body image. For instance, research suggests that individuals with eating disorders display a

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Table 1
Descriptive information for variables of interest.

Measure	<i>M</i> (<i>SD</i>)	Range (potential range)	Correlations					
			1.	2.	3.	4.	5.	
1. BMI	23.58 (4.67)	14.91–45.63	–					
2. Age	18.81 (1.24)	18–24	.05					
3. BISS-T1	5.56 (1.52)	2.33–9.00 (1–9)	–.34*	–.15				
4. BISS-T2	5.51 (1.38)	1.33–8.20 (1–9)	–.30*	–.02	.65*			
5. TFEQ-R sum	8.04 (4.97)	0–20 (0–21)	.33*	.04	–.33*	–.22*		
6. TFEQ-D sum	5.50 (3.22)	0–16 (0–16)	.30*	.07	–.40*	–.21*	.29*	

Note. BMI = Body Mass Index; BISS = Body Image States Scale; TFEQ-R = Three-Factor Eating Questionnaire, Restraint subscale; TFEQ-D = Three Factor Eating Questionnaire, Disinhibition subscale.

* $p < .01$.

heightened sensitivity to both neurobiological and psychological shifts when fasting (Kaye et al., 1998). Individuals who practice dietary restraint and fasting on a regular basis may also receive reinforcement for their restraint efforts from improvements in state body image. While fasting may produce improvements in body image for some, others may experience no impact on body image, and, for others, body image may worsen after fasting. For example, men and women's body ideals differ (Cafri & Thompson, 2004), and male ideals may influence men's response in body image after fasting. Many men, for instance, value muscularity as a part of their ideal body image (McCreary & Sasse, 2000), and may feel weaker and less muscular after fasting. Thus, men may experience decreased body image satisfaction after a period of fasting.

The current study explored how state body image shifts after fasting. This study evaluated whether specific characteristics related to changes in state body image after a 24-h fast. We hypothesized that certain predictors would moderate change in body image after fasting, including gender, dietary restraint, disinhibition, and self-reports of recent fasting. We expected that women and those who endorsed fasting would experience positive shifts in body image after fasting, and that high levels of restraint and disinhibition would also relate to body image improvements.

Method

Participants and Procedure

This study was conducted at a large university in the Northeastern United States and was approved by this university's Institutional Review Board. Participants ($N = 186$) included college students in Introductory to Psychology courses who received course credit for study completion. Exclusion criteria included history of an eating disorder or medical problems that would prevent completion of a fast. Participants attended an appointment 24-h before the fast, where they completed an informed consent procedure along with measures of body image satisfaction and eating disorder risk. Height and weight were measured with participants blind to weight status and they were provided instructions on fasting. Individuals could drink water along with any zero calorie beverages, coffee, and tea during the fast. Participants were asked to abstain from all food for 24h, and they were not penalized for failure to complete the fast successfully. Participants attended an appointment at the end of their fast, in which they reported on the success of their fast and completed the Body Image States Scale (BISS). Participants were weighed again at the end of this appointment.

Measures

Dietary restraint and disinhibition. Dietary restraint and disinhibition were measured by the Three-Factor Eating Questionnaire (TFEQ) (Stunkard & Messick, 1985). The restraint subscale includes

21 self-report items about the degree to which individuals purposefully restrict their intake. The TFEQ-R has been shown to predict reduced daily caloric intake over a 7-day period (Laessle, Tuschl, Kotthaus, & Pirke, 1989). The disinhibition subscale contains 16 self-report items about the degree to which individuals are likely to overeat. Both subscales demonstrate reliability on a 1-month test–retest. Internal consistency was good for both scales. Cronbach's alpha in the current sample was .86 for the restraint scale and .77 for the disinhibition scale.

State body image. Body image was measured by the BISS (Cash et al., 2002). The BISS is a 6-item measure that evaluates the degree to which individuals are currently satisfied with their body. BISS items are rated on a 9-point scale. Items evaluate current satisfaction with physical appearance, body size and shape, and weight, along with how individuals currently feel about their looks compared to how they usually feel and compared to the average person. The BISS was developed in a college student sample and is appropriate for use in both men and women. Reliability in the current sample was good (Cronbach's alpha = .88 at both time points).

Fasting. Participants completed an item from the Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000) to evaluate recent fasting. One item on this questionnaire asks participants "How many times per week on average over the past 3 months have you fasted (skipped at least two meals in a row) to prevent weight gain or counteract the effects of eating?" This item was dichotomized (due to being significantly positively skewed and not responding well to data transformations) to produce a group of participants that had endorsed regular fasting (at least once per week, $n = 38$) and a group that did not endorse regular fasting ($n = 132$).

Results

Of the 186 participants, 16 individuals reported that they were unable to fast for the full 24h, and these individuals were removed from further analysis. An examination of these individuals indicates that they did not differ from the overall sample on any variables of interest. Characteristics of the sample along with correlations between variables of interest are reported in Table 1. There were slightly more female ($n = 86$) than male ($n = 76$) participants, and the majority of participants were Caucasian (61.7%), with other races also represented (Asian/Pacific Islander – 13.0%, Mixed Race – 8.6%, African American – 8.0%, Other – 6.8%, Native American – 0.6%). Participants in this study did show an overall reduction in weight after fasting, $M = 0.98 \pm 2.02$ pounds; $t(168) = 6.56$, $p < .001$, providing evidence that, overall, participants did reach a state of relative caloric deprivation during the fasting period. Weight loss did not predict shifts in state body image. As participants were blind to weight status on both days, and thus were unaware of any changes in weight, we did not anticipate that weight loss would precipitate body image changes. Therefore, we did not evaluate this variable in additional analyses.

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