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An exploration of the influence of thinness expectancies and eating pathology on compensatory exercise

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ABSTRACT

Compensatory exercise (exercise performed in an effort to control weight/shape or in response to caloric intake) and thinness expectancies (beliefs that thinness will improve the overall quality of life) are strongly linked to the development, maintenance, severity, and outcome of eating disorders. There is little literature, however, examining the relationship between compensatory exercise and thinness expectancies. The goal of the current study was to examine whether thinness expectancies contribute significant variance in the endorsement of excessive exercise over and above binge eating, restraint, and shape and weight concerns. A total of 677 undergraduate women (mean age = 18.73) completed self-report measures of thinness expectancies and eating disorder symptoms (TREI and EDE-Q). There was a significant association between thinness expectancies and frequency of compensatory exercise behavior. Restraint and subjective binge episodes accounted for significant variance in compensatory exercise. Frequency of objective binge episodes did not, nor did endorsement of thinness expectancies. These findings suggest a potential profile of individuals engaging in compensatory exercise as individuals who actively restrict their diets, feel as if they have binged when they violate those restrictions, and feel the need to excessively exercise to compensate for the subjective binges.

1. Introduction

Compensatory exercise is characterized by weight and shape concerns and intense guilt when missed or postponed (Mond, Phillipa, Rodgers, & Owen, 2006). Prevalence rates as high as 18.1–30% have been detected in studies among undergraduate college women (Berg, Fraizer, & Sherr, 2009; Guidi et al., 2009). Importantly, compensatory exercise is both a symptom and a maintenance factor in eating disorders (Davis et al., 1997; Polivy & Herman, 2002).

College women who engage in compensatory exercise have higher levels of body dissatisfaction, restraint, and behaviors than women who do not (LePage, Crowther, Harrington, & Engler, 2008; Taranis & Meyer, 2011). Among women with eating disorders, excessive exercise is linked to higher levels of anxiety, depression, obsessions, and perfectionism (Shroff et al., 2006). Excessive exercise and residual concern about weight, shape, and eating are predictors of relapse and poor outcome following treatment (e.g., Carter, Blackmore, Sutandar-Pinnock, & Woodside, 2004; Long & Hollin, 1995). Thus, both excessive exercise and beliefs about weight and shape are associated with the development, severity, maintenance, and outcome of eating disorders. Additionally, pathological motivations for exercise are associated with functional impairment and reduced quality of life (Cook et al., 2013).

Thinness expectancies (TE), the extent to which an individual believes thinness will improve their overall quality of life, are strongly related to eating pathology as well (Annus, Smith, & Masters, 2008). TE have been shown to predict the rate of onset and severity of binge-eating and purging among adolescent girls (Smith, Simmons, Flory, Annus, & Hill, 2007) and have been associated with disordered eating in prospective studies utilizing college students (e.g., Fischer, Peterson, & McCarthy, 2013). Additionally, women who participated in an intervention that challenged thinness and restricting expectancies showed a significant decrease in eating disorder symptoms and cognitions (Annus et al., 2008). Therefore, TE may also contribute to the maintenance of eating disorder symptoms. TE are a potential motivating factor for compensatory exercise that has been largely unexplored, despite their association with other forms of compensatory behavior (e.g., self-induced vomiting; Combs, Smith, Flory, Simmons, & Hill, 2010). Thus, the goal of this study is to examine the association between TE and endorsement of compensatory exercise.

TE reflect the extent to which individuals believe the pursuit of thinness results in global life improvements. Thus, it is plausible that individual differences in TE endorsement account for unique variance in compensatory exercise, an activity designed to facilitate weight loss. Additionally, previous research suggests individuals engage in maladaptive compensatory behaviors (such as compensatory exercise) to relieve the effects of binge eating (Fairburn, 2008). Thus, we examined whether or not TE accounted for incremental variance in the endorsement of

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compensatory exercise, over and above subjective (SBE) and objective (OBE) binge eating episode frequency. As other aspects of eating pathology, such as restraint, shape and weight concerns, and eating concerns, reflect behaviors and cognitions related to the pursuit of thinness, we included these variables in our models. We hypothesize a significant positive correlation between TE and the frequency of compensatory exercise and that individual differences in TE will account for unique variance in compensatory exercise above and beyond other symptoms of eating disorders.

2. Method

2.1. Participants

Participants were 677 female students at a large southeastern university who were enrolled in introductory psychology courses. The majority of participants were in their first year of school (64.8%) and varied in age from 17 to 23 ($M = 18.73$, $SD = 1.12$). Most of the sample (75.6%) identified as Caucasian, and the remaining participants identified as African American (10.8%), Asian American (6.5%), Hispanic (3.1%), Bi-racial (2.5%), or Other (1.25%). The average body mass index of participants was 22.45 ($SD = 4.16$).

2.2. Measures

2.2.1. TREI (Hohlstein, Smith, & Atlas, 1998)

The Thinness and Restricting Expectancies Inventory is a 44-item self-report measure that assesses the extent to which individuals believe that thinness and food restriction determine overall life success. Higher scores on the TREI discriminate anorexia nervosa and bulimia nervosa from controls (Hohlstein et al., 1998). Internal consistency in our sample was .98.

2.2.2. EDE-Q (Fairburn & Beglin, 1994)

The Eating Disorder Examination-Questionnaire (EDE-Q) is a self-report measure that assesses eating disorder symptoms for the previous 28 days. The Eating Concern, Shape Concern, Weight Concern, and Restraint subscales were used, as these subscales reflect behaviors associated with eating pathology. Unlike the TREI, which assesses outcome expectancies, the Restraint scale specifically assesses behaviors designed to facilitate weight loss (e.g., going for long periods of time without eating). In order to determine the presence and frequency of OBEs over the previous 28 days, participants endorsed how often they consumed "what other people would regard as an unusually large amount of food" and experienced "a sense of having lost control." SBEs were assessed by asking participants to report the number of "other episodes of eating in which you had a sense of having lost control but have NOT eaten an unusually large amount of food" over the past four weeks. Participants who affirmed having "vigorously exercised as a means of controlling your weight, altering your shape or amount of fat, or burning off calories," were classified as engaging in compensatory exercise, and the number of episodes reported in the past four weeks was used to determine frequency. SBE and OBE frequency counts are not included in the EDE-Q subscales. In this sample all subscale α values were within acceptable limits (Restraint = .84, Eating Concern = .73, Weight Concern = .91, and Shape Concern = .89).

2.2.3. Demographics

A demographic questionnaire was used to collect information about age and race.

2.3. Procedure

Participants signed up for the study via an online system to earn credit for an introductory psychology course. Groups of about 30 participants anonymously filled out printed questionnaires containing the measures described above in a classroom after giving informed consent. This study was approved and conducted in accordance to procedures outlined by the institutional review board.

3. Results

In the sample, 174 (25.7%) participants endorsed compensatory exercise. Sample means for the EDE-Q subscales were as follows: Restraint $M = 1.60$, $SD = 1.46$, Eating Concern $M = 0.85$, $SD = 1.07$, Weight Concern $M = 2.26$, $SD = 1.71$, and Shape Concern $M = 2.21$, $SD = 1.56$. In this sample, frequency of OBEs $M = 0.48$, $SD = 1.86$ and frequency of SBEs $M = 0.83$, $SD = 2.69$.

In order to test our hypothesis that TE are correlated with frequency of compensatory exercise, we conducted bivariate correlations. We included scores from the TREI, the four EDE-Q subscales, frequency of SBEs and OBEs, and endorsement and frequency of compensatory exercise in the correlation matrix. All nine factors were significantly correlated with each other (see Table 1). TE were significantly correlated with frequency of compensatory exercise, $r(624) = .28$, $p < .01$.

We conducted a logistic regression analysis in order to test our hypothesis that high levels of TE explain significant variance in compensatory exercise above and beyond the EDE-Q subscales and binge eating variables. We created a dichotomous variable representing whether or not a participant engaged in compensatory exercise as the outcome variable. The EDE-Q subscales were entered in Step 1 of the model. Frequency of SBEs and OBEs were entered in Step 2. Finally, the TREI total score was entered in Step 3 of the model. The model correctly classified participants as compensatory exercisers or not 79.4% of the time and demonstrated more sensitivity than specificity. Only Restraint scores (OR = 1.66, 95% CI [1.35, 2.05]) and SBEs (OR = 1.13, 95% CI [1.03, 1.24]) explained significant variance in compensatory exercise. In contrast, the frequency of OBEs did not (see Table 2).

4. Discussion

In this sample, there was a significant positive correlation between TE and frequency of compensatory exercise. However, TE did not account for significant variance in compensatory exercise above and beyond the EDE-Q subscales. This may be because behaviors, such as restraint, mediate the relationship between TE and exercise. TE develop as early as fifth grade, and prospectively predict engagement in binge eating and purging over middle school years (Combs, Pearson, & Smith, 2012). Thus, by the time individuals are in college, they have already established a pattern of disordered eating behavior based on early expectancy development.

Our findings that levels of restraint and SBEs explained significant variance in compensatory exercise are consistent with previous research indicating a strong relationship between excessive commitment to exercise and dietary restraint (LePage et al., 2008; McLaren, Gauvin, & White, 2001). Past research suggests that excessive exercise is more common in individuals with anorexia nervosa (both restricting-type and binge/purge-type) than in those with bulimia nervosa (Davis et al., 1997; Grave, Calugi, & Marchesini, 2008) and that reported binge episodes tend to be smaller and contain less calories in individuals with anorexia nervosa (Burd et al., 2009). These studies suggest that some individuals with diagnosable eating disorders engage in compensatory exercise after eating smaller amounts of food and are consistent with our finding that restraint and SBEs (but not OBEs) are significant predictors of compensatory exercise. This outcome is notable, as one might hypothesize eating an objectively large amount of food may be associated with compensating through exercise. However, our data were not consistent with this hypothesis.