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# Predicting Changes in Negative Emotional Eating following Bariatric Weight-Loss Surgery

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# Predicting Changes in Negative Emotional Eating following Bariatric Weight-Loss Surgery

## **Abstract**

**Background:** Obesity has been associated with higher rates of social anxiety, and social anxiety has been linked to increased emotional eating. We hypothesized that reductions in BMI and social anxiety following bariatric surgery would predict decreases in negative emotional eating.

**Methods:** Participants were 206 bariatric weight loss surgery patients who completed self-report questionnaires. Liebowitz Social Anxiety Scale (LSAS) scores measured social anxiety. Scores from the negative emotion subscale in the Emotional Appetite Questionnaire (EMAQ) reflected eating due to negative emotions. BMI was calculated from self-report data. All data were collected shortly preceding surgery and at 1-year post surgery.

**Results:** Multiple regression was performed to examine whether changes in BMI and social anxiety predicted changes in negative emotional eating. BMI, social anxiety scores and negative emotional eating decreased significantly 1-year post surgery. Changes in BMI did not significantly predict changes in negative emotional eating. Decreases in social anxiety, however, did predict decreases in negative emotional eating following bariatric surgery, even when controlling for changes in BMI,  $p = .001$ .

**Conclusions:** These research findings suggest that there may be behavioral benefits to bariatric surgery when psychosocial improvements occur, independent of weight loss. It would be worthwhile to test whether targeting social anxiety helps reduce negative emotional eating in obese participants.

## **Keywords**

fsc2015

## **Disciplines**

Psychology

## **Comments**

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## Background

- Research has shown that candidates for weight loss surgery report an increased prevalence of psychopathology, including social anxiety (e.g., Sarwer, Wadden & Fabricatore, 2005; Rosik, 2005; Mitchell et al., 2012).
  - Social anxiety is the belief that one is being negatively evaluated, ridiculed, or subject to hostility from others in social situations.
- Obese people are subject to high levels of prejudice and discrimination in their professional, educational, medical, social and family lives (Puhl & Heuer, 2009).
  - Stigmatization contributes to increased feelings of being negatively evaluated (Puhl & Heuer, 2009) and creates a confirmatory environment for social anxiety (Farmer & Kashdan, 2012)
- Thus, **weight-loss surgery (WLS) patients may be particularly subject to negative emotions from social anxiety and stigmatization.**
- In order to manage these negative emotions, WLS patients may engage in a variety of coping strategies including emotional eating. (e.g., Geliebter & Aversa, 2003)
  - Emotional eating, which includes **eating as a response to negative emotions, has been linked to experiencing weight-based stigmatization** (Puhl & Heuer) and **social anxiety** (Ostrovsky et al., 2013).
- After WLS, **patients tend to experience decreases in both BMI and social anxiety** (Sarwer et al., 2005).
  - Improvements in social anxiety tend to be sustained over time for WLS patients (Nickel, Loew, Bachler 2007; Jarvholm et.al., 2011).

## Hypotheses

### Hypotheses

- Decreases in BMI following WLS will predict decreases in negative emotional eating.
- Decreases in social anxiety following WLS will predict decreases in negative emotional eating:
  - Decreases in social anxiety should include a decrease in general negative emotion within social situations.
  - Decreases in negative emotions will result in less emotional eating due to negative emotions.
- In sum, we hypothesized that reductions in BMI and social anxiety following WLS would predict a decrease in emotional eating due to negative emotions.**

## Method

### Participants

- 81 WLS patients (recruited from a bariatric surgery office in a major urban hospital) who completed questionnaires immediately before surgery (Time 1) and again one year post-surgery (Time 2).

### Measures

- BMI:** Body Mass Index was calculated from patients' self-reported height and weight.
- Social Anxiety:** The Liebowitz Social Anxiety Scale- Self Report version (LSAS-SR; Baker, Heinrichs, & Kim; 2002) has 24 items and measures social fear, anxiousness, anxiety and avoidance on a 0 (none) to 3 (severe) scale. Higher scores indicate higher anxiety levels.
- Emotional Eating:** The Emotional Appetite Questionnaire (EMAQ; Geliebter & Aversa, 2003) allows users to rate how likely they are to eat as a result of positive and negative emotions and situations on a 9-point scale. The current study focused on the subscale for eating due to negative emotions. Higher scores indicate higher negative emotional eating.
- For all measures, change scores were calculated by subtracting participants' scores at Time 2 minus Time 1.

### Data Analysis

- A multiple regression was performed to examine whether changes in BMI and social anxiety predicted changes in negative emotional eating.

## Results

- BMI, Social Anxiety, and Negative Emotional Eating all decreased from baseline to one year post-surgery (see table for means and paired t-test results).
- A multiple regression showed that
  - Changes in BMI did not significantly predict changes in negative emotional eating** when controlling for changes in social anxiety,  $\beta = -.04$ ,  $p = .72$ .
  - Decreases in social anxiety predicted decreases in negative emotional eating** when controlling for changes in BMI,  $\beta = .40$ ,  $p = .001$ .
- These results were consistent across regression models that were run examining each predictor individually and models that controlled for all variables at Time 1.

	Time 1	Time 2	<i>p</i>
BMI	47.2	33.4	<.001
Social Anxiety	19.1	15.8	.154
Emotional Eating	5.2	4.2	.012

## Conclusions

- As hypothesized, following bariatric surgery, decreases in social anxiety predicted a decrease in emotional eating due to negative emotions.
  - These research findings suggest that there may be behavioral benefits to bariatric surgery when psychosocial improvements occur.
  - This effect occurred even when controlling for changes in BMI, suggesting that psychosocial factors have a unique role in predicting behavior after WLS.
- Contrary to our hypothesis, decreases in BMI did not predict decreases in emotional eating.
  - Though there was a significant decrease in BMI at 1-year post-surgery, the average participant was still obese. Thus, participants may not have experienced a reduction in experiencing weight-based stigmatization and the negative emotions that often accompany this experience.
  - However, these findings more broadly suggest that weight loss alone may not prompt changes in eating patterns.
- In sum, improving WLS patients' psychosocial well-being, independently from weight loss, may assist in improving bariatric surgery outcomes.**
- Future studies should examine
  - the specific role of changes in negative emotion as a mediator of the relationship between social anxiety and negative emotional eating post-WLS.
  - whether targeting social anxiety helps reduce negative emotional eating in obese participants.