Published in final edited form as:

Obes Surg. 2018 November ; 28(11): 3724–3728. doi:10.1007/s11695-018-3490-7.

Causal Attributions for Obesity Among Patients Seeking Surgical Versus Behavioral/Pharmacological Weight Loss Treatment

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Abstract

Obesity is frequently attributed to causes such as laziness and lack of willpower and personal responsibility. The current study identified causal attributions for obesity among patients seeking bariatric surgery and compared them to those among patients seeking less invasive weight loss treatment (behavioral/pharmacological). The 16-item Causal Attributions for Obesity scale (CAO; rated 1–7) was administered to 102 patients seeking bariatric surgery (sample 1) and 178 patients

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Conflict of Interest: RLP discloses serving as a consultant for Weight Watchers, as well as receiving grant support outside of the current work from Weight Watchers. TAW discloses serving on advisory boards for Novo Nordisk and Weight Watchers, as well as receiving grant support, on behalf of the University of Pennsylvania, from Eisai Co. during the conduct of this study. KCA discloses serving as a consultant for Weight Watchers and receiving grant support, on behalf of the University of Pennsylvania from Novo Nordisk. AMC discloses receiving grant support from Shire Pharmaceuticals, outside the current work. NA discloses serving as a consultant for Novo Nordisk. RIB discloses serving as a consultant to Eisai Co. JST discloses serving as a consultant for Novo Nordisk.

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Ethical Statement: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent Statement: Informed consent was obtained from all individual participants included in the study.

seeking behavioral/pharmacological weight-loss treatment (sample 2). Between-subjects analyses compared CAO ratings for the two samples. Results showed that behavioral factors were the highest-rated attributions in both samples. Sample 1 had higher ratings of biological and environmental factors than did sample 2. Overall, patients seeking bariatric surgery had a more complex conceptualization of obesity than did patients seeking behavioral/pharmacological treatment.

Keywords

Attributions; obesity; personal responsibility

Introduction

Obesity is commonly portrayed as an issue of “personal responsibility” [1]. This conceptualization rests on the prevailing belief that obesity is primarily caused by behavioral factors, such as diet and exercise [2], and that people have total control over these behaviors [3]. Thus, individuals with obesity are perceived as irresponsible, as well as lazy and lacking willpower, due their apparent inability to control their health behaviors and their weight [1,3]. This assignment of blame and perceived weakness of character due to weight contributes to weight-based stigma, which is associated with impaired mental and physical health [4,5].

The current study examined causal attributions among treatment-seeking individuals with obesity. We expanded upon prior research by comparing differences in causal attributions between patients with obesity pursuing two different forms of weight loss treatment: 1) bariatric surgery and 2) a combined behavioral and pharmacological treatment. We hypothesized that attributions would differ between groups due to the clinical recommendation of bariatric surgery for patients who have not responded to behavioral and pharmacological treatments. Thus, compared to patients seeking behavioral/pharmacological treatment, we expected patients seeking bariatric surgery to show stronger endorsement of uncontrollable attributions, such as biology and the environment.

Methods

The current study drew from two samples of participants. Sample 1 was comprised of adults who sought bariatric surgery at a university hospital and had a BMI 40kg/m² or 35kg/m² with a medical comorbidity. Sample 2 was part of a larger clinical trial of lorcaserin combined with behavioral weight loss maintenance (WLM) counseling that has been described previously [6]. Eligible participants were age 21–65 years and had a body mass index (BMI) 33 kg/m² and 55 kg/m² (or 30 kg/m² and an obesity-related comorbidity). Exclusion criteria included serious medical conditions, current major depression or use of anti-depressants, active suicidal ideation, and a history of suicide attempts [6].

Study Design and Procedures

Participants in sample 1 were enrolled in a preoperative bariatric surgery program, which involved monthly meetings with a dietitian to improve eating and physical activity prior to surgery and to learn about the postoperative diet. All patients received an optional questionnaire (with an informed consent form) when they enrolled in the bariatric surgery program. At the preoperative psychosocial-behavioral evaluation, a psychologist collected completed consent forms and questionnaires from patients who chose to participate. The informed consent also gave permission to access patients' electronic medical records (EMRs).

Participants in sample 2 were enrolled in a long-term WLM study consisting of a 14-week low-calorie diet program, followed by a 52-week randomized controlled trial of lorcaserin versus placebo for WLM. The study protocols for samples 1 and 2 were approved by the university's institutional review board.

Study Measures

At baseline (prior to any weight loss), participants in samples 1 and 2 completed the Causal Attributions for Obesity (CAO) scale [5]. The scale asks participants to rate the extent to which obesity is caused by 16 potential factors (described in more detail below). Items were rated from 1 (not at all) to 7 (entirely).

In sample 1, demographic characteristics were self-reported and confirmed with patient EMRs, and patients' BMIs from the date of the psychosocial-behavioral evaluation were extracted from EMRs. In sample 2, demographic characteristics, as well as height and weight to compute BMI, were assessed at baseline.

Statistical Analyses

We first assessed categories of causal attribution factors in the CAO scale using factor analysis with Varimax rotation and an Eigenvalue > 1 . We used sample 2 for the factor analysis due to its larger sample size. Factor analysis was then repeated with sample 1. To resolve potential discrepancies in factor loadings between the two samples, internal reliability of each of the factors was computed (with Cronbach's α). Items that did not consistently load in both samples and negatively affected the internal reliability of factors were excluded. *A priori* knowledge about causes (and perceived causes) of obesity were also used to guide final factor groupings [4,7]. Once factors were formed, item scores were averaged for each factor. Between subjects analyses of mean ratings for each CAO factor were conducted with linear regression analyses, controlling for variables that differed between samples (as determined by analyses of variance and logistic regression).

Results

Participant Characteristics

Sample 1 consisted of 102 patients seeking bariatric surgery (37.3% black, 61.8% white, 3.9% Hispanic, 87.3% female, $M_{age}=46.4\pm12.4$ years, $M_{BMI}=45.3\pm7.1$ kg/m²). Sample 2 was comprised of 178 participants enrolled in the behavioral/pharmacological treatment

study (71.3% black, 21.9% white, 6.2% Hispanic, 87.6% female, $M_{age}=44.2\pm11.2$ years; $M_{BMI}=40.9\pm5.0$ kg/m²). Compared to sample 2, sample 1 had a higher average BMI ($p<0.001$) and fewer black participants (odds ratio[OR]=0.24, $p<0.001$). As a result, BMI and race (black versus non-black) were included as covariates in between-subjects analyses. BMI was transformed with the natural log to meet assumptions of normality for between-subjects analyses.

Factor Analysis

Factor analysis of the CAO scale in sample 2 yielded a four-factor solution (all factor loadings >0.5 ; see Table 1a). Factors were labeled as follows: Biology/Brain (genetic factors; metabolic defect; endocrine/hormonal disorder; addictive properties of food; and psychological problems); Behavior (eating the wrong foods and not enough physical activity); Environment (poor nutritional knowledge; limited access to healthy food; marketing of unhealthy foods; and low income); and Personal Responsibility (weakness of character; lack of willpower; and laziness). Two additional items (overeating and restaurant eating) loaded onto the Behavior factor in sample 2 but not in sample 1. (Factor analysis of sample 1 yielded a five-factor solution; see Table 2.) The internal reliability of the Behavior factor in sample 1 increased from 0.54 to 0.64 when these two items were removed, and their removal did not affect the reliability of this factor in sample 2 (0.75 increased to 0.76), so these two items were excluded from analyses. The item of psychological problems did not load onto the Biology/Brain factor in sample 2. However, this factor had good internal reliability in sample 1 ($\alpha=0.75$), so this item was retained in the factor.¹ All other factors had good reliability in both samples (α values ranged from 0.74 to 0.82).

Between-Subjects Analyses of Causal Attribution Factors

Table 2 shows mean scores on all four factors across both samples. In both samples, Behavior was the highest-rated factor, and Personal Responsibility was the lowest-rated factor. Linear regression results (controlling for BMI and race) showed that, compared to sample 2, sample 1 had higher ratings of the Behavior, Biology/Brain, and Environment factors. No differences between groups were found for the Personal Responsibility factor. In addition, compared to non-black participants, black participants had higher ratings of the Behavior ($\beta=0.13$, $p=0.04$) and Environment ($\beta=0.14$, $p=0.03$) factors.

Discussion

The current study showed significant differences in causal attributions for obesity between patients seeking surgical versus behavioral/pharmacological weight loss treatment. Controlling for BMI, patients seeking bariatric surgery had higher ratings of behavioral, biological, and environmental attributions than did patients enrolled in a behavioral/pharmacological weight-loss treatment program. In contrast to a common misperception that patients who seek bariatric surgery are looking for an “easy fix” to their weight and are too lazy to make changes to their eating and physical activity habits [8], the heightened

¹Analyses were also conducted excluding the “psychological problems” item from the Biology/Brain factor, and results did not change.

behavioral ratings in the current bariatric sample suggest that these patients are indeed aware of the importance of eating and activity in managing obesity. The preoperative dietary counseling that patients are required to undergo may have contributed to the high behavioral ratings in this group.

Elevated ratings of biological and environmental factors among patients seeking bariatric surgery suggest that they perhaps have a greater appreciation for the complex factors that determine weight than patients seeking behavioral and pharmacological treatment. Prior research has shown that many patients seeking bariatric surgery have an extensive history of weight loss attempts, some of which resulted in short-term weight reduction but subsequent weight regain [9]. A history of unsuccessful weight loss or maintenance with behavioral and pharmacological treatments may increase understanding of the role of uncontrollable factors in determining weight and, thus, also increase willingness to seek a more invasive treatment that can better help patients to overcome those factors.

Of note, across samples, black participants had higher ratings of behavioral and environmental factors than non-black participants. More research is needed to understand the cultural factors that may explain these differences. In addition, we did not collect information related to income and socioeconomic status in this study. Given evidence of pronounced racial disparities in income and wealth in the US [10], it is possible that environmental barriers to healthy eating and physical activity – such as limited financial resources, access to healthy food, and neighborhood safety – could have been more salient to black participants. Future studies should more carefully examine socio-environmental factors that may influence causal attributions for obesity. Prior evidence suggests that these attributions could potentially affect weight loss outcomes [5,11]. However, more research is needed to understand these effects among treatment-seeking patients with obesity.

Acknowledgements:

We thank Dr. Noel Williams for assistance with participant recruitment and data collection.

Funding: This study was supported, in part, by an investigator-initiated grant, on behalf of the University of Pennsylvania, from Eisai Co (TAW). RLP is supported by a mentored patient-oriented research career development award from NHLBI/NIH (#K23HL140176). AMC is supported by a mentored patient-oriented research career development award from NINR/NIH (#K23NR017209).

Clinical Trial Registration: [ClinicalTrials.gov](https://clinicaltrials.gov) identifier NCT02388568.

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Table 1a.

Factor loadings for patients seeking behavioral/pharmacologic weight loss treatment (sample 2)

Item	Factor 1 (Biology/Brain)	Factor 2 (Behavior)	Factor 3 (Environment)	Factor 4 (Personal Responsibility)
Genetics	0.57	0.10	0.22	−0.02
Metabolic defect (i.e., problem with digestion/metabolism)	0.57	−0.05	0.34	0.25
Endocrine (i.e., hormonal) disorder	0.83	−0.02	0.16	0.04
Addictive properties of food	0.72	0.27	0.05	0.16
Weakness of character	0.38	0.11	−0.13	0.61
Lack of willpower	0.13	0.25	0.08	0.84
Laziness	0.01	0.16	0.28	0.80
Psychological or emotional problems	0.61	0.37	0.23	0.22
Not enough physical activity	0.02	0.68	0.09	0.38
Eating the wrong foods	0.03	0.85	0.13	0.21
Overeating	0.32	0.69	0.15	0.17
Poor nutritional knowledge	0.24	0.43	0.61	0.10
Restaurant eating	0.09	0.57	0.32	−0.05
Limited access to healthy foods	0.25	0.29	0.77	−0.08
Marketing of unhealthy food	0.28	0.15	0.69	0.08
Low income	0.10	0.07	0.81	0.21

Table 1b.

Factor loadings for patients seeking bariatric surgery (sample 1)

Item	Factor 1 (Biology/Brain)	Factor 2 (Behavior)	Factor 3 (Environment)	Factor 4 (Personal Responsibility)	Factor 5
Genetics	0.82	−0.06	0.16	−0.08	0.02
Metabolic defect (i.e., problem with digestion/metabolism)	0.86	0.18	0.11	−0.03	−0.09
Endocrine (i.e., hormonal) disorder	0.74	−0.05	0.21	0.16	0.08
Addictive properties of food	0.61	0.17	0.02	0.31	0.38
Weakness of character	0.16	0.03	0.08	0.84	0.22
Lack of willpower	0.06	0.22	0.14	0.82	0.17
Laziness	−0.03	0.51	0.10	0.63	−0.14
Psychological or emotional problems	0.17	0.35	0.42	0.22	0.18
Not enough physical activity	−0.06	0.77	0.12	0.24	−0.10
Eating the wrong foods	0.11	0.75	0.13	0.09	0.28
Overeating	0.05	0.10	0.15	0.21	0.85
Poor nutritional knowledge	−0.12	0.12	0.73	−0.04	0.28
Restaurant eating	0.27	0.46	0.10	−0.43	0.32
Limited access to healthy foods	0.25	0.05	0.83	0.02	0.14
Marketing of unhealthy food	0.14	0.10	0.77	0.10	0.02
Low income	0.24	0.08	0.76	0.14	−0.23

Table 2.

Means $\pm$ standard deviations and between-subject differences in ratings of Causal Attributions for Obesity factors

Factor	Sample 1	Sample 2	Between-Subjects Comparison		
			B	SE	β
Behavior	5.92 $\pm$ 0.96	5.70 $\pm$ 1.14	0.30	0.15	0.13 [*]
Biology/Brain	4.82 $\pm$ 1.11	4.33 $\pm$ 1.25	0.50	0.17	0.20 ^{**}
Environment	4.74 $\pm$ 1.54	4.13 $\pm$ 1.51	0.84	0.21	0.26 ^{***}
Personal Responsibility	3.74 $\pm$ 1.62	4.11 $\pm$ 1.42	-0.36	0.21	-0.11

Note. Sample 1 = patients seeking bariatric surgery; Sample 2 = patients seeking behavioral/pharmacological weight loss treatment; SE=Standard error Analyses controlled for the natural log of body mass index (centered) and race (black versus non-black). Due to missing data for specific scale items, *N*s for sample 1 ranged from 99–102, and *N*s for sample 2 ranged from 167–174.

^{*}
 $p < 0.05$

^{**}
 $p < 0.01$

^{***}
 $p < 0.001$