



## Further statistical and clinical validity for the Weight Efficacy Lifestyle Questionnaire-Short Form



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### ABSTRACT

Identifying barriers to long-term adherence to reduced energy intake and increased physical activity level is critically important for obese patients seeking weight loss treatment. Previous research has identified that one such barrier is low eating self-efficacy or poor confidence in one's ability to control eating behavior in the presence of challenging situations. Accordingly, a valid, brief measure of eating self-efficacy for longitudinal assessment of weight loss and regain is needed. The purpose of this study was to test the internal consistency and clinical validity of the Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF). Participants were 1740 consecutive obese patients who presented for a psychological evaluation in consideration for bariatric surgery. Median BMI was 44.9 (range: 35.0–111.9), age 48.7 years (range: 18.9–77.3 years), and patients were predominantly female (71.1%) and Caucasian (90.8%). The median WEL-SF total score was 56 (range: 0–80) and Cronbach's alpha measuring internal consistency was 0.92 with a one-factor structure. In terms of clinical validation, lower WEL-SF total scores were significantly associated with higher rates of binge eating episodes ( $P < 0.0001$ ), food addiction severity and dependence ( $P < 0.0001$ ), night eating syndrome ( $P < 0.0001$ ), depression ( $P < 0.0001$ ), and anxiety ( $P < 0.0001$ ). In contrast, higher WEL-SF total scores were associated with higher weight management self-efficacy ( $P < 0.0001$ ) and motivation to make positive lifestyle changes ( $P < 0.0001$ ). Taken together, these findings suggest that the WEL-SF is a psychometrically valid clinically meaningful measure of eating self-efficacy.

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### 1. Introduction

In spite of many advances in medical and surgical treatments for obesity, maintaining lost weight remains a significant challenge for obese patients, and many patients relapse (MacLean et al., 2014). A complex interaction of biological adaptation, environmental factors, and behavioral recidivism contribute to weight regain following weight loss treatment (MacLean et al., 2014; Ochner, Tsai, Kushner, & Wadden, 2015). One possible explanation for behavioral recidivism is that when weight loss plateaus after 6–8 months of treatment, the perceived effort required to adhere to a healthy diet and exercise prescription is greater than the perceived benefit (Perri, 1998). Thus, identifying barriers to long-term adherence to reduced energy intake and increased physical activity is critically important. One such barrier is low eating self-efficacy (Clark, Abrams, Niaura, Eaton, & Rossi, 1991). Self-efficacy is defined as confidence in one's ability to perform specific behaviors in the presence of challenging situations (Bandura, 1977).

Previous research has consistently demonstrated that eating self-efficacy improves with weight loss and remains high when lost weight is maintained (Batsis et al., 2009; Clark, Cargill, Medeiros, & Pera, 1996; Clark et al., 1991; DePue, Clark, Ruggiero, Medeiros, & Pera, 1995). Given the pragmatics of a busy clinical practice, a brief valid measure of eating self-efficacy has the potential to improve patient screening and care. The Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF), measures patients' confidence in their ability to control eating behavior in challenging situations and was developed as a brief measure for use in research and clinical practice (Ames, Heckman, Grothe, & Clark, 2012).

The two aims of this study were to provide further statistical and clinical validation of the WEL-SF in a large multisite sample of obese patients seeking bariatric surgery. First, normative values and internal consistency of the WEL-SF were examined. We hypothesized that the WEL-SF items would demonstrate strong internal consistency and a one-factor structure as found in previous studies (Ames et al., 2012; Flolo, Andersen, Nielsen, & Natvig, 2014). Second, a recent study revealed high rates of disordered eating behaviors prior to bariatric surgery in patients who participated in the Longitudinal Assessment of Bariatric Surgery-2 (LABS-2) (Belle et al., 2013). These behaviors included binge eating, night eating, grazing, skipping breakfast and evening hyperphagia and were associated with greater levels of psychopathology (Mitchell, King, Courcoulas, et al., 2014b). In terms of clinical

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validation, the associations between WEL-SF total scores and problematic eating behaviors and mood were examined. We hypothesized that lower total scores on the WEL-SF would be significantly associated with higher levels of disordered eating behaviors and lower mood. In contrast, we hypothesized that higher WEL-SF total scores would be significantly associated with higher ratings of self-efficacy for exercise, weight management, and motivation to make lifestyle changes.

## 2. Methods

### 2.1. Study participants

This study included a total of 1740 consecutive patients who presented for a psychological evaluation at a multisite medical center in the south-east ( $N = 381$ ) and mid-west ( $N = 1359$ ) for consideration of bariatric surgery between January, 2012 and October, 2014. The evaluation consisted of a structured clinical interview and completion of validated screening questionnaires recommended by LABS-2 (Belle et al., 2013). Patients were excluded if they were younger than 18, if they had a body mass index (BMI) of less than 35, or if they did not have complete data on all 8 items that comprise the WEL-SF. At the time of the evaluation, demographic information including age, gender, race, and BMI were collected. Information was unavailable regarding race for 22 patients. This study was approved by our Institutional Research Review Board.

### 2.2. Measures

#### 2.2.1. Eating self-efficacy

The Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF) is an 8-item self-report measure of confidence for controlling eating behavior in a variety of challenging situations (Ames et al., 2012). Items are rated on a 0 to 10 scale, with a score of 0 indicating “not confident at all that I can resist overeating” and a score of 10 indicating “very confident that I can resist overeating.” The measure yields a total score of 80 with lower scores revealing less confidence in one's ability to control eating behavior.

#### 2.2.2. Binge eating disorder

The Questionnaire of Eating and Weight Patterns-Revised (QEWP-R) is a self-report measure (Spitzer, Yanovski, S., & Marcus, M.D., 1993) that provides acceptable sensitivity in identifying individuals with Binge Eating Disorder based on Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria (American Psychiatric Association, 1994). The items used to assess symptoms of Binge Eating Disorder included consumption of a large amount of food and sense of loss of control on at least 2–3 days per week during the previous 6 months. Patients who endorsed “yes” on these items were considered to have a positive screen for Binge Eating Disorder. Information regarding the QEWP-R was not available for 51 patients.

#### 2.2.3. Food addiction

The Yale Food Addiction Scale (YFAS) is a 25-item self-report measure of food addiction (Gearhardt, Corbin, & Brownell, 2009). Patients answered items on a scale ranging from “never” to “4 or more times per day” and items with a dichotomous “yes” or “no” answer. Answers on these items are assigned a value of 0 or 1. The measure yields a severity index ranging from 0 to 7 that combines items designed to assess tolerance, withdrawal, continued use, activities given up, loss of control, and unsuccessful attempts at cutting down. The measure also yields a dependence score of 1 (diagnosis met) or 0 (diagnosis not met). The dependence score consists of items that assess level of distress and impaired functioning combined with a severity score of  $>3$ . The YFAS has previously been validated with patients seeking bariatric surgery (Meule, Heckel, & Kubler, 2012). The YFAS severity index was not

available for 3 patients, while the dependence score was not assessed for 31 patients.

#### 2.2.4. Night eating syndrome

The questions used in LABS-2 to measure Night Eating Syndrome were used in this study (Belle et al., 2013). The question, “During the past 3-months how much of your daily intake did you consume after supper time?” (None, Up to 25%, About half, More than half, Almost all), was used to measure evening hyperphagia. The question, “During the past 3-months if you got up in the middle of the night, how often did you snack?” (Never, Sometimes, About half the time, Usually, Always), was used to measure nocturnal eating. Patients who endorsed about half or greater on either item were considered to have a positive screen for Night Eating Syndrome (Mitchell, King, Courcoulas, et al., 2014b). These two questions were not answered by 58 and 30 patients, respectively.

#### 2.2.5. Depressive symptoms

The Patient Health Questionnaire-9 (PHQ-9) is a 9-item self-report measure of depression symptoms with excellent internal consistency and test–retest reliability (Kroenke, Spitzer, & Williams, 2001). Patients answer items on a scale 0 (not at all) to 3 (nearly every day) and responses are categorized according to level of depression including minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27). Information was not available for the PHQ-9 for 242 patients.

#### 2.2.6. Anxiety level

The Generalized Anxiety Disorder-7 (GAD-7) is a 7-item self-report measure designed to identify probable cases of GAD with a score of 10 or greater (Spitzer, Kroenke, Williams, & Lowe, 2006). Patients answer items on a scale 0 (not at all) to 3 (nearly every day) and responses are categorized according to level of anxiety including minimal (0–4), mild (5–9), moderate (10–14), and severe (15–21). The GAD-7 was not assessed for 125 of the study patients.

#### 2.2.7. Alcohol use

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item self-report measure of three domains including hazardous alcohol use, dependence symptoms, and harmful alcohol use (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Each item contains a set of responses to choose from where scores range from 0 to 4. A score of 8 or greater is an indicator of harmful or hazardous alcohol use and possible dependence. A total of 118 patients did not have information available regarding the AUDIT.

#### 2.2.8. Victim of childhood sexual abuse

The Adverse Childhood Experiences (ACE) scale is a 10-item self-report measure including domains of abuse, neglect, and household dysfunction (Dube et al., 2003). Sexual abuse was defined by question number three from the ACE, “Did an adult or a person at least 5 years older than you touch or fondle you or have you them touch in sexual way OR try to have oral, anal, or vaginal sex with you?” (Yes or No). During the study period, the ACE replaced the previous measure of childhood sexual abuse to reduce cost. Thus, it was collected for only half of the study period; the ACE was not assessed for 768 of the study patients.

#### 2.2.9. Smoking status

Patients self-reported their smoking status with the following question. “Please categorize your history of tobacco use: never smoked, former smoker, current smoker.” Smoking history was not available for 380 patients.

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