

PSYCHOLOGICAL ADJUSTMENT TO SURGICALLY INDUCED WEIGHT LOSS:
DISTINGUISHING FACTORS IN BARIATRIC PATIENTS

by

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Bariatric surgery is an effective tool to promote weight loss and reduction of co-morbidities associated with obesity. A battery of pre-operative tests and consultations are required to certify someone as a candidate for such surgery. Even though the patient may be prepared for physical change, they may not be fully prepared for the psychological, spiritual and social challenges that rapid weight loss presents. Based on Hermans' Dialogical Self Theory, this research introduces a series of questions to assess which patients may be having difficulty with psychological adaptation to their diminished weight. Based on these 25 questions, participants are clustered into predominately 'I-obese' or 'I-ex-obese' categories. Female participants who remain in an 'I-obese' psychological state, were found more likely to have body image concerns, view their health as strongly impacted by the influence of others and have difficulty identifying their feelings. In addition, they were significantly more likely to have lower health-related quality of life scores in vitality, social functioning and mental health.

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DEDICATION

This dissertation work is dedicated to the memory of my father, James Milton Oakley, who prized education and life-long learning, especially for his daughters.

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I would like to thank Dr. Ann Schreier (Chairperson), Dr. Janice Neil, Dr. Robert Carels and Dr. Melvin Swanson who served on my dissertation committee. Also, thank you to Mrs. Kristy Jo Cook, who served as a research assistant during data collection.

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CHAPTER 1: INTRODUCTION

Over the last forty years, BMI has increased in the United States and around the world. The scientific world is still working to understand the roots of obesity and the myriad of ways that being obese impacts the individual's health and how the individual sees himself or herself. Worldwide, there are 2.1 billion people in the world defined as overweight or obese. Overweight or obesity is the cause of 3.4 million deaths per year from associated co-morbid diseases (Caulfield, 2015). Over 7 million quality-adjusted life years are lost in the US annually due to excess body weight (Meunig, Jia, Lee and Lubetkin, 2008). The cost for caring for overweight and obese individuals is rising rapidly, making attempts to decrease health care costs very difficult. It is estimated that \$147 billion is spent yearly caring for the obese. Obese individuals account for 77% more medication costs than non-obese individuals each year (Finkelstein, Trogon, Cohen & Dietz, 2009). The effects of obesity are not simply confined to health. There are numerous psychological and emotional issues concerning body image, how one sees himself or herself and how they are seen by the world (Carels et al., 2014). Obesity may affect one's ability to meet life's demands and fulfill societal roles. There is a positive correlation between work absenteeism, decreased production, and employee obesity (Bilger, Finkelstein, Kruger, Tate & Linnan, 2013).

Bariatric surgery has increased in prevalence as a way to address the health issue of obesity. The global number of bariatric surgical procedures performed in 2013 was 468,609, 95.7% of which were done laparoscopically. There are multiple bariatric surgery procedures, but the two most commonly performed are the Roux-En-Y Gastric Bypass (RYGB) and the Vertical Sleeve Gastrectomy (VSG) which account for 82% of all bariatric procedures (Angrisani et al., 2015). These two procedures are popular because greater weight loss can be achieved over

gastric banding procedures. The RYGB has both a restrictive and malabsorptive component (Furtado, 2010), while the VSG is a restrictive procedure (Colquitt, Pickett, Loveman & Frampton, 2014; Lewis, Dirksen, Heitkemper, Bucher & Camera, 2011).

When obese patients decide to pursue bariatric surgery, they usually experience rapid weight loss. Although this weight loss is exciting and often something that the patient has longed to achieve, there are challenges as well. After surgery, there are strict guidelines for eating, drinking and exercising that the patient must follow for the rest of their life. Sometimes in the focus on preparing pre-operatively for physical change, the patient is not fully prepared for the psychological, spiritual and social challenges that rapid weight loss presents. Bariatric surgery impacts the individual in a holistic manner, since physical, psychological, emotional and social factors are part of the total health of a post-operative patient. The body is the external self that we present to the world, and as a result, the opinions and support of others may impact the post-surgical adjustment and ultimate weight loss (Livhits et al., 2011). Therefore, recovery and adaptation should be viewed through a holistic lens (Lazzeretti, Rotella, Pala and Rotella, 2015). Deep seated emotional and social issues may once again emerge after surgery (Canetti, Bachar & Bonne, 2016), alluding to the multi-dimensional nature of obesity and the weight-loss experience. French researchers found that if the pre-operative psychological state and body image of a bariatric patient is disturbed, there is a greater risk of deepening psychological disturbance and weight regain after surgery (Claudon, Roche-Bauchet, Guirking, Alnot & Ziegler, 2012). Psychological constructs are studied in obese patients in order that we may understand the influence of such factors on a patient's successful recovery and mental adaptation to diminished weight. Four of the most commonly studied constructs are body image, locus of

control, health-related quality of life, and personality traits such as alexithymia (Lazzeretti et al., 2015). Each of these constructs are discussed below.

Body Image is a foundational psychological construct that has been analyzed in various groups who have appearance-altering health challenges. Body image has multiple dimensions: a perceptual dimension of being able to estimate body shape and size accurately; an attitude dimension regarding one's body; and a behavioral dimension affecting how the person interacts in certain situations. Research has found that up to 74% of obese individuals have body image dissatisfaction and distortion (Lazzeretti et al., 2015). Body Image has been found to improve after bariatric surgery and improvements can persist even if some or all of the weight is regained (Smolak and Cash, 2011). The seeds of body image incongruence may lie in rapid post-operative weight loss. A body image adjustment is required as one's body literally 'melts' before one's eyes. Some weight loss patients experience a 'mind-body lag', in which the patient's internal experience adjusts more slowly than the external experience of extreme weight loss (Alegria & Larsen, 2015; LePage, 2010; Lyons, Meisner, Sockalingam and Cassin, 2014). In addition, body image dissatisfaction is a significant predictor of systemic inflammation, which is associated with obesity and poor health. Research found that body image dissatisfaction predicted inflammation biomarkers, c-reactive protein and tumor necrosis factor- α . This relationship held true even when controlled for obesity indicators (Cernekić-Bizjak and Jenko-Praznikar, 2014). Other studies have associated visceral obesity with post-operative complications. It appears that the visceral fat is central to the formation of metabolic syndrome and a chronic inflammatory state (Doyle, Lysaght & Reynolds, 2009). Both of these studies demonstrate a relationship between our physical habitus and psychological state.

Locus of control is a major dimension of evaluations in psychological assessments, along with self-efficacy, self-esteem and neuroticism. Locus of control is defined as how much control an individual feels he or she has over events affecting their life (Lazzereti et al., 2015). The Multidimensional Health Locus of Control Scale (MHLC) identifies three potential areas of health-related control beliefs; internality (“I am directly responsible for my condition getting better or worse”), powerful others externality (“In order for my condition to improve, it is up to others to see that the right things happen”), and chance externality (“Luck plays a big part in determining how my condition improves”) (Kopec, Richardson, Llewellyn-Thomas, Klinkhoff, Carswell & Chalmers, 2007; Wallston, 2005). Studies have found a correlation between the personality variable of internal versus external locus of control and weight loss in both medical and surgical weight loss programs (Anastasiou, Fappa, Karfopoulou, Gkza & Yannakoulia, 2015; Saltzer, 1982). By selecting a weight-loss program consistent with the patients’ inherent locus of control, there was greater weight loss success. The Weight Locus of Control Scale (WLOC) identifies locus of control beliefs specifically related to weight and health. For example, internal locus of control individuals who feel that their health depends on their own behavior, may have more success in programs using self-motivation. In contrast, an externally-oriented bariatric patient may need extrinsic reinforcement and reward, or social peer pressure (Lazzeretti et al., 2015; Saltzer, 1978).

Another construct that may be associated with obesity is a personality trait called *alexithymia*. Alexithymia is defined as "the (subclinical) difficulty in describing feelings to others and in sharing inner experiences" (Lazzereti et al., 2015, pg. 63). This trait is more common in men than in women (Bagby, Parker & Taylor, 1994). The most common scale used to measure alexithymia is the Toronto Alexithymia Scale (TAS-20). This scale comprises three

factors: difficulty identifying feelings; difficulty describing feelings to others; and difficulty with externally-oriented thinking (Leising, Grande & Faber, 2009). Another way to describe this internal awareness is 'meta-cognition'. Becoming self-aware and mindful about behavioral decisions that leads to eating, may allow post-operative bariatric patients to attain weight loss goals (Rogerson, Soltani & Copeland, 2016) although a direct link with alexithymic behavior is not clearly established.

A final construct is *Health-Related Quality of Life* (HRQOL). HRQOL refers to the physical, psychological, social and functional domains of health. These domains are influenced by experiences, beliefs, expectations and perceptions. Evidence about the link between HRQOL and obesity are mixed. Some research shows that weight loss improves HRQOL in obese subjects (Fontaine, Barofsky, Bartlett, Franckowiak & Andersen, 2004). Others suggest that HRQOL improves over the first post-operative year, then declines. Hachem & Brennan (2016) state that HRQOL continues to improve for as long as 2 to 4 years post-operatively. Their research showed mixed results when HRQOL was measured as a predictor for weight loss success. A systematic review found that physical HRQOL improved more readily than psychological HRQOL post-operatively. However, the link is not clearly defined at this time and needs further research and clarification (Lazzereti et al., 2015). The most commonly used measure for HRQOL is the SF-36 and related scales developed by Ware et al. (2008). While all of these constructs have been used in studying obese patients, there is ambiguity as to how (and if) these traits are linked with each other. Some ambiguity remains as to the link between obesity and the impact of personal traits in general (Teixeira, Going, Sardinha and Lohman, 2005).

Faccio, Nardin and Cipolletta (2016) have studied the transition to diminished weight through the lens of Hermans' Dialogical Self Theory (DST) which defines two conflicting

psychological "I-positions" that a post-op bariatric surgery patient may assume. One position is the "I-obese" position in which the patient still feels severely obese despite a change in body shape and clothing size. The other position is "I-ex-obese" in which the patient sees themselves as interacting with the world as a person who is no longer severely obese. The author found that the majority of her female bariatric patients experienced this phenomenon, and that only through a psychological intervention of awareness can the "I-obese" patient realize that they are no longer severely obese. The goal is to integrate their physical reality and mental perceptions. Identifying factors associated with healthy and unhealthy psychological adjustment would allow health providers to anticipate which bariatric patients may need extra assistance in transitioning to normal weight. Faccio et al., (2016) does not propose any way of identifying pre-operatively which patients may experience this adjustment issue. This dissertation study seeks to clarify this ambiguity by distinguishing those bariatric patients who self-identify as 'I-obese' or 'I-ex-obese' and compare them along four concepts: body image, locus of control, alexithymia, and health-related quality of life.

Faccio et al., stated that a year after surgery, the participants in their study "thought, behaved and related to others as though they were still obese." Based on that three-pronged statement, 25 questions were developed to assess the 'I-obese' versus 'I-ex-obese' mindset. These questions compose the 'Evolving Self View after Bariatric Surgery' (ESV) and test whether the participant is more oriented toward an 'I-ex-obese' or 'I-obese' orientation. The ESV was based on research in the areas of body image, obesity, health behaviors, beliefs and psychological adjustment. This research and subsequent tool development adds to nursing knowledge about caring for bariatric surgery patients, and will facilitate optimal pre-operative

preparation and post-operative interventions for patients as they begin the transition to diminished weight.

Theoretical Framework

Faccio et al's (2016) chosen theoretical framework with which to understand this health challenge for bariatric patients is Dialogical Self Theory (DST), developed by Hermans (2001). Hermans' theory was conceived in opposition to the traditional Western view of individual and rational personhood, and instead sees the self as having dialogue within the same self. As the person moves through space and time, the self also transitions through a number of imaginative positions (Hermans, Kempen & vanLoon, 1992). This theory uniquely combines the self (traditionally singular) and the concept of dialogue (traditionally plural). In DST, the self is made of a multiplicity of 'I-position's that develop in response to the many roles and experiences that the individual has (Figure 1). There is a constant dialogue between 'I-positions' where negotiations, debates and conflicts often arise. The self becomes a 'mini-society' of the mind. In Hermans' theory, it is completely healthy and normal for this dialogue to take place. As the individual experiences changes in their life status and situations, the 'Is' also fluctuate in response. American philosopher David Antin wrote, "The self is an oral society in which the present is constantly running a dialogue with the past and the future inside of one skin" (Hermans & Geiser, 2012, p.xiv).

An event, such as bariatric surgery may bring conflict between two 'I-positions'. After surgery, the individual's previous 'I-position' of 'I-obese' may not mesh with the new 'I-position' of 'I-ex-obese' when the dramatic weight loss occurs. This forms a dialogical triad which resembles a triangle (Figure 2). The points of the triangle are 'I-obese', 'I-ex-obese' (in conflict) and the resolution position to which the patient moves to resolve the conflict. DST incorporates

other terms to describe the interplay of roles in the dialogical self. These terms are *'third position'*, *'ambiguous third position'*, *'meta position'*, *'promoter position'* each of which affect the dueling 'I-positions' in the individual. Each term describes an important role in a healthy individual grappling with change and life's demands (Hermans & Geiser, 2012).

Research Questions and Assumptions

This dissertation study will focus on three research questions (Figure 3):

- 1. Is there preliminary evidence that the two 'I-positions' ('I-obese' and 'I-ex-obese') exist in a larger sample of post-operative bariatric surgery patients?** The 'Evolving Self View After Bariatric Surgery' (ESV) tool will be used to separate participants into the "I-obese" or "I-ex-obese" categories.
- 2. How do the two 'I-positions' relate to the traditional assessment concept of body shape/body image in post-operative bariatric surgery patients?** The Body Shape Questionnaire (BSQ) will be used to assess body image and the results will be correlated with 'I-positions' as identified by the ESV.
- 3. What is the relationship between the two 'I-groups' and locus of control, weight locus of control, alexithymia and health-related quality of life?** The demographics and personal characteristics of both groups will be assessed. Specific factors will be studied through survey instruments: Locus of Control (MHLC), Weight-Specific LOC (WLOC), Health Related Quality of Life (SF36-v2), and Alexithymia (TAS-20).

Hypothesis 3.1: Patients who identify as 'I-obese' will have lower scores on Body Image (BSQ) and HRQOL (SF-36v2) as compared with those identifying as 'I-ex-obese'.

Hypothesis 3.2: Patients who identify as ‘I-obese’ will have higher externally located scores on the Health Locus of Control (MHLC) and Weight Locus of Control (WLOC) as compared with those identifying as ‘I-ex-obese’.

Hypothesis 3.3: Patients who identify as ‘I-obese’ will demonstrate greater alexithymic traits (TAS-20) as compared with those identifying as ‘I-ex-obese’.

This proposed study will provide crucial information for understanding the successful psychological adjustment for bariatric surgery patients who are transitioning from 'I-obese' to 'I-ex-obese'. Identifying factors associated with healthy and unhealthy psychological adjustment would allow health providers to anticipate which bariatric patients may need extra assistance in transitioning to diminished weight.

Method

This study used a descriptive correlational design. Systematic random sampling was used to recruit fifty-five bariatric surgery patients who were between 18 to 30-months post-surgery. Patients were recruited in four ways: 1) from records at a private bariatric surgery clinic with operating privileges at a Level One Trauma Center with MBSAQIP (Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program) accreditation; 2) from scheduled 24month post-op visit; 3) from the monthly Bariatric Surgery Support Group; 4) through the office Facebook page and the Patient Portal. Using the lists of patients generated, every 20th patient was contacted for enrollment, until the list was exhausted. Each participant was scheduled for a 60-minute interview appointment. Twenty-dollar gift card incentives were given to each participant after their interview.

- *Inclusion Criteria:* bariatric surgery patient between 18-30 months post-operative; Roux-En-Y Gastric Bypass (RYGB) or Vertical Sleeve Gastrectomy (VSG) procedures; male

or female; age \geq 21; English-speaking; Seen in clinic at least twice in first post-operative year; Pre-op BMI \geq 35.

- *Exclusion criteria:* Laparoscopic Adjustable Gastric Band (LAGB) and revision patients. Lap Band patients were excluded because the procedure is associated with the least amount of weight loss in most patients (Chakravarty et al., 2012) and revision patients were excluded because they have already experienced weight loss, psychological adjustment, and weight regain or other complication (Arapis et al., 2012).

The following demographic, anthropometric and personal data were collected from the record: Age; Gender; Date of Surgery; Pre-operative weight and BMI; Height; Post-op weights at 3 mos., 6 or 9 mos., 12 mos., 24 mos; Goal weight. *The following data were assessed through self-report:* DOB; income level; highest level of Education; weight at age 18; lowest weight achieved; whether they meet the pre-operative weight loss prerequisite (requirement may depend on individual surgeon); participation in pre-operative support groups or counseling; marital status; race.

The following data was collected during face-to-face interview/assessment: current weight; BMI; % body fat as measured by bioelectrical impedance analysis using a Tanita scale which is a valid, non-invasive instrument (Toomey, Cremona, Hughes, Norton & Jakeman, 2015). Using the instruments and procedures listed in the measures section, participants will then complete all measures: Evolving Self Image After Bariatric Surgery (ESV), Locus of Control and Weight Locus of Control (MHLC and WLOC), Alexithymia (TAS-20), Body Image (BSQ) and Health-Related Quality of Life (SF-36v2). See Figure 1 for the proposed conceptual model of how these constructs relate to one another.

The survey included the following:

1. Obesity identification was measured using the ESV. The ESV seeks to identify the participant's orientation to either 'I-obese' or 'I-ex-obese' using 25 questions on a 6-point Likert scale and written on a 7-8th grade level. The ESV is based on the research of Faccio et al., (2016).
2. Locus of Control was assessed using the MHLC (Wallston, Wallston, Kaplan & Maides, 1976; Cronbach's alpha = 0.72; 5-6th grade reading level) which has 18 questions using 6-point Likert scale and takes 5 minutes to complete.
3. Weight Locus of Control was assessed using the WLOC that has 4 questions on a 6-point Likert scale (5-6th grade reading level) and takes 2 minutes to complete (Saltzer, 1978).
4. Alexithymia was assessed using the TAS-20 which has 20 questions on a 5-point Likert scale and takes 10 minutes to complete (Cronbach's alpha = 0.81; 5-6th grade reading level) (Bagby et al., 1994; Leising et al., 2009).
5. Body image was measured using the BSQ which has 34 questions on 6-point Likert scale (Cronbach's alpha 0.88, $p < .001$; 5th grade reading level) and can be completed in 10 minutes (Cooper, Taylor, Cooper and Fairbum, 1987). It is one of the most valid instruments used to measure body image (Lazzereti et al., 2015).
6. Health-Related Quality of Life was measured using the SF-36v2 survey which has 36 questions, and takes 10 minutes to complete (Cronbach's alpha > 0.70 on all items; 5-6th grade reading level; 3 and 5-point Likert scale). The SF-36v2 is one of the most commonly-used tools for health studies and assesses both physical and mental health across age and disease groups with norm-based scoring and a mean of 50. The SF-36v2 measures on each of eight health domains: Physical Functioning, Role-Physical,

Bodily Pain, General Health, Vitality, Social Functioning, Role-Emotional and Mental Health (QualityMetric, 2009).

Summary

The remainder of this dissertation paper is organized as follows:

1. Chapter 2. A manuscript dedicated to the concept analysis of *body image disturbance in post-operative bariatric surgery patients*.
2. Chapter 3. A manuscript that addresses the following research questions:
 - a). Is there preliminary evidence that the two ‘I-positions’ (‘I-obese’ and ‘I-ex-obese’) exist in a larger sample of post-operative bariatric surgery patients?
 - b). How do the two ‘I-positions’ relate to the traditional assessment concept of body shape/body image in post-operative bariatric surgery patients?
3. Chapter 4. A manuscript that addresses the following research question:
 - a). What is the relationship between the two ‘I-positions’ and locus of control, alexithymia and health related quality of life?
4. Chapter 5. A synthesis of chapters 2, 3 and 4 and identification of how all three are interconnected and integral in understanding the adjustment to diminished weight of post-operative bariatric surgery patients.

Figure 1. Basic Model of Dialogical Self Theory

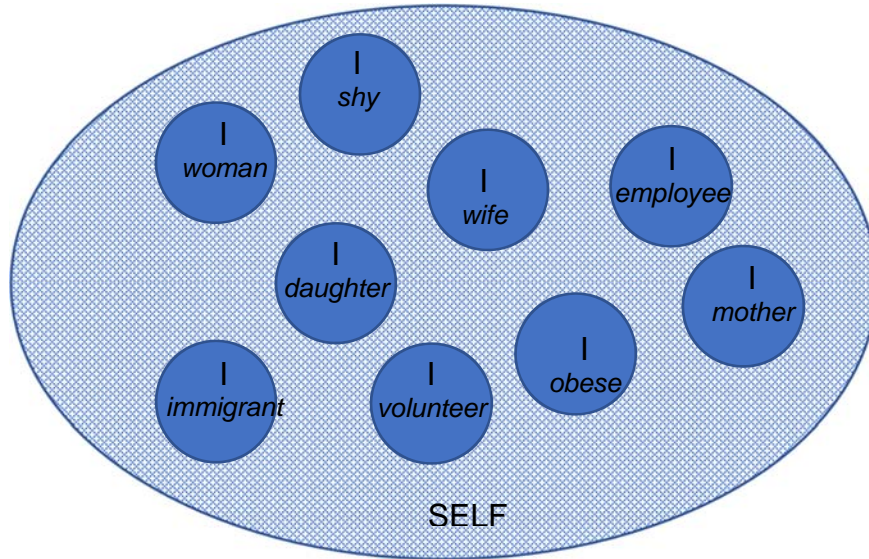


Figure 1. Dialogical Self Theory depicting examples of possible I-positions within the same self for a female subject.

Figure 2. Dialogical Self Theory in a Post-Operative Bariatric Surgery Patient

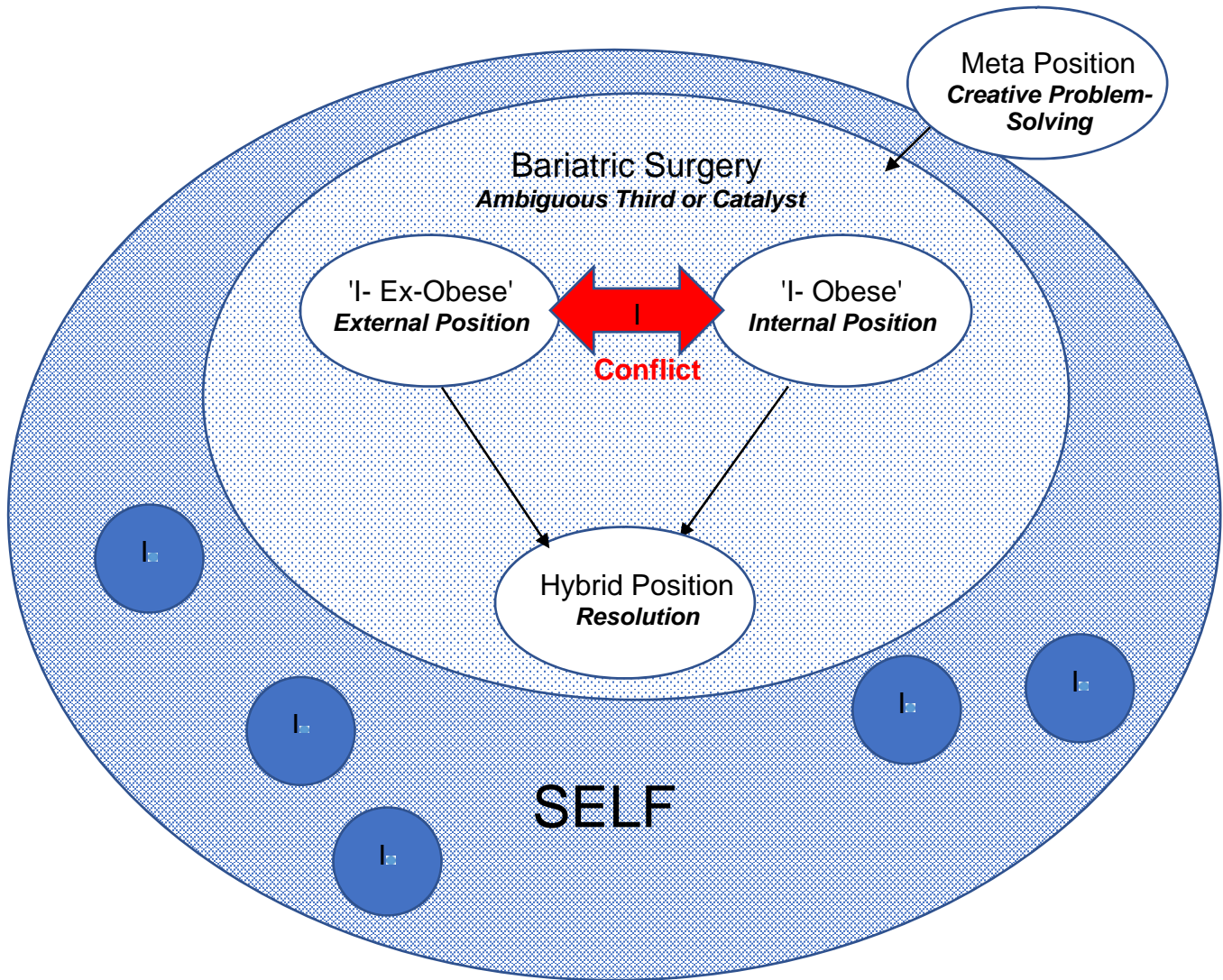


Figure 2. The Dialogical Self Theory applied to a post-operative bariatric surgery patient depicting the struggle to adjust to normal weight. This figure depicts a dialogical triad composed of two conflicting 'I-positions' (I-ex-obese and I-obese) triggered by an ambiguous third (bariatric surgery) and the emergence of a hybrid position which resolves the conflict.

Figure 3: Proposed Conceptual Model of the Psychological Adjustment to Surgically-Induced Weight Loss

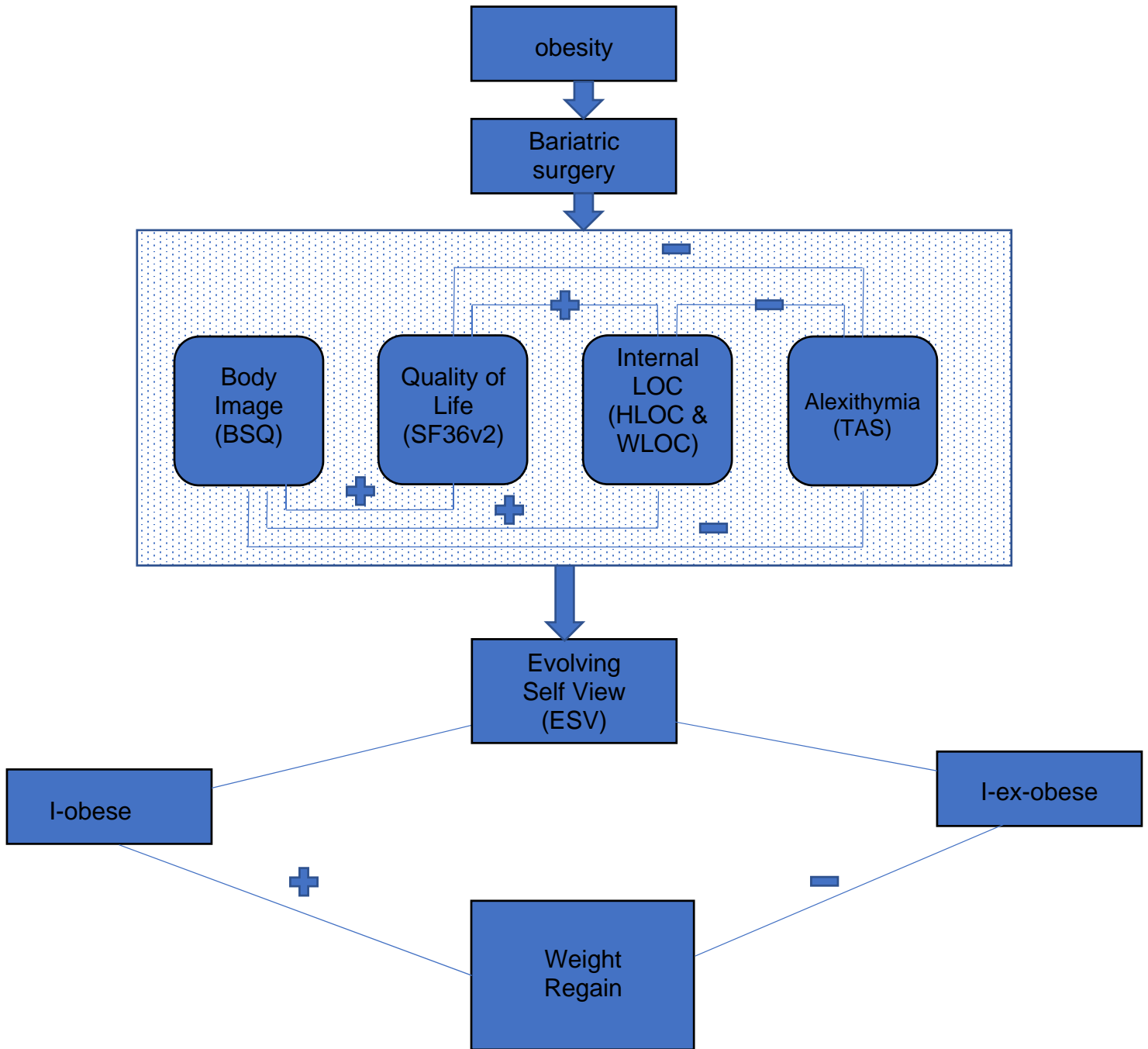


Figure 3. Proposed conceptual model of psychological adjustment to normal weight in post-operative bariatric surgery patients with the prediction of which patients will make an unsuccessful adaption to normal weight with resulting weight regain. The dotted box in the middle of the figure illustrates the concepts which will be tested through survey instruments, and their proposed relationship to each other.

CHAPTER 2: A CONCEPT ANALYSIS OF DISTURBED BODY IMAGE IN BARIATRIC SURGERY PATIENTS

Purpose

This article describes the manifestation of disturbed body image in bariatric surgery patients.

Method

Walker and Avant's (2011) method of concept analysis is used to clarify this concept.

Findings

Disturbed body image in post-operative bariatric surgery patients may lead to physical stress reaction and emotional and social disquietude.

Conclusion

If not prepared physically and psychologically for body image challenges after bariatric surgery, patients may experience disturbed body image in the post-operative phase.

Implications for Nursing Practice

Understanding the concept of disturbed body image in post-operative bariatric surgery patients may allow health providers to provide adequate pre-operative teaching and preparation, as well as post-operative interventions to create congruence between the patient's internal and external selves.

Problem Identification

Body habitus, including size and proportion, is a topic that has garnered much interest in the last two decades as humans have waged an uphill battle against the scourge of obesity.

Two point one billion people in the world are overweight (BMI \geq 25 kg/m²) or obese (BMI \geq 30 kg/m²). Being overweight or obese is the cause of 3.4 million deaths worldwide per year

from associated co-morbid diseases (Caulfield, 2015). Over 7 million quality-adjusted life years are lost in the US annually due to excess body weight (Meunnig, Jia, Lee and Lubetkin, 2008). In addition to the health issues associated with obesity, there are numerous psychological and emotional issues that have to do with how one sees or perceives himself or herself, and how we are seen by the world. Some researchers refer to this as the ‘inside’ and ‘outside views of human physical appearance. How we are perceived and treated by our social world is influenced by our observable physical characteristics (Cash, 2012). The obese individual often experiences rejection, anti-fat attitudes and discrimination in the public arena since being overweight or obese is attributed to a lack of self-control or laziness. They are less likely to marry and have lower earned income than ‘normal’ weight individuals (Sarwer, Dilks & Ritter, 2012; Schwartz & Brownell, 2004). Body dissatisfaction has been linked to frequent teasing during childhood or adolescence (Phillips, 2012). Since the mind and body are closely linked, the obese individual may experience an unhealthy body view that spans both the physical and psychological realms.

Western society has typically emphasized the outward appearance of a person when considering ‘body image’. However, body image is actually a complex and multifaceted construct. In psychological literature, body image is seen to encompass perceptual, cognitive, affective and even behavioral aspects of the body (Tiggemann, 2004). As the average BMI has increased in the United States and around the world over the last forty years, the scientific world is still struggling to fully understand the roots of obesity and the myriad of ways that being obese impacts the individual and affects how the individual sees himself. Bariatric surgery has increased in prevalence as a way to address the health issue of obesity. The global number of bariatric surgical procedures performed in 2013 was 468,609,

95.7% of which were done laparoscopically. There are multiple bariatric surgery procedures, but the two most commonly performed are the Roux-En-Y Gastric Bypass (RYGB) and the Vertical Sleeve Gastrectomy (VSG) which account for 82% of all bariatric procedures (Angrisani et al., 2015). Bariatric surgery impacts the individual in a holistic manner, since physical, psychological, emotional and social factors are part of the total health of a post-operative bariatric patient.

When obese patients decide to pursue bariatric surgery, they usually experience rapid weight loss. Although this weight loss is exciting and often something that the patient has worked to achieve, there are challenges as well. After surgery, there are strict guidelines for eating, drinking and exercising that the patient must follow for the rest of their life. A body image adjustment is required as one's body literally 'melts' before one's eyes. Some weight loss patients experience a 'mind-body lag' in which the patient's internal experience adjusts more slowly than the external experience of extreme weight loss (Alegria & Larsen, 2015; LePage, 2010; Lyons, Meisner, Sockalingam and Cassin, 2014). One researcher (Faccio, Nardin & Cipoletta., 2016) has found that some bariatric surgery patients do not make a smooth adjustment to their lighter weight and body size. She found that a year after surgery, the majority still thought, felt and related to others as if they were still at their pre-surgical weight. Faccio et al., used Hermans' Dialogical Self Theory to explain dueling 'I-positions' within the psyche that may make movement to a new self-identity (or 'I-position') difficult. While nurses may have a basic understanding of the concept of disturbed body image in patients, there is less clarity about what the bariatric surgery patient experiences as their weight rapidly diminishes. The standard thought is that the experience of diminished weight results in contentment, but perhaps this is a clichéd and untrue thought. It is hoped that a

thorough concept analysis will lead to new strategies for pre-operative and post-operative care for bariatric surgery patients. This paper uses Walker and Avant's (2011) method of concept analysis to analyze the concept of *disturbed body image in post-operative bariatric surgery patients*.

Methods

Concept analysis is a method of knowledge building in which the researcher uses a scripted process to examine the basic elements of a concept. Concept analysis is especially useful if the concept is vaguely defined, or if it is overused and yet misunderstood. Walker and Avant's (2011) method of concept analysis will be used as a guide for analyzing the concept of *body image disturbance in post-operative bariatric surgery patients*. Walker and Avant state that the purpose of a concept analysis is to examine the structure and function of a concept. A concept is a way to define and represent information that can be used to understand something more fully. It can be used to clarify vague terms or concepts that are sometimes used excessively. A concept is a mental picture of something, and is always subject to a bit of bias and interpretation on the part of the author. This concept analysis will be based on 8 steps put forth by Walker and Avant. The steps are: (1) select a concept; (2) determine the aims or purposes of analysis; (3) determine all uses of the concept; (4) determine the defining attributes; (5) identify a model case; (6) identify borderline, related, contrary, inverted and illegitimate cases; (7) identify antecedents and consequences; (8) define empirical referents (Walker & Avant, 2011).

To explore this concept in the literature, CINAHL, PubMed, PsycINFO and Proquest data bases were searched in four separate searches (one in March 2015, February 2016, October 2016, August 2017). For the first search, the terms "obesity" AND ("bariatric

surgery” OR “weight loss surgery”) AND (“body image” OR “self image”) were used. For the second search, the terms used were “body image” AND (“dysmorphic” OR “unhealthy” OR “skewed”) AND “obesity” AND “adult”. For the third and fourth search terms ("body image" OR "self image") AND ("obesity") AND ("bariatric surgery" OR "weight loss surgery"), and ("body image" OR "self image") AND ("obesity") AND ("concept analysis") were used. A total of 362 articles were found in all searches. After duplicates were identified and articles excluded, there were 43 articles included in this concept analysis. Inclusion criteria were peer-reviewed journal articles or books, dated between 2005 and 2017, regarding human subjects, and written in the English language.

Data Sources and Literature

The concept of *body image* is one that has been used more often in non-nursing literature, especially that of psychology or psychiatry. A commonly used definition of body image is that it, “consists of perceptions, thoughts and feelings associated with the body and bodily experience” (Sarwer & Steffen, 2015, p. 505). In post-operative bariatric surgery patients, it seems intuitive that diminishing weight would result in more positive body image. Research however, shows this relationship is not always linear. Some theories about body image state that there is not always a clear relationship between the objective view of one’s body and what one subjectively perceives about their body (Smolak & Cash, 2011). Thus, to better understand disturbed body image, it is helpful to first look at the definitions of body image in the literature.

Definitions of Body Image from Dictionaries

To facilitate analysis, the term ‘body image’ will be investigated as two individual words in dictionary reference sources. The Houghton Mifflin American Heritage Dictionary (1976)

and Webster's New World Online Dictionary (2015) put forth multiple definitions for 'body'. Some of the definitions actually speak to the idea of torso or trunk, such as, "The part of a garment covering the trunk or body; the entire structure of an organism; a 3-dimensional object that has mass and is distinguishable from other objects; the torso or trunk excluding head, neck and limbs." From the discipline of music, a body is defined as a resonating chamber in a musical instrument, such as the 'body of a violin'. Geography and navigation uses the term 'a body of water'. The printing industry identifies a body to be 'the part of a block of type underlying the impression surface'. In literature, the word body can be used as a verb, such as Shakespeare's "Imagination *bodies* forth the form of things unknown". We can extrapolate from the use of the verb, that the body serves to make something visible and known that has hitherto been unknown or undefined. The German root is '*bot*' which means 'container', just as the human body is the container for the life-force within us.

A search of the term 'image' defines it as "a reproduction or visible representation of someone or something, especially a sculpted likeness; a standard or typical example (he is the image of a good father); or one that closely resembles another". From Jungian psychology, we see image defined as "a personal façade that one presents to the world". From mathematics, an image is "the set of values of the dependent variable for which a function is defined"; in other words, it is inclusive of all values that will fit that equation. Image can be defined as a mental picture of something not real or present, which leads to the related word 'imagination'. Imagination is defined as the "ability to deal creatively with reality; an unrealistic idea or notion". The word image comes from the Latin word '*imitari*' which means to imitate (Webster's, 2015; Houghton Mifflin, 1976).

When these definitions are carefully considered, one can understand that the word '*body*' connotes a physical presence that is 3-dimensional, and distinguishable from other objects. It has a usefulness; such as the body of a violin and can be indicative of the larger area of something such as a trunk or torso. It is simultaneously a 'container' and an 'implement'. '*Image*' on the other hand is ethereal; it defies definition or exact duplication. It is a reflection as in a darkened mirror, only partly revealing truth. We present an image to others of either what we think we are, or what we would like to be. The combination of 'body' and 'image' therefore, is almost an oxymoron. It simultaneously means that we are talking about something tangible and real; and yet it is only a creative reproduction.

Uses of the Concept of Disturbed Body Image in the Literature

Body image dissatisfaction is observed across the age ranges. A Brazilian study found that three out of every five young men and three out of every four young women express dissatisfaction with their bodies (Mintem, Horta, Domingues & Gigante, 2015). As we age, we experience a variety of threats and challenges to our body image. Medical problems, restrictions in activities or exercise modalities, changes in social status and acquaintances, joint mobility, posture, skin and hair quality may negatively impact our body image. Chronic illness, in particular diabetes and cancer, impacts our body image as we age (Rhoten, 2016; Tiggeman, 2004).

Scientific literature has presented *body image* from many angles. The literature on body image is predominately of a medical or psychological nature, but there is some research that has been produced through the field of nursing. Nurse Jo Gilmartin (2013), states that the concept of body image is a combination of both mental self-image and the patient's own assessment of their physical self. These two aspects affect one's behavior, whether the

person's assessment is realistic or not. Ironically, actual attractiveness (as perceived by others) and the way that the individual feels about their body are often two different things. People who feel more positively about their own bodies report greater confidence and comfort in interacting with others (Smolak & Cash, 2011). Issues with body image can result from deformities, scarring or issues with eating disorders, as well as from obesity (Rhoten, 2016; Sarwer & Steffan, 2015). The discipline of nursing also recognizes body image issues as important to human functioning. NANDA-I defines *disturbed body image* (00118) as 'confusion in the mental picture of one's physical self' (Herdman & Kamitsuru, 2014). Another term used to describe disturbed body image is 'body dysmorphic disorder' (BDD). BDD is a term that originated at the turn of the century in neurological literature. Doctors studying and treating brain injury attempted to understand the causes of disorders such as phantom limb pain. It was recognized that sometimes what is 'real' in a physical sense isn't experienced as 'real' in a psychological sense. In 1935, Dr. Paul Schilder called for an approach to body image disorders such as BDD by using a biopsychosocial approach instead of a strictly medical approach. In psychological literature, BDD is defined as 'a preoccupation with an imagined defect in appearance' (Phillips, 2012; Smolak & Cash, 2011). If there actually is a defect or difference in the person's appearance, the person's concern may be markedly increased. Sixty percent of people with BDD report that they were teased about their appearance during childhood or adolescence (Phillips, 2012). 'Body image' and 'self-image' and 'self-esteem' are sometimes used interchangeably to describe how one experiences and feels about his body, although the words are not synonymous and the meanings are vague.

Researchers have found that overweight and obese individuals tend to be more dissatisfied with their body image than normal weight individuals (Sarwer et al., 2012; Schwartz and Brownell, 2004). Perhaps this seems to be an intuitive point. In general, overweight women are more dissatisfied with their bodies than overweight men (Ghai, Milosevic, Laliberte, Taylor & McCabe, 2014) and obese white women report more quality of life disruption than obese women who are black or of other ethnic cultures (Cox et al, 2011). Some research shows that even a small amount of weight loss correlates with an improved body image, which persists even if the initial weight is regained or a less-than-anticipated amount of weight is lost (Hrabosky et al, 2006; Smolak & Cash, 2011). Conversely, other researchers have found that improvements in body image and quality of life do not persist past 12 months post-surgery if the weight is regained, or if weight loss levels off over time (Pelle, Fortuin, Heck & Hout, 2008; Teufel et al., 2012). Bariatric surgery typically leads to 50-60% of excess loss (Smolak & Cash, 2011). After surgery, the problem of loose folds of skin resulting from massive weight loss may become an issue for bariatric surgery patients. This can negatively influence the scores on body image and quality of life instruments (Gilmartin, 2013; Lyons et al., 2014; Sarwer et al., 2010).

The area of ‘disconnect’ between the actual weight and appearance of someone, and their perceived view of themselves has been studied by several researchers and presents fascinating data. Some post-surgical bariatric patients have experienced what is termed a ‘dysmorphic body image’ or an ‘allocentric lock’ and found it difficult to adjust to their new thinner body. The ‘allocentric lock hypothesis’ was developed by Riva in 2012, and describes a disconnect between their *egocentric* (experienced bodies) and their *allocentric* (lived-in, physical body). The world sees them as a normal weight individual, but they still

see themselves in their 'old' obese, pre-surgical body (Cardenas-Lopez et al., 2014; DePanifilis et al., 2007; Guardia et al., 2013; Riva, 2012). They have a permanent experience of a 'wrong' body (Riva, Gaudio & Dakanalis, 2014). As one participant in a qualitative study shared, she felt like "a big fat lady masquerading in tiny dresses". Her dress size had decreased, but in her mind, she was unchanged (LePage, 2010).

Evaluation of Findings

Walker and Avant (2011) state that the defining attributes of a concept are the repetitious characteristics of that concept in literature. There are three defining attributes of the concept of *body image disturbance in post-operative bariatric surgery patients*: 1. disturbance of perception and experience. 2. negative influence on quality of life. 3. diminished functional health.

Disturbance of Perception and Experience

Body image disturbance in post-operative bariatric surgery patients is not a completely physical or psychological phenomenon, but represents a merging of the two worlds. In the post-operative phase, the connection between the diminishing anthropometric measurements such as BMI and neck circumference, do not always correlate with equal improvements in body image (Varns, Fish & Eagon, 2016). Sometimes the patient's internal experience adjusts more slowly than the external experience of extreme weight loss (Alegria & Larsen, 2015; LePage, 2010; Lyons et al., 2014). One's true body image lies between the egocentric body image (the inner, individual lived experience) and the allocentric body image (the physical self that others perceive in the world) (Riva, 2012). Body image disturbance in post-operative bariatric surgery patients cannot be defined in a simplistic manner. The nursing lens of holism reminds us that we must consider the physical, psychological,

emotional and social aspects of post-operative bariatric surgery patients, in order to be truly helpful. To be healthy, these aspects of body image all need to be congruent and realistic (Tiggemann, 2004).

Influences on Quality of Life

Body image disturbance can affect overall happiness and self-esteem. Body image scholarship has grown, and body image is acknowledged to be an important facet of quality of life (Sarwer & Steffen, 2015). Often those experiencing massive weight loss show greater body image satisfaction and quality of life as their weight decreases (Kinzl, Lanthaler, Stuerz & Aigner, 2011; Pelle et al., 2008; Sarwer et al., 2010). This relationship is not always one of direct causation however, since some patients report improvement in BI and QOL even when the patient remained overweight or regained some of their weight (Hrabosky et al., 2006; Kinzl et al., 2011; Madan, Beech & Tichansky, 2008). The positive impact of weight loss on quality of life may be diminished by the issue of excess skin after weight loss and the desire for plastic surgery (Sarwer et al., 2010; Gilmartin, 2013). Despite the excess skin, some patients declare that to be a better scenario than living with severe obesity.

Diminished Functional Health

Without a positive body image, it is difficult to achieve a high level of health and function. Rhoten (2016) uses the idea of 'function' to encompass both physical and social functioning. Even for those who have lost weight and are no longer obese, their inability to accept their new bodies can lead to angst and preoccupation with appearance (Masheb, Gilo, Burke-Martindale & Rothschild, 2006). Body image dissatisfaction is a significant predictor of inflammation in the body, resulting in an increase in CRP and TNF- α , which are biomarkers of inflammation. If the interventions for obesity do not include treatment for

body image disorders as well, the patient can experience increased inflammation, which can lead to co-morbid conditions such as diabetes and hypertension (Cernekić-Bizjak & Jenko-Praznikar, 2014; Muennig et al., 2008). From a psychological perspective, body image disturbance can be associated with an increased incidence of depression and other mental disorders. Some researchers found that post-operative bariatric patients with body image concerns were associated with a history of past and present depression (Pona, Heinberg, Lavery, Ben-Porath & Rish, 2016). Avant and Walker (2011) encourage the use of three types of sample cases to aid in illustration of what does and does not constitute the concept: model cases, contrary cases and borderline cases. See Table 1 for sample model cases.

Antecedents

For *disturbed body image* to occur in post-operative bariatric surgery patients, there must be several antecedents present. First, the patient must be an adult patient who has undergone a bariatric surgery procedure to assist in losing weight. Since the various procedures have different indications and weight-loss projections, the patient and surgeon should make a reasonable choice given the individual characteristics of that patient's condition (Mechanick et al., 2009). Second, the patient must have a lack of egocentric and allocentric congruence after weight loss. This lack of realism must be accompanied by perceptual, affective, cognitive and behavioral experiences that are incongruent with her physical self (Tiggemann, 2004). Examples of such unhealthy perspectives are common in our society, as evidenced by the high numbers of anorexic, bulimic, depressed and obese persons in the Western World (Smolak & Cash, 2011; Tiggemann, 2004). If dysmorphic tendencies or a mind-body lag is not recognized early on, the patient may have difficulty adjusting to their new body (Bergelin & Lundgren, 2014; Cardenas-Lopez et al., 2012; Riva, Cardenas-Lopez, Duran, Torres-

Villalobos & Gaggioli, 2012). A third antecedent is ambivalence about being healthy. A normal post-operative bariatric patient sees health as a worthy goal, both in a physical and mental sense and be willing to change behaviors and attitudes to achieve health. Following the complex and lifelong changes for food, liquid and activity is requisite for successful and sustained weight loss. Approximately 20-30% of post-operative bariatric surgery patients regain their lost weight, although other studies have found the percentage to be less than 10% (Courcoulas et al., 2013; Faria et al., 2010). The reasons for weight regain vary, but diet issues and lack of adherence to long-term follow-up may be factors. The bariatric patient, their support systems and the physician of record must encourage a realistic and congruent appraisal as weight loss occurs. Dysmorphic thought or a 'mind-body lag' must be recognized early on and the proper tools must be used to assist the patient to adjust to their new body (Bergelin & Lundgren, 2014; Cardenas-Lopez et al., 2014; Riva et al., 2012; Riva et al., 2014). NANDA-I offers concrete suggestions for NIC activities that can enhance body image in patients (Herdman & Kamitsuru, 2014).

Empirical Referents

Walker and Avant's method (2011) suggests that empirical referents should be defined so that the concept can be recognized. The presence of the empirical referents means that the concept is also present. Measuring these empirical referents can be done indirectly using survey instruments. Since body image is difficult to empirically define, administering multiple surveys of related concepts may help to identify healthy and unhealthy body image behaviors. Related concepts such as depressive symptoms, social anxiety, social isolation, social avoidance and eating disorders have been found to be associated with disturbed body image. For example, multiple studies found that psychiatric factors such as depression (BDI

and PHQ-9) and quality of life (QOL) are impacted by changes in body image (Cardenas-Lopez et al., 2014; Kinzl et al., 2011; Masheb et al., 2006; Pelle et al., 2008; Riva et al., 2012; Sarwer et al., 2010; Teufel et al., 2012). Thus, these factors are often assessed in research on disturbed body image in an effort to triangulate the concept (Rhoten, 2016). One of the most reliable and widely used referents to measure body image is the Body Shape Questionnaire (BSQ). Five studies have used the BSQ in two languages (Cardenas-Lopez et al., 2014; Hrabosky et al., 2006; Masheb, 2006; Riva, 2012; Sarwer et al., 2010). For this concept analysis, 24 applicable surveys were identified in 3 different languages. Table 2 lists these surveys.

Discussion and Implications for Nursing Knowledge

As far as this author is aware, this is the first concept analysis of body image disturbance in post-operative bariatric surgery patients. The issue of obesity has led to a dramatic increase in those choosing bariatric surgery as a tool for weight control. As bariatric surgery becomes more frequent, it is important to select patients through pre-operative screening that will be able to adhere to the rigorous post-operative regimen and make a healthy psychological adjustment to their changing body. Recognizing antecedent conditions in patients in either the pre-operative or early post-operative stage of their care, may allow health providers to provide physical and psychosocial interventions. Timely referrals to specialists can also aid in the transition. Nurses should include psychosocial questions that identify body image issues when they assess their patients and be especially mindful of the reactions and input of the patient and their significant others (Herdman & Kamitsuru, 2014). For example, some researchers have used a cognitive aid or encouraged patients through counseling and efforts of awareness to see themselves realistically. Other research has

shown that use of a technological tool such as MRI scans to elucidate their fat distribution (Bergelin & Lundgren, 2014) or Experiential Cognitive Therapy groups and Virtual Reality software to gradually orient them to their physical reality (Cardenas-Lopez et al., 2014; Riva et al., 2012) and have eased their disturbed body image. By naming and explaining the concept, providers are better able to prepare patients post-operatively for the body image challenges to come.

Conclusions

Bariatric surgery provides rapid weight loss to most patients. If not prepared physically and psychologically for the challenge of merging an 'old' internal perception with a 'new', thinner external perception, disturbed body image may occur. Disturbed body image in post-operative bariatric surgery patients may lead to physical stress reaction and emotional and social disquietude. Understanding the concept of disturbed body image in post-operative bariatric surgery patients may allow health providers to provide adequate pre-operative teaching and preparation, as well as post-operative interventions to create congruence between their Internal and external selves.

Table 1
Sample Cases of Disturbed Body Image in Bariatric Surgery Patients

Case Type ^a	Scenario
<i>Model case of body image disturbance</i>	<p>A 28-year-old Hispanic female graduate student had always been overweight. A chubby child, she began to gain weight at puberty despite numerous diets and exercise plans. Her present BMI of 40.9 places her in the category of obesity Class III or morbidly obese. She has never been on a date and finds it hard to make friends. She has not looked at herself in a full-length mirror for 4 years. Taking the stairs to class is almost impossible, and just walking from her car to the front door of the nursing school is getting harder. She decides to have a gastric bypass procedure and goes through all the pre-operative assessments. During the consultations with the nutritionist, the student found that the dietary guidelines seem overly restrictive. The emphasis on drinking water (2-3 liters a day!) was also extreme. She wasn't sure the restrictions are necessary, but she really did want to lose weight so she agreed to the plan. Post-operatively, she struggles to maintain the diet but gradually the weight begins to come off and she is able to exercise a bit more. She finds that she thinks about food almost all of the time, and will occasionally sneak a soda or a bowl of ice cream, which is contrary to the guidelines. Her blood sugar and blood pressure began to decrease to normal ranges, which is encouraging. At 6 months post-operatively, the student has lost 78 pounds! When she goes home to visit her parents, they are worried because she 'looks so thin'. Her mother encourages her to eat a little extra. When it becomes apparent that the student needs to buy some new clothes, she goes to the 'big girls' store where she always shopped, despite the store clerk's encouragement to go to a traditional women's clothes store. When the student goes through doorways or turnstiles at the subway station, she inhales deeply and turns sideways as she always has and still finds it hard to look in a mirror. She just can't stand the look of all those folds of skin. What will she do with all her free time? In the past, she had looked forward to eating in her apartment, but now she is at a loss for what to do with herself. She never dreamed that losing weight would be so stressful. She feels depressed and just wants to go back to her old self.</p>
<i>Contrary case of body image disturbance</i>	<p>A 38-year-old white woman with a BMI of 39.4 realizes that she must make behavior and health changes in order to remain alive and healthy to care for her two young children. She elects to undergo a gastric bypass procedure. Post-operatively, she follows the strict protocol for activity, eating, drinking water and taking supplements and finds that she has lost 72 pounds in the first 9 months post-operatively. She is delighted that she is able to play with her children in the yard and in at the park without shortness of breath and joint discomfort. Her primary physician declared her free of her hypertension and discontinued her blood pressure medication. When she looks at herself in the mirror, she notices that her cheekbones are now visible and her legs are shapely once again. As a reward for herself, she and her husband plan to go on a 5-day cruise together. She goes to the local department store and finds several new outfits in the normal-sized women's department instead of the plus-sized women's department. She even decides to purchase a bathing suit-- the first in 7 years! She opts for a bias-cut one-piece with skirt to help camouflage the folds of excess skin that she has on her abdomen. In an ideal world, she would like to get rid of the excess skin folds, but she feels so much younger and freer without the weight, that she knows the decision to have bariatric surgery was the right one.</p>
<i>Borderline case of body image disturbance</i>	<p>A 44-year old black male with a pre-operative BMI of 41 had a RYGB one year ago and has lost 105 pounds. He has been commended by his medical doctor and surgeon for his steady weight loss progress. He no longer needs his blood pressure or oral hypoglycemic medications and he feels that his energy level is so much better. He can spend time playing pick-up basketball at the YMCA and finds himself awaking in the mornings rested and refreshed. He has bought himself a new trim-cut suit for work and his waistband doesn't cut his abdomen. He looks at himself in the mirror however, and sees an adolescent boy. His body looks so small, that it doesn't seem manly. He has not been sexually intimate with any women and worries a bit that he won't seem strong enough to impress anyone. Strangers used to mistake him for a retired NFL football player, but now he just feels normal. (This patient's situation represents a borderline case because while he has some aspects of healthy body image such as better functional health and normal body perception, he is dissatisfied with aspects of his appearance and is apprehensive about sexual intimacy. Thus, his quality of life is negatively affected and leads to a disturbed body image.)</p>

^aCase type based on recommendations of Walker & Avant, 2011.

Table 2

Survey Instruments to Measure Empirical Referents for Disturbed Body Image in Post-Operative Bariatric Surgery Patients

Measurements/Instruments			
Scale	Language Version	What it measures	Instances Used
BDI	Spanish	Depression	2
STAI	Spanish	Stress	2
BSQ	Spanish	Body Image	2
BULIT	Spanish	Bulimia behaviors	2
TFEQ	Spanish	Food dis-inhibition & restriction	2
BIQ	German	Body Image	2
BAROS	German	Bariatric Outcome System	1
BQL	German	Bariatric Quality of Life	1
PHQ-9	German	Depression	1
BUT	English	Body Uneasiness	1
SCID T/P	English	Psych Disorders	1
EDI-2	English	Eating Disorders	1
BSQ	English	Body Image	3
EDE-Q	English	Eating Pathology (2 subscales)	2
BESAA	English	Body Esteem	1
RSE	English	Self Esteem	1
BDI	English	Depression	1
SFRS	English	Silhouette Shape Identity	1
SCL-90	English	Psych Disorders	1
BAT	English	Psych Disorders	1
NPV	English	Neuroticism	1
SF-36	English	Health Quality of Life	1
IWQOL	English	Effect of Weight on QOL	1
BIQOL	English	Positive/Negative BI Effect on QOL	1

CHAPTER 3: EVOLVING SELF VIEW AND BODY IMAGE CONCERNS IN FEMALE POST-OPERATIVE BARIATRIC SURGERY PATIENTS

Aims and Objectives

This research study explores the experience of post-operative bariatric surgery patients as they adjust to diminished weight, and differentiates that adjustment from the more general concept of body image.

Background

Bariatric surgery is an effective way to reduce weight and co-morbidities associated with obesity. Complete success requires that patients must adjust psychologically as they lose weight. If this does not occur, bariatric patients may experience a ‘mind-body lag’ in which the patient’s internal body image lags behind the external changes. Hermans’ Dialogical Self Theory of ‘I-positions’ is a foundation with which to understand this problem.

Design

Descriptive correlational study of post-operative bariatric patients explored the concept of ‘I-obese’ and ‘I-ex-obese’ in an effort to quantify previous qualitative findings and develop a survey questionnaire.

Methods

Bariatric patients (N=55) between 18-30 month post-operative completed one hour interviews. Cluster analysis and Chi-square analysis compared mean scores and explored the prevalence of ‘I-positions’ and body image concerns in the participants.

Results

Cluster analysis of the survey data identified participants as falling into either ‘I-obese’, ‘I-ex-obese’ or ‘mixed I-obese’ categories. There were significantly higher body image concerns in

the 'I-obese' participants than those identified as 'I-ex-obese'. The majority of female participants reported high body image concerns. There was no significant association with weight loss percentage.

Conclusion

This research establishes a connection in this study sample of women who experience body image concerns and prolonged 'I-obese' identification 18 to 30 months after their bariatric surgery.

Relevance to clinical practice

To date, the primary measure of bariatric surgery success has focused almost exclusively on the amount of weight lost. Implementing psychological as well as physiological care however, may be the key to full recovery and long-term success. Practitioners can use this new information to plan effective pre- and post-operative psychological preparation and support.

Introduction

Over the last forty years, BMI has increased in the United States and around the world. The scientific world is working to understand the roots of obesity and the myriad of ways that being obese impacts the individual's health and how the individual sees himself or herself. Worldwide, there are 2.1 billion people in the world defined as overweight or obese. Overweight or obesity is the cause of 3.4 million deaths per year from associated co-morbid diseases (Caulfield, 2015). Over 7 million quality-adjusted life years are lost in the US annually due to excess body weight (Meunnig, Jia, Lee & Lubetkin, 2008). The cost for caring for overweight and obese individuals is rising rapidly, making attempts to decrease health care costs very difficult. It is estimated that \$147 billion is spent yearly caring for the obese. Obese individuals account for 77% more medication costs than non-obese individuals each year (Finkelstein,

Trogdon, Cohen & Dietz, 2009). The effects of obesity are not simply confined to physical health. There are numerous psychological and emotional issues concerning body image, how one sees himself or herself and how they are seen by the world (Carels et al., 2014). Obesity may affect ones' ability to meet life's demands and fulfill societal roles. Those who are obese are less likely to finish high school or marry. They often earn less money than their normal-weight counterparts (Sarwer, Allison, Bailer, Faulconbridge & Wadden, 2013). There is a positive correlation between work absenteeism, decreased production, and employee obesity (Bilger, Finkelstein, Kruger, Tate & Linnan, 2013)

Bariatric surgical procedures have increased as one way to improve the health of persons who experience obesity. Criteria for surgical intervention includes body mass index (BMI) ≥ 40 kg/m² or a BMI ≥ 35 kg/m² accompanied by serious weight-related health conditions such as diabetes or heart disease (Sarwer et al., 2013). There were 468,609 bariatric surgical procedures performed around the world in 2013. The two most commonly performed procedures are the Roux-En-Y Gastric Bypass (RYGB) and the Vertical Sleeve Gastrectomy (VSG), which account for 82% of all bariatric procedures (Angrisani et al., 2015). These two procedures result in greater weight loss than gastric banding procedures. The RYGB has both a restrictive and malabsorptive component (Furtado, 2010), while the VSG is a restrictive procedure (Colquitt, Pickett, Loveman & Frampton, 2014).

Background

Following bariatric surgery, patients usually experience rapid weight loss. Although this weight loss is exciting, and often something that the patient has longed to achieve, there are physical, emotional and psychological challenges that emerge. The post-operative course requires strict guidelines for eating, drinking and exercising that the patient must follow for the

rest of their life. Sometimes in the focus on preparing pre-operatively for physical change, the patient is not fully prepared for the psychological, spiritual and social challenges that rapid weight loss presents. The body is the external self that we present to the world, and as a result, the opinions and support of others may impact the post-surgical adjustment and ultimate weight loss (Livhits et al., 2011). Therefore, recovery and adaptation should be viewed through a holistic lens (Lazzareti, Rotella, Pala & Rotella, 2015).

Pre-existing emotional and social issues may once again emerge after surgery (Canetti, Bachar & Bonne, 2016), alluding to the multi-dimensional nature of obesity and the weight-loss experience. French researchers found that if the pre-operative psychological state and body image of a bariatric patient is disturbed, there is a great risk of deepening psychological disturbance and weight regain after surgery (Claudon, Roche-Bauchet, Guirkingner, Alnot & Ziegler, 2012). In an effort to recognize the best candidates for such surgery, pre-surgical psychological assessment and testing is a routine part of the pre-operative clearance for bariatric surgery and is required by most insurance companies and bariatric surgeons. It is designed to identify patients with deep-seated emotional, interpersonal, coping and compliance issues, and substance abuse or eating disorders that may negatively affect the surgical outcome (Sarwer et al., 2013).

Most of the research on the psychological transition after bariatric surgery has been qualitative. Phenomenological, narrative, grounded theory studies and case reports have given voice to bariatric patients who have experienced rapid weight loss but remain a ‘fat person’ on the inside (Faccio, Nardin & Cipolletta, 2016; Guardia et al., 2013; LePage, 2010; Lyons, Meisner, Sockalingam & Cassin, 2014; Warholm, Oien, Raheim, 2014). For example, Faccio et al., (2016), stated that a year after surgery, the participants in their study “thought, behaved and

related to others as though they were still obese.” She explains this as conflicting ‘I-positions’, or identities. Previous qualitative researchers have defined this paradox as a ‘mind-body lag’ or ‘allocentric lock’ in which the patient’s body has physically become smaller, but remains obese in the patient’s mind (Lyons et al., 2014; Riva, 2012). This echoes the experiences of anorexics and amputees, where the lived body and the experienced body are not the same (Henderson, 2008). Neuroscience research has highlighted the amygdala, part of the limbic system of the brain, as the seat of fear and negative emotions associated with body experiences. The amygdala (or as a pair, the amygdalae) play a role in consolidating allocentric (body as object in the physical world) sensory input to long-term memory. The amygdala is responsible for survival instincts, and when the amygdala is stimulated, strong emotions such as fear, anger and sadness are activated. Perhaps negative feelings associated with the stigma of obesity become stored by the amygdala, and continually resurface in bariatric surgery patients even after achieving surgically induced weight loss (Byrne, 2017; Riva, 2012). The effect that such psychological disquietude has on the recovery and subsequent weight management of the bariatric patient has not been quantitatively studied. The purpose of this research study was to describe the adjustment experience of post-operative bariatric surgery patients in terms of ‘I-positions’ as they adjust to diminished weight, and differentiate that adjustment from the more general concept of body image. Two research questions were addressed:

1. Is there preliminary evidence that the two ‘I-positions’ exist in a sample of bariatric surgery patients?
2. How does the concept of ‘I-positions’ differ from traditional assessment of body shape/body image?

Theoretical Framework

The proposed theoretical framework for understanding this health challenge for bariatric patients is Dialogical Self Theory (DST), developed by Hermans (2001). Faccio et al., (2016), used this theory in her phenomenological study of pre- and post-operative bariatric surgery patients. Hermans', as opposed to the traditional Western view of individual and rational personhood, conceives the self as dialogical. As the person moves through space and time, the self also transitions through a number of imaginative positions or 'I-positions' (Hermans, Kempen & vanLoon, 1992). This theory uniquely combines the self (traditionally singular) and the concept of dialogue (traditionally plural). In DST, the self is made of a multiplicity of 'I-positions' that develop in response to the many roles and experiences of the individual (Figure 1). There is a constant dialogue between 'I-positions' where negotiations, debates and conflicts often arise. The self becomes a 'mini-society' of the mind. In Hermans' theory, it is completely healthy and normal for this dialogue to take place. As the individual experiences change in their life status and situations, the 'I-positions' also fluctuate in response. American philosopher David Antin describes the dialogical concept when he writes, "The self is an oral society in which the present is constantly running a dialogue with the past and the future inside of one skin" (Hermans & Geiser, 2012, p.xiv).

One 'voice' or 'I-position' may dominate a person's life for many years, only to become subordinate when new 'I-positions' emerge and create discord (Faccio et al., 2016). An event, such as bariatric surgery, may create adjustment difficulty since it is simultaneously incorporated as 'part of the self' and also rejected as 'not part of the self'. It becomes a "'kernel around which the formation of I-positions and counter-positions can emerge'" (Raggart, 2012, p. 36). Post-operatively, the individual's previous 'I-position' of 'I (as) obese' may not mesh with the new 'I-

position' of 'I (as) ex-obese' after dramatic weight loss occurs. This forms a dialogical triad which resembles a triangle (Figure 2). The points of the triangle are 'I-obese', 'I-ex-obese' (in conflict) and the resolution position to which the patient moves to resolve the conflict. It is proposed that clinical care and intervention may serve to move the patient to the resolution position; something that Faccio et al. (2016) refers to as 'an effort of awareness'. DST incorporates other terms to describe the interplay of roles in the dialogical self. These terms are *'third position'*, *'ambiguous third position'*, *'meta position'*, *'promoter position'*; each of which affect the dueling 'I-positions' in the individual. Each term describes a role in a healthy individual grappling with change and life demands (Hermans & Geiser, 2012) though for purposes of this research, will not be discussed here. Faccio et al., found that the position of 'I (as) obese' remained dominant even after the patient lost much of their excess body weight. This dominance is so pervasive that she hypothesizes that the 'I (as) ex-obese' position is actually a variation of the 'I (as) obese' position. Instead of a dichotomous division between the two positions post-operatively, she sees the patient moving along a continuum as they adjust psychologically to their new weight. The terms 'I-obese' and 'I-ex-obese' were coined by Faccio et al., (2016) but have not been operationalized at present.

Methodology

Study Design and Sample Selection

This study used a descriptive correlational design and was approved by the East Carolina University Institutional Review Board. The sample consisted of 55 bariatric surgery patients who were between 18 to 30-months post-surgery. They were recruited in four ways: 1) from patient records at a private bariatric surgery clinic with operating privileges at a Level One Trauma Center with MBSAQIP (Metabolic and Bariatric Surgery Accreditation and Quality

Improvement Program) accreditation; 2) from patients making their scheduled 24-month post-op visit; 3) from participants at the monthly Bariatric Surgery Support Group; 4) through the office Facebook page and the Patient Portal (automated phone system). Patients in the clinic record were contacted using a systematic random sampling plan in which each 20th patient was contacted to invite to enroll in the study, until the list was exhausted. A phone script was used to ensure similar contact among all patients. Each participant volunteer was scheduled for a 60-minute interview appointment at the surgery office in a private room.

Inclusion criteria consisted of bariatric surgery patients between 18-30 months post-operative who had a Roux-En-Y Gastric Bypass (RYGB) or Vertical Sleeve Gastrectomy (VSG) procedure. Participants were female or male, age 21 or older, English-speaking with a BMI ≥ 35 kg/m² and seen at least twice in the first post-operative year. Exclusion criteria were patients who had a Laparoscopic Adjustable Gastric Band (LAGB) or revision surgery. Lap Band patients were excluded because the procedure is associated with the least amount of weight loss in most patients (Chakravarty et al., 2012) and revision patients were excluded because they have already experienced weight loss, psychological adjustment, and weight regain or other complication (Arapis et al., 2012). After statistical analysis however, it was found that the survey answers of the revision patients did not vary significantly from the answers of RYBG or VSG patients, and two revision patients were included in the sample.

Data Collection

Each interview began with the signed informed consent and HIPAA consent process. A Tanita scale was used to measure weight, height, BMI and body fat percentage. Demographic data was collected and the participants were asked to complete six survey questionnaires: Evolving Self View After Bariatric Surgery (ESV), Multidimensional Health Locus of Control

and Weight Locus of Control (MHLC and WLOC), Toronto Alexithymia Scale (TAS-20), Body Shape Questionnaire (BSQ) and Health-Related Quality of Life (SF-36v2). Twenty-dollar gift card incentives were given to each participant at the conclusion of their interview. This research paper will focus on the relationship between body image (BSQ) and Evolving Self View After Bariatric Surgery (ESV) in bariatric surgery patients.

Survey Instruments

The ESV is composed of 25 statements developed by the researcher to indicate whether participants identified as “I-obese” or “I-ex-obese” (See Appendix B). These statements were based on the qualitative research of Faccio et al., (2016). Their study results stated that “even one year after surgery they (participants) still thought, behaved and related to others as though they were still obese” (p. 1713). This three-pronged statement was divided into three separate concepts:

- Thinking about oneself as if he/she was still the weight before surgery.
- Behaving as if he/she were still the weight before surgery.
- Relating to others as if he/she were still the weight before surgery.

In turn, these three concepts were used to extrapolate 22 other statements that described situations and ways of thinking that fit within these three broad concepts. The work of other qualitative researchers in the field of bariatric weight adjustment served as inspiration for these extrapolated statements (Carr & Jaffe, 2012; DePanfilis et al., 2007; Guardia et al., 2013; Henderson, 2008; LePage, 2010; Lyons et al., 2014; Riva, Gaudio & Dakanalis, 2014). Nine of the resulting 25 statements fit into the ‘Thinking About Oneself’ category; 8 statements fit into the ‘Behaving as If’ category; and 8 statements fit into the ‘Relating to Others’ category. For the purpose of establishing content validity, the 25 sample statements were reviewed by three

bariatric surgery patients, two of whom are bariatric surgery coordinators, to render opinions regarding the applicability and design of the questions. The ESV consists of 25 questions on a 6-point Likert scale ranging from 1 ('Strongly Disagree') to 6 ('Strongly Agree'), is written on a 6th to 7th grade reading level, and takes 5 minutes to complete.

Body image was measured using the BSQ which has 34 questions on 6-point Likert scale (Cronbach's alpha 0.88; 5th grade reading level) and can be completed in 10 minutes (Cooper, Taylor, Cooper and Fairbum, 1987). The BSQ scale ranges from 1 ('Never') to 6 ('Always'). Originally, the BSQ was developed for use with young, anorexic females (Cooper et al., 1987), although later studies expanded its use to men, obese individuals and people without eating disorders (Rosen, Jones, Ramirez & Waxman, 1995). Lazzaretti et al., (2015) says, "The BSQ is one of the most valid psychometric instruments for the assessment of distress related to body image and weight in obese individuals seeking weight reduction" (p.62).

Data Analysis

Demographic data and instrument responses were analyzed using SPSS v22. Two-step cluster analysis was used to explore the natural groupings, or cluster of cases within the data set for both ESV and BSQ results. Cluster analysis works with continuous, categorical or a combination of the two types of variables. The output of cluster analysis includes the number of cases in each cluster and the importance of each question in developing the separate clusters.

Results

The sample was predominately female, almost evenly divided by race, with roughly two-thirds of participants reporting that they were married. Almost two-thirds of the sample reported at least some college or a college degree, and they were evenly distributed in income categories between \$26,000 and \$100,000 (Table 1). The mean age at time of the survey was 48 and the

mean number of months post-op was 23. Weight measures found a median pre-op weight of 272 pounds, median pre-op BMI 43, median current weight 175, median current BMI 27, and median recalled weight at age 18 of 170 lbs. (Table 2).

Analysis of item responses for body image (BSQ) and I-position (ESV) showed that women and men clustered in different significant ways with the two step cluster analysis. Thus, for the purposes of this research article, men were not included in further data analysis. The 34 items of the BSQ scale were entered into the SPSS two-step cluster procedure and two clusters (groups) of individuals were identified. Ten of the 34 BSQ items were identified as important predictors in defining the two clusters, and are presented in Table 3 with the items listed in order of importance. Of the 45 women in the study sample, 31 (69%) had higher mean scores on the ten items and are designated as having high body image concerns (cluster 1), while 14 (31%) of the women had lower mean scores and are designated as having low body image concerns (cluster 2). The three most important items in defining the clusters involved items asking about feeling self-conscious about one's shape when in the company of others (item #33), worried about other people seeing rolls of flesh around their waist (item #24), and feeling ashamed about their body (item #20). Additional items focused on their feeling of lack of self-control (item #23), comparing their body to others (item #12), that worry about their shape made them diet (item #21), and being particularly aware of their body shape in various situations (items # 29, 22, 14 and 15). BSQ mean scores ranged from < 1.50 to ≥ 3.00 for the sample. Higher mean scores indicate more concern about body shape.

The 25 ESV items were entered into the SPSS two-step cluster procedure and two clusters (groups) of individuals were identified. Six of the 25 items were identified as important predictors in defining two clusters, and are presented in Table 4 with the items listed in order of

importance. Of the 45 women in the study sample, 28 (62%) had higher mean scores on the six items and are designated as 'I-obese' (cluster 1), while 12 (27%) had lower mean scores and are designated as 'I-ex-obese' (cluster 2). Five of the women were not assigned to a cluster and are designated as 'I-obese-mix'. The ESV statements were written to reflect three concepts related to the overall construct of obesity identification. These concepts included thinking of oneself in terms of their pre-operative weight, behaving in terms of their pre-operative weight, and relating to others in terms of their pre-operative weight. The three most important items in defining 'I-position' clusters involved a relationship item (item 17), a behavioral item (item 15), and another relationship item (item 22). Item 9 was a behavior item, while items 18 and 23 are relationship items. For the women in the 'I-obese-mix' group, their responses to items 17, 15, 22, and 23 are more similar to the item means of the 'I-ex-obese group, while items 9 and 18 are more similar to the I-obese group. To summarize, the significant items on the ESV fell into two of the three stem concept areas. Two questions relate to physical feelings of how the participant moves and acts in the physical world (behavioral items). The other four strong predictor questions spoke to how the participant interacts with others (relationship items). The total for ESV individual item mean scores ranged from < 1.50 to ≥ 3.00 for the sample.

Crosstabulation of the BSQ groups with the ESV 'I-position', revealed that 79% ($n=22$) of those women identifying as 'I-obese' were in the high concern group on the BSQ. In contrast, of the 12 women identifying as 'I-ex-obese', 58% ($n=7$) were in the low concern BSQ group and 42% ($n=5$) were in the high concern BSQ group. Of the 5 women who had a mixed 'I-position', the majority ($n=4$, 80%) were in the high concern group for BSQ (See Table 7). When analyzing the BSQ and ESV scores together, a Chi-square test for independence indicated a significant relationship between the BSQ scores for women ($n=40$) who were on one end of the 'I-position'

continuum or the other ('I-obese' or 'I-ex-obese'). Women who had lower body image concerns were more likely to have an 'I-ex-obese' position, and those women who had high body image concerns were significantly more likely to be in the 'I-obese' position (1, 40), $p=0.02$, $\phi = 0.36$.

Discussion

Body image is a concept that is found in literature dating back to the 1980's and has been associated with research in a variety of populations. Perceptions of physical appearance are closely linked to the concept of body image (Jensen et al., 2014). The psychologist, Gallagher (1986) defined body image as a "inconstant, intentional object of consciousness" (p.542) but not how the body performs in space and time. He states that the body is understood in an abstract and disintegrated way within the concept of 'body image'. Certain parts of the body may be emphasized or even singled out. Conversely, the 'I-obese' concept is newer, and based upon qualitative findings (Faccio et al., 2016). The results of this study imply that despite their different roots, body image and the 'I-obese' concepts are related to each other. Studying the overlap between the data clusters reveals the relationship between the body image and 'I-obese' concepts, and how the concepts compare.

Analysis revealed that there were two clusters of data for the BSQ; one group of female bariatric surgery patients was designated 'high concern' and the second group was designated 'low concern'. This study found that 69% ($n=31$) of the women clustered into the high concern group for the BSQ, with only 31% ($n=14$) in the low concern group. Even those women in the mixed 'I-obese' group were predominately in the 'high concern' group for the BSQ ($n=4$, 80%). This demonstrates that in this sample, body image was a concern for the majority of the females. The instructions for the BSQ questionnaire ask the participant to rate their feelings about their appearance over 'the last four weeks'. This time frame leads to answers from the participant that

are more reflective of their current post-operative feelings about their body, and fits well with the time frame of the ESV which is also concerned with the participant's current 'I-position'.

Likewise, six items on the ESV instrument were strong predictors of ESV group membership. The means scores on those six items were highly significant in clustering participants into 'I-positions' of either 'I-obese', 'I-ex-obese' or 'I-obese-mix'. According to the theoretical framework of Hermans' DST, these positions may represent a post-operative bariatric surgery patient's adjustment to their new 'I-position' as a thinner person. Faccio et al., (2016) states that they found the 'I-ex-obese' position to be a variation of the dominant 'I-obese' position. She surmised that bariatric surgery and resulting weight loss (even while extreme) is not sufficient to change the self-image of the formerly obese persons. A change can only come about if the "identity of the person and the system of social relations connected with it also adapt to this new reality" (p. 1718). Even use of the prefix 'ex', as in 'I-ex-obese' imparts the significance of the obese identity concept to that person. They might have recovered from the physical manifestations of obesity, but have not fully recovered from the condition of being obese. Two of the significant clustering statements were taken directly from Faccio et al.'s, (2016) qualitative study on bariatric surgery patients and these statements were 'Today, I relate to others as if I were the same weight that I was before surgery', and 'Today, I behave as if I were the same weight that I was before surgery'. The other clustering statements were derived from findings of other qualitative researchers. Overall, the clustering statements were divided between the importance of how one moves and behaves in the physical world and how they interact with others in determining their 'I-position' identity. This research introduces the ESV questions as a potential means to identify bariatric surgery patients who are experiencing difficulty transitioning psychologically from 'I-obese' to 'I-ex-obese'.

For this sample, the majority of women could be categorized as having both high concern regarding body image and a psychological view of themselves as ‘I-obese’, even though they may have a diminished post-op weight. The converse of this finding is also true, albeit to a lesser degree. The data shows that slightly more than half of women who report a low concern about their body image, also view themselves as ‘I-ex-obese’ ($n=7$, 58%). If we view as Faccio et al., (2016) suggests that the participants are on an ‘I-obese’ continuum and not in distinct groups, the research data is especially interesting. For example, the small group ($n=5$) of ‘Mixed I-obese’ women can be viewed as being in transition between ‘I-obese’ and ‘I-ex-obese’. For some of the clustering questions, their ESV results placed them closer to the scores of the ‘I-ex-obese’ women. In others, they were closer to the ‘I-obese’ women, and in still others, their scores on the ESV were in-between. In other words, they experience times when they use the lens of diminished weight individuals to view themselves and the world around them, and other times when they still interact with the world as an obese individual. The connection between ESV and BSQ scores becomes more evident when viewed on such a continuum.

BSQ scores indicate how the individual views herself and incorporates a perceptual, attitudinal and behavioral component and thus may or may not be rooted in reality. It is a concept that is extremely relevant to research in obesity, since 74% of obese individuals have body image dissatisfaction and distortion (Lazzeretti et al., 2015). A study by Pona, Heinberg, Lavery, Ben-Porath & Rish (2016) found that patients with pre-existing mental health issues, such as depression or ideas of persecution were more likely to report body image concerns in the first three months after bariatric surgery, despite weight loss. Likewise, the ‘I-position’ may or may not be truly reflective of the bariatric patient’s true physical size. This present research alludes to the fact that body image may in fact, be the ‘lynch pin’ that impacts a patient’s position along

the 'I-obese' continuum. A healthy or 'low concern' body image is part of the healing and adjustment process reflected by lower scores on the ESV and a 'I-position' closer to the 'I-ex-obese' end point. Conversely, a 'high concern' body image score triangulates with a high score of the ESV to indicate that the patient may be struggling to adjust to their diminished weight and new view of self. Perhaps this 'mind-body lag' has its roots in the neuroscience theory on amygdala function. Weight-related stigma may generate negative emotions which are stored in the amygdalae and inhibit proper updating of the body schema as weight is lost after surgery (Byrne, 2017; Riva, 2012).

Limitations

This study utilizes an insured patient population from a private practice in a rural state in the Southeastern US. Thus, the results may not be generalizable to more impoverished patients in other parts of the US, or in areas with a less rural population base. The patients who returned researcher phone calls and signed up for the study may not be indicative of the general population of that office. In addition, the results of these female patients may not apply to a larger population or to male patients. Information in this study was primarily gathered through self-report, which may result in bias. This study is the first trial of the ESV, which was developed from multiple sources. Further use of the ESV with larger and more varied populations is needed to establish test-retest reliability and validity of the questions.

Future Research

This research represents an exploration into the concept of an 'I-obese' continuum based on the theory of Hermans as applied by Faccio et al., (2016), and whether such a concept is associated with body image issues in women. The body image in a bariatric surgery patient is subjective and certain parts of the body may be singled out or over-emphasized as has been

proposed by body image theorists (Gallagher, 1986). This emphasis may or may not be integrated in the reality of the body schema, or physical experience of the body. Women with body image issues are more likely to view themselves as obese in the ways that they think about themselves, behave, and relate to others, as measured by the ESV. Future research using the ESV instrument with larger sample sizes and in a longitudinal time frame, may identify whether patients with higher scores along the 'I-obese' continuum show sustained or greater post-operative weight loss. If so, the concept of 'I-obese' should be highlighted and identified during both pre-op and post-op treatment programs for obese patients. In an effort to further explore the role of the amygdalae in prolonged 'I-obese' orientation, future research could investigate whether strongly negative experiences of an obese person (such as teasing or ostracism) are associated with higher 'I-obese' scores on the ESV.

Conclusion

Recovery from bariatric surgery consists of more than a reduction of pounds or BMI. A successful post-operative course includes healthy personal, social and psychological adjustment. In female bariatric patients, the concept of body image plays an important role in their psychological adjustment. Body image alone however, doesn't fully explain the experience of post-operative bariatric surgery patients. 'Body Concept' incorporates the perceptual aspect of body image, along with the patient's cognitive understanding of the body in general (Gallagher, 1986). This subtle difference may explain why there is some overlap in scores on the BSQ and ESV, but not perfect equivalence. The ESV may be tied statistically in this study to 'body image' because it serves as a way to measure the 'bridging' construct of 'body concept. 'Body concept' in turn, connects body and mind. When the ESV is used to assess the body concept of post-operative bariatric surgery patients it may provide a way to understand, identify and assist

those patients to move along the continuum toward a healthy, new life with their diminished weight.

Figure 1. Basic Model of Dialogical Self Theory

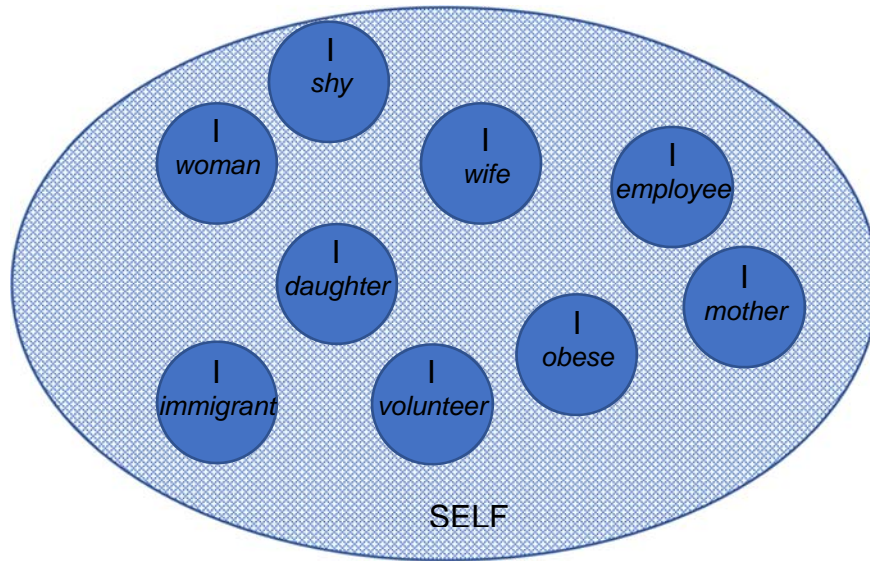


Figure 1. Dialogical Self Theory depicting examples of possible I-positions within the same self for a female subject.

Figure 2. Dialogical Self Theory in a Post-Operative Bariatric Surgery Patient

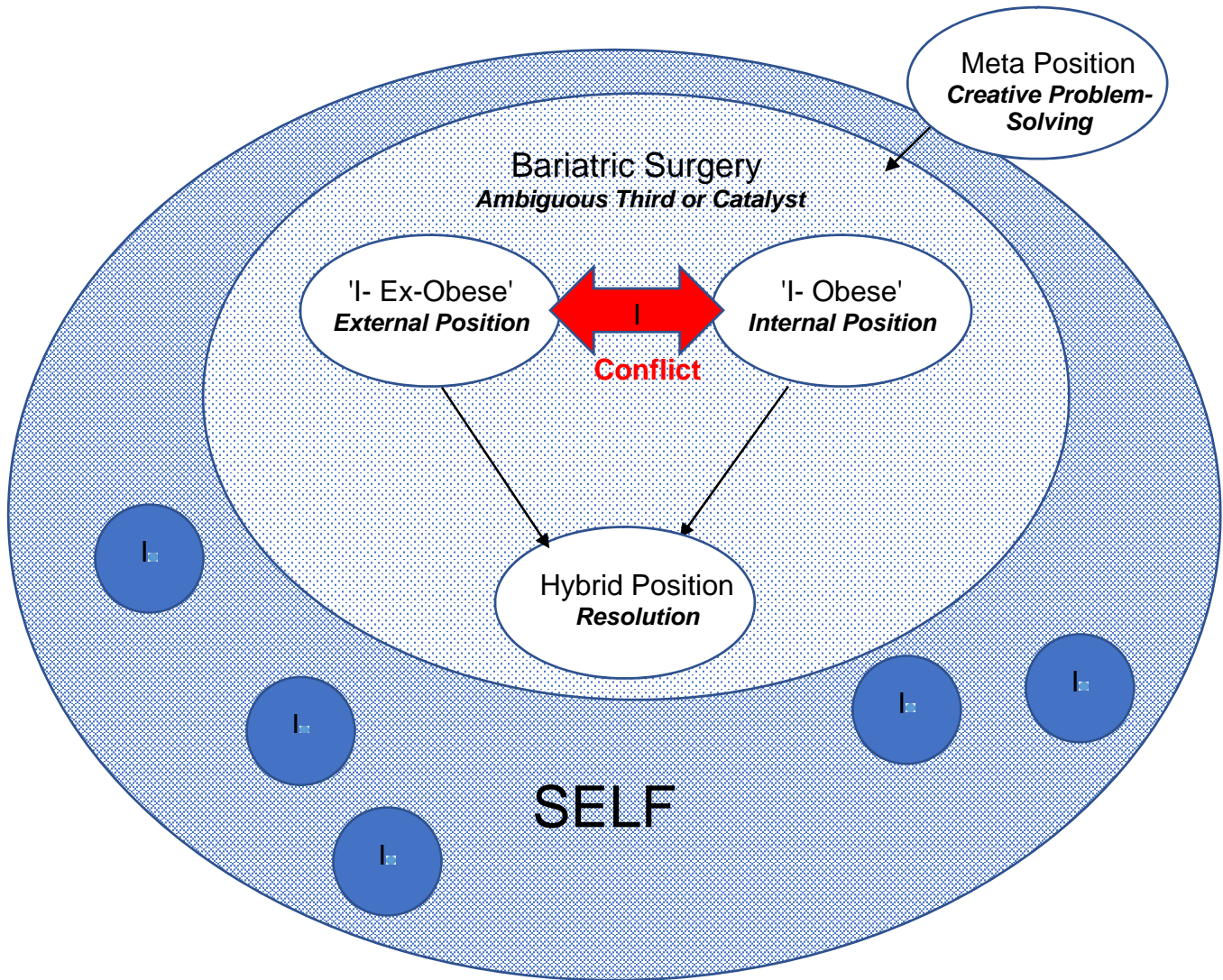


Figure 2. The Dialogical Self Theory applied to post-operative bariatric surgery patients depicting the struggle to adjust to normal weight. This figure depicts a dialogical triad composed of two conflicting 'I-positions' (I-Ex-Obese and I-Obese) triggered by an ambiguous third (bariatric surgery) and the emergence of a hybrid position which resolves the conflict.

Table 1

Demographic Characteristics of Female and Male Participants (N=55)

Characteristic	<i>n</i>	%
Age at time of survey (years)		
24-35	6	11
36-45	16	29
46-55	21	38
56-65	9	16
66-70	3	5
Race		
African-American	25	46
Caucasian	30	55
Sex		
Female	45	82
Male	10	18
Marital Status		
Divorced	5	9
Married	37	67
Single	13	24
Highest Level of Education Completed		
Less than HS diploma or GED	3	6
HS diploma or GED	4	7
Some college	16	29
Assoc Degree	11	20
4-year college degree	10	18
Some graduate school	5	9
Masters degree	4	7
Doctoral degree	2	4
Household Income		
\$25,000 or less	4	7
\$26,000-50,000	12	22
\$51,000-75,000	13	24
\$76,000-100,000	13	24
\$100,000 or more	3	22

Note: Totals of percentages are not 100 for every characteristic because of rounding.

Table 2

Female and Male Participant Characteristics (N=55)

Characteristic	<i>M</i>	<i>SD</i>	Median	Range
Age at time of survey (years)	48	10.22	49	24-70
Months post-op at time of survey	23	3.55	23	18-30
Pre-op weight	284	53.15	272	214-455
Today's weight	182	45.33	175	108-357
Pre-op BMI	46	8.40	43	35-68
Today's BMI	29	6.81	27	19-51
Percent total weight loss	36	8.65	37	15-56
Weight at age 18 (recall)	182	60.31	170	98-412

Table 3

Means and Standard Deviations of High Concern and Low Concern Female Participants (n=45) on the Body Shape Questionnaire (BSQ) Items That Were Most Important in Identifying the Body Shape Groups

BSQ Item Number [†]	High Concern Female ^a		Low Concern Female ^b	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
33. Have you been particularly self-conscious about your shape when in the company of other people?	2.74	0.86	1.29	0.47
24. Have you worried about other people seeing rolls of flesh around your waist or stomach?	4.00	1.55	1.57	0.76
20. Have you felt ashamed of your body?	3.03	1.14	1.21	0.43
12. Have you noticed the shape of other women and felt that your own shape compared unfavorably?	3.03	1.2	1.43	0.65
23. Have you thought that you are the shape you are because you lack self-control?	3.00	1.41	1.14	0.36
29. Has seeing your reflection (for example, in a mirror or shop window) made you feel bad about your shape?	2.52	1.03	1.14	0.36
21. Has worry about your shape made you diet?	2.94	1.15	1.36	0.75
22. Have you felt happiest about your shape when your stomach has been empty (for example, first thing in the morning)?	2.81	1.49	1.00	0.39
14. Has being naked, such as when taking a bath, made you feel fat?	3.03	1.38	1.36	0.63
15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?	3.29	1.13	1.79	0.80

Note. All the mean scores between the low concern and high concern groups were statistically significant, $p < .001$. ^a $n = 31$; ^b $n = 14$; [†] Items listed in order of importance in cluster formation

Table 4

Means and Standard Deviations of Female I-obese, Female I-ex-obese and Not Classified Female Participants on the Evolving Self View (ESV) Items That Were Most Important in Identifying the I Clusters (in descending order of importance)

ESV Item Number [†]	I-obese ^a		I-ex-obese ^b		I-obese-mix ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
17. Today, I relate to others as if I were the same weight that I was before surgery.	3.68	1.28	2.00	1.23	2.00	1.41
15. In my mind, I can still ‘feel’ my fatter self when I move.	2.75	1.29	1.33	0.49	1.25	0.50
22. I prefer to be with new friends, rather than old friends who knew me before my weight loss.	1.75	0.64	1.08	0.29	1.40	0.55
9. Today, I behave as if I were the same weight that I was before surgery.	2.36	1.06	1.25	0.62	2.60	1.67
18. People compliment me on my appearance but I have trouble believing them.	2.86	1.18	1.58	1.00	3.60	2.07
23. I feel less powerful in my thinner body.	1.82	0.77	1.08	0.29	1.20	0.45

Note. All the mean scores between the I-obese and I-ex-obese groups were statistically significant, $p < .01$. ^a $n = 28$; ^b $n = 12$; ^c $n = 4$ for items 17 and 15, ^c $n = 5$ for items 22, 9, 18, and 23; [†] Items listed in order of importance in the cluster formation.

CHAPTER 4: PSYCHOLOGICAL ADJUSTMENT AND QUALITY OF LIFE OF BARIATRIC PATIENTS 18 – 30 MONTHS POSTOPERATIVELY

Background

When bariatric surgery is performed to address the health issue of obesity, a successful outcome is usually described as the percent of pre-operative weight lost. This definition fails to address the importance of post-operative psychosocial adjustment. Previous research has alluded to a ‘mind-body lag’ in which the patient’s experienced body feels larger than their physically smaller post-operative body, perhaps as a result of amygdala conditioning. The impact of this issue on the patient’s recovery and quality of life has not been quantitatively described.

Methods

Female bariatric surgery patients between 18-30 months post-op were interviewed and asked to complete demographic data, survey instruments and undergo anthropometric testing. Their evolving self-view, health locus of control, tendency toward alexithymic thought and health quality of life were assessed to identify significant relationships which could impact psychological adjustment. Hermans’ Dialogical Self Theory is used to understand the self-view of post-operative bariatric patients.

Results

The majority of participants retained an obese view of self despite weight loss. Those who retained an ‘I-obese’ viewpoint, were significantly more likely to see external situations and powerful others as controlling their health and weight, have difficulty identifying their feelings and score significantly lower in vitality, social functioning and mental health.

Conclusion

Despite losing weight, the majority of participants retained an obese view of self that was significantly associated with a lessened health quality of life and some emotional difficulty. Use of the ESV instrument may allow early identification of post-operative patients with a prolonged 'I-obese' self-view, and provide an opportunity for intervention.

Introduction

Bariatric surgery has increased in prevalence as a way to address the health issue of obesity for patients with a Body Mass Index (BMI) ≥ 40 kg/m² or a BMI ≥ 35 kg/m² accompanied by serious weight-related health conditions such as diabetes or heart disease (Sarwer, Allison, Barles, Faulconbridge and Wadden, 2013). The global number of bariatric surgical procedures performed in 2013 was 468,609, 95.7% of which were done laparoscopically (Angrisani et al., 2015). When obese patients decide to pursue bariatric surgery, a successful outcome is defined as rapid and sustained weight loss. Sometimes in the focus on preparing pre-operatively for physical change, the patient is not fully prepared for the psychological, emotional and social challenges that rapid weight loss presents (Lazzaretti, Rotella, Pala & Rotella, 2015). The opinions and support of others may impact the post-surgical adjustment and ultimate weight loss (Livhits et al., 2011) and is part of the total health of a post-operative patient. Pre-surgical psychological testing is an established tool to screen for mental illness that may negatively affect adjustment (Sarwer et al., 2013). However, a subtle psychological issue is alluded to in the research literature but remains largely unexplored in quantitative research.

Qualitative studies and case reports describe patients who have experienced rapid weight loss in a physical sense, but remain a 'fat person' on the inside (Faccio, Nardin & Cipolletta, 2016; Guardia et al., 2013; LePage, 2010; Lyons, Meisner, Sockalingam & Cassin, 2014; Warholm, Oien, Raheim, 2014). Previous researchers have defined this paradox as a 'mind-body

lag' or 'allocentric lock' in which the patient's body has physically become smaller, but remains obese in the patient's mind (Lyons et al., 2014; Riva, 2012). Neuroscience has found that the amygdalae play a role in storing allocentric (body as object in the physical world) sensory input to long-term memory and are responsible for survival instincts, and emotions such as fear, anger and sadness. The stigma of obesity may result in negative emotions that are stored by the amygdalae, and repeatedly resurface in bariatric surgery patients despite weight loss (Byrne, 2017; Riva, 2012). Psychology offers another view of how obese individuals become psychologically 'stuck' at their heavier weight.

Faccio et al. (2016) used the framework of Hermans' Dialogical Self Theory (DST) in her phenomenological study of pre- and post-operative bariatric surgery patients. His theory states that as a person moves through space and time, they transition through a number of imaginative positions, or 'I-positions', some of which are very strong (Hermans, Kempen & vanLoon, 1992). A voice such as 'I (am) obese' may dominate a person's life for many years. After bariatric surgery, their body changes, and the patient is forced to begin to see themselves in a new I-position, 'I (am) ex-obese' (Faccio et al., 2016). The 'I am obese' position remained dominant in most of her participants' lives however, even after they lost much of their excess body weight. The effect that such psychological disquietude has on the recovery and subsequent weight management of the bariatric patient has not been quantitatively defined. The purpose of this research study was to assess the relationship between the 'I-position' in post-operative bariatric surgery patients and locus of control, alexithymia, health quality of life and weight regain.

Methods

Study Design and Sample Selection

This study used a descriptive correlational design and was approved by the university Institutional Review Board. The sample consisted of 40 female bariatric surgery patients who were between 18 to 30-months post-surgery. Patients were recruited in four ways: 1) records at a private bariatric surgery clinic with operating privileges at a MBSAQIP (Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program) accredited hospital; 2) scheduled 24month post-op visit; 3) monthly Bariatric Surgery Support Group; 4) Facebook page and the Patient Portal (automated phone system). Systematic random sampling and use of a phone script ensured that each participant was approached in a similar fashion. Each participant volunteer was scheduled for a 60-minute interview appointment. Inclusion criteria consisted of: female bariatric surgery patients, 21 years or older who speak English, have a BMI ≥ 35 and were seen at least twice in the first post-op year. Exclusion criteria were patients who had a LAGB or revision surgery. Lap Band patients were excluded because the procedure is associated with the least amount of weight loss in most patients (Chakravarty et al., 2012) and revision patients were excluded because they have already experienced weight loss, psychological adjustment, and weight regain or other complication (Arapis et al., 2012). Twenty-dollar gift card incentives were given to each participant at the conclusion of their interview.

Data Collection

Each interview began with the signed informed consent and HIPAA consent process. A Tanita scale was used to measure weight, height, BMI and body fat percentage. A demographics form was completed and the participants were asked to complete six survey questionnaires: Evolving Self View After Bariatric Surgery (ESV), Multidimensional Health Locus of Control

and Weight Locus of Control (MHLC and WLOC), Alexithymia (TAS-20), Body Shape Questionnaire (BSQ) and Health-Related Quality of Life (SF-36v2). This paper will focus on the results from the ESV, MHLC, WLOC, TAS-20 and the SF36v2.

Survey Instruments

Obesity identification was measured using questions developed by the researcher and entitled ‘Evolving Self View After Bariatric Surgery’ (ESV) (See Appendix B). The ESV identified the participant’s orientation as predominately ‘I-obese’ or ‘I-ex-obese’ using a 25-question tool based on the qualitative research of Faccio et al., (2016). Their study results stated that “even one year after surgery they (participants) still thought, behaved and related to others as though they were still obese” (p. 1713). This three-pronged statement generated three concepts: thinking about oneself as if he/she was still the weight before surgery; behaving as if he/she were still the weight before surgery; and relating to others as if he/she were still the weight before surgery.

These three concepts were used to extrapolate 22 other statements that described situations and ways of thinking that fit within the three areas. The work of other qualitative researchers in the field of bariatric weight adjustment served as inspiration for the extrapolated statements and added content validity (Carr & Jaffe, 2012; DePanfilis et al., 2007; Faccio et al., 2016; Guardia et al., 2013; Henderson, 2008; LePage, 2010; Lyons et al., 2014; Riva, Gaudio & Dakanalis, 2014). The ESV is contains 25 questions on a 6-point Likert scale ranging from 1 (‘Strongly Disagree’) to 6 (‘Strongly Agree’), is written on the 7-8th grade level, and takes 5 minutes to complete.

Locus of Control was assessed using the MHLC (Wallston, Wallston, Kaplan & Maides, 1976; Cronbach's alpha = 0.72; 8th grade reading level) which has 18 questions using 6 point

Likert scale. The MHLC is scored on three scales: LOC Internal, LOC Chance, and LOC Powerful Others. The Powerful Others subscale in turn, is divided into ‘Powerful Others (doctors)’ and ‘Powerful Others (others)’ which includes family, friends and religious figures. Each of the three subscales is scored on a scale from 6 to 36. MHLC authors state that the scores cannot be combined as a total score. Rather it is possible for an individual to be high or low on all three scales (Wallston, Wallston & DeVellis, 1978). Weight Locus of Control was assessed using the WLOC that uses a 6-point Likert scale (5-6th grade reading level) (Saltzer, 1978). Alexithymia was assessed using the Toronto Alexithymia Survey (TAS-20) which has 20 questions on a 5-point Likert scale (Cronbach's alpha = 0.81; 5-6th grade reading level. The TAS-20 has three subscales: Difficulty Identifying Feelings, Difficulty Describing Feelings and Externally Oriented Thinking (Bagby, Taylor and Parker, 1994; Leising, Grande & Faber, 2009). Health-Related Quality of Life was measured using the SF-36v2 survey which has 8 domains, or subscales (Cronbach's alpha >0.70 on all items; 5-6th grade reading level; 3 and 5-point Likert scale). The SF-36v2 is one of the most commonly-used tools for health studies and assesses both physical and mental health across age and disease groups with t-scores based on a normative group with standard score of 50 and $SD = 10$ (QualityMetric, 2009). Higher scores on the subscales indicate higher levels of health.

Data Analysis

Demographic data and instrument responses were analyzed using SPSS v22. Two-step cluster analysis was used to explore the natural groupings, or cluster, of cases within the data set for ESV results. Cluster analysis works with continuous, categorical or a combination of the two types of variables. The output of cluster analysis includes the number of cases in each cluster and the importance of each variable in developing the separate clusters.

Results

This female sample was almost evenly divided by race, with roughly two-thirds of participants reporting that they were married. Almost two-thirds of the sample reported at least some college or a college degree, and incomes were evenly distributed between \$26,000 and \$100,000. The mean age was 48 (*SD* 9.97) and the mean number of months post-op was 22 (*SD* 3.44) (Tables 1 and 2).

ESV scores mean scores ranged from < 1.50 to ≥ 3.00 for the sample. Mean scores for 'I-obese' participants clustered at the higher end of the scale and mean scores for 'I-ex-obese' clustered at the lower end of the scale. Six of the 25 ESV items (Table 3) were strong predictors of 'I-position' membership and are listed in descending order of strength of prediction. The significant items on the ESV fell into two of the three stem concept areas: relating to physical feelings of how the participant moves and acts in the physical world, and how the participant interacts with others. The 40 female participants clustered into either 'I-obese' or 'I-ex-obese' categories. Overall, there were more women in the 'I-obese' category ($n=28$, 70%) than 'I-ex-obese' ($n=12$, 30%). All mean scores for 'I-obese' and 'I-ex-obese' groups differed significantly for the six items. This remainder of this paper focuses on the ESV as a distinguishing variable.

Results for the MHLC and WLOC scale showed higher mean scores in the participants who identified as 'I-obese' on the ESV continuum, than those who identified as 'I-ex-obese'. This held true for all three subscales of the MHLC and on the WLOC. An independent samples t-test was conducted to explore the impact of the 'I-position' on the MHLC scores and WLOC. The locus of control scores of 'I-obese' participants were significantly higher for two of the subscales (Table 4): Powerful Others and Weight Locus of Control.

Results for the TAS-20 scale showed that participants who identified as ‘I-obese’ on the ESV continuum had higher mean scores for the TAS-20 Total score, the Difficulty Identifying Feelings subscale and the Difficulty Describing Feelings subscales, indicating more alexithymia. An independent samples t-test was conducted to explore the impact of the ‘I-position’ on the TAS-20 scores. The scores were significantly higher for ‘I-obese’ participants on the Difficulty Identifying Feelings subscale (Table 4).

Results for the SF36v2 (Health-Related Quality of Life or HRQOL) show that participants who identified as ‘I-obese’ on the ESV continuum had lower mean scores on 7 out of 8 domain subscales, as well as the Mental Health Summary scale. Lower scores indicate a lower level of health. An independent samples t-test was conducted to explore the impact of the ‘I-position’ on the SF36v2 scores. The scores were significantly lower for ‘I-obese’ participants on the Vitality (VT) scale, Mental Health (MH) scale, and the Mental Health Component Summary. In addition, there were two scales that were lower with moderate significance and moderate effect sizes (Table 4). These scales were: General Health (GH) scale and Social Functioning (SF) scale.

There were four weight measures included in this analysis: pre-operative weight, lowest weight achieved, recalled weight at age 18 and percent of pre-op weight lost. On the first three measures, the participants who identified as ‘I-obese’ on the ESV continuum had mean weights that were higher than their ‘I-ex-obese’ counterparts. In addition, the ‘I-ex-obese’ individuals showed a slightly greater percent of pre-op weight lost. On independent samples t-test however, these differences were not found to be significant.

Discussion

This research provides further evidence that obesity is a multifactorial disease with biological, environmental and psychological roots (Lazzeretti et al., 2016). The traditional measurement of weight loss as the primary measure of success fails to emphasize this. Significant relationships between the correlation of the ESV results (obesity identity) with other psychosocial and emotional indicators, reveal links that help us understand how bariatric patients see themselves. First, the participants in this study whose obesity identity remained ‘I-obese’ had a significantly higher external orientation toward their views of their health and weight than participants who had transitioned to see themselves as ‘I-ex-obese’. In particular, ‘I-obese’ individuals were highly oriented to the influence of powerful others as forces instrumental in their ability to stay healthy and maintain their weight. The subscale of ‘Powerful Others’ refers not only to health providers, but also family, friends and religious figures. Those health providers that are assisting ‘I-obese’ individuals to maintain their weight and adjust post-operatively should recognize that programs must provide positive external reinforcement, include these significant others, and not count on all patients being motivated within themselves to maintain the prescribed diet and exercise programs. The results of the TAS-20 revealed that those participants who are higher on the ‘I-obese’ continuum are significantly more likely to have an alexithymic trait: difficulty describing their feelings. Researchers have described this as ‘meta-cognition’, or the participant’s ability to see their situation from a removed, external position. Without this ability, it is difficult for patients to be self-aware and mindful about behavioral decisions such as eating and exercise.

The participants who identified as higher on the ‘I-obese’ continuum experienced significant negative impact on their vitality (feeling full of life and having energy), their mental

health (feeling calm, peaceful and happy) and their overall mental health component measurement as measured on the SF36v2. These findings are similar to the results from a systematic review which found that post-operative physical HRQOL improved more readily than psychological HRQOL in bariatric patients (Lazzertti et al., 2016). General health (see themselves as healthy, less likely to get sick and trending toward good health) and social functioning (ability to spend time in normal social activity) were negatively affected to a lesser degree. These findings support the mixed results of other studies that assess the impact of bariatric surgery and diminished post-op weight on quality of life and life satisfaction (Hachem & Brennan, 2016; Lee, Kim & Cho, 2013; Muller, Wenger, Schiesser, Clavien & Weber, 2008; Nickel et al., 2017; Shiri, Gurevich, Reintuch & Beglaibter, 2007). This research seems to indicate that the patient's position on the 'I-obese' continuum may be the missing piece in identifying those patients that do not experience the expected increase in health quality of life after bariatric surgery.

Pre-surgical psychological counseling may help the health system recognize those patients with serious mental illness and eating disorders, but this research shows that psychological issues persist and can have a significant impact on the post-operative course, as well. Mental health concerns must be a prescribed part of the post-operative care for bariatric surgery patients who become 'stuck' on the 'I-obese' end of the identity continuum. Post-operative weight loss maintenance for bariatric surgery patients is variable and dependent on type of procedure that is used, patient selection and time frame. The large multi-center LABS study found that most post-surgical weight loss occurs in the first 12 months, with a small but predictable weight regain (3-5% total weight) between 24 and 36 months post-op (Courcoulas et al., 2013). Based on that variability, they recommend improved pre-op patient selection and

education, along with enhanced post-operative support to positively affect weight maintenance. This study found that there was no significant difference in the weight measures for patients who identify as ‘I-obese’ at 18 to 30 months post-op from those that identify as ‘I-ex-obese’.

Limitations

This study is limited by the fact that all the participants are patients of the same surgeon in a private practice office in the Southeastern US and therefore may not be representative of all bariatric patients. In addition, this research is not longitudinal, and therefore does not account for changes in attitudes or psychological adjustment over time. When assessing the issue of weight regain, the time frame may not have been extended far enough to capture the weight regain after the 24-30 month period. The data collected in this research depends mostly on self-report and thus, may be prone to bias and recall issues.

Conclusion

Lazeretti et al., (2015) recommends that researchers attempt to define sub-groups of individuals who may or may not respond to weight loss surgery and medical weight loss in successful and predictable ways. This research study heeds that call by identifying patients who remain oriented in an ‘I-obese’ mindset and may be predisposed to post-operative psychological disquietude and crisis. The ESV and standardized survey instruments were used to triangulate and define the personality traits and psychological positions that may significantly affect adjustment and post-op weight loss. This research identified that ‘I-obese’ patients have a more external orientation to their health and weight loss maintenance and may benefit from the reinforcement of ‘powerful others’ to help them to adjust. In addition, the difficulty that these individuals have in identifying feelings as measured by the TAS-20 may lead to less mindful decisions about eating habits and triggers. Additional longitudinal research is recommended to

implement the ESV at later post-operative periods in an effort to identify the attenuation or strengthening of these personality traits and ongoing weight maintenance. Validation of the role of negative emotions and fear/survival instincts as moderated by the amygdala, could be validated through qualitative and quantitative research on early weight stigma experiences. An increased emphasis on basic post-operative psychological counseling is recommended to address the concerns of bariatric surgery patients who may experience adjustment issues.

Table 1

Demographic Characteristics of Female Participants (N=40)

Characteristic	<i>n</i>	%
Age at time of survey (years)		
24-35	3	8
36-45	14	35
46-55	14	35
56-65	7	18
66-68	2	5
Race		
African-American	19	48
Caucasian	21	53
Marital Status		
Divorced	4	10
Married	26	65
Single	10	25
Highest Level of Education Completed		
Less than HS diploma or GED	3	8
HS diploma or GED	2	5
Some college	10	25
Assoc Degree	8	20
4-year college degree	8	20
Some graduate school	5	13
Masters degree	3	8
Doctoral degree	1	3
Household Income†		
\$25,000 or less	3	8
\$26,000-50,000	8	20
\$51,000-75,000	10	25
\$76,000-100,000	10	25
\$100,000 or more	8	20

Notes: Totals of percentages are not 100 for every characteristic because of rounding; †Total reported (N=39).

Table 2
Female Participant Characteristics (N=40)

Characteristic	<i>M</i>	<i>SD</i>
Age at time of survey (years)	48	9.97
Months post-op at time of survey	22	3.44
Pre-op weight	271	41.55
Today's weight	171	35.11
Pre-op BMI	45	7.39
Today's BMI	28	6.14
Percent total weight loss	37	8.97
Weight at age 18 (recall)	169	45.80

Table 3
*Differences Between the Seven Most Important
Evolving Self View Items that Identified the I-Obese
and I-Ex-Obese Clusters*

ESV Item Number [†]	I-obese ^a		I-ex-obese ^b	
	<i>M</i> *	<i>SD</i>	<i>M</i> *	<i>SD</i>
17. Today, I relate to others as if I were the same weight that I was before surgery	3.68	1.28	2.00	1.23
15. In my mind, I can still 'feel' my fatter self when I move.	2.75	1.29	1.33	0.49
22. I prefer to be with new friends, rather than old friends who knew me before my weight loss.	1.75	0.64	1.08	0.29
9. Today, I behave as if I were the same weight that I was before surgery.	2.36	1.06	1.25	0.62
18. People compliment me on my appearance but I have trouble believing them.	2.86	1.18	1.58	1.00
23. I feel less powerful in my thinner body.	1.82	0.77	1.08	0.29

Notes. All the mean scores between the I-obese and I-ex-obese groups were statistically significant, $p < .01$. ^a $n = 28$; ^b $n = 12$; [†]Items listed in order of importance in the cluster formation; *Higher mean scores indicate more agreement with item.

Table 4

Differences Between I-Obese and I-ex-Obese Women on Study Measures (N=40)

Measures	I-obese ^a		I-ex-obese ^b		<i>t</i> (38)	<i>p</i>	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Health Locus of Control							
LOC Internal	27.04	3.54	27.17	3.79	0.11	.92	<.001
LOC Chance	15.96	4.46	13.42	4.66	1.63	.11	.065
LOC Powerful Others	19.32	3.24	16.50	5.30	2.07	.045	.101
Weight Locus of Control	7.82	2.60	5.58	1.51	2.78	.008	.169
Alexithymia							
Difficulty Identifying Feelings	12.21	3.98	8.42	2.91	2.98	.005	.189
Difficulty Describing Feelings	9.50	3.51	7.75	3.31	1.47	.150	.053
Externally Oriented Thinking	16.61	3.65	17.25	4.65	0.47	.640	.006
SF36v2							
Physical Functioning	53.64	5.53	53.57	10.96	0.03	.990	<.001
Role Physical	54.08	5.03	54.35	5.34	0.15	.880	.001
Bodily Pain	51.01	9.23	54.54	9.78	1.09	.280	.030
General Health	57.11	6.18	61.11	4.57	2.01	.051	.096
Vitality	54.40	6.78	61.02	8.29	2.64	.012	.155
Social Functioning	53.22	7.84	57.34	0	1.80	.079	.079
Role-Emotional	50.08	9.22	53.56	4.95	1.23	.230	.038
Mental Health	52.27	8.10	60.46	2.81	3.39	.002	.233
Physical Health Summary	54.66	6.82	54.53	7.90	0.06	.960	<.001
Mental Health Summary	51.48	10.17	59.22	2.96	2.57	.014	.148

Note: ^a*n*=28; ^b*n*=12

CHAPTER 5: SUMMARY

Introduction

Bariatric surgical procedures have increased as a one way to improve the health of persons who experience obesity. Criteria for surgical intervention includes body mass index (BMI) ≥ 40 kg/m² or a BMI ≥ 35 kg/m² accompanied by serious weight-related health conditions such as diabetes or heart disease (Sarwer et al., 2013). There were 468,609 bariatric surgical procedures performed around the world in 2013. The two most commonly performed procedures are the Roux-En-Y Gastric Bypass (RYGB) and the Vertical Sleeve Gastrectomy (VSG), which account for 82% of all bariatric procedures (Angrisani et al., 2015). These two procedures result in greater weight loss than gastric banding procedures. The RYGB has both a restrictive and malabsorptive component (Furtado, 2010), while the VSG is a restrictive procedure (Colquitt et al., 2014).

Following bariatric surgery, patients usually experience rapid weight loss. Although this weight loss is exciting and often something that the patient has longed to achieve, there are physical, emotional and psychological challenges that emerge. The post-operative course requires strict guidelines for eating, drinking and exercising that the patient must follow for the rest of their life. Sometimes in the focus on preparing pre-operatively for physical change, the patient is not fully prepared for the psychological, spiritual and social challenges that rapid weight loss presents. The body is the external self that we present to the world, and as a result, the opinions and support of others may impact the post-surgical adjustment and ultimate weight loss (Livhits et al., 2011). Therefore, recovery and adaptation should be viewed through a holistic lens (Lazzareti et al., 2015).

Pre-existing emotional and social issues may once again emerge after surgery (Canetti et al., 2016), alluding to the multi-dimensional nature of obesity and the weight-loss experience. French researchers found that if the pre-operative psychological state and body image of a bariatric patient is disturbed, there is a great risk of deepening psychological disturbance and weight regain after surgery (Claudon et al., 2012). In an effort to recognize the best candidates for such surgery, pre-surgical psychological assessment and testing is a routine part of the pre-operative clearance for bariatric surgery and is required by most insurance companies and bariatric surgeons. It is designed to identify patients with deep-seated emotional, interpersonal, coping and compliance issues, and substance abuse or eating disorders that may negatively affect the surgical outcome (Sarwer et al., 2013).

Most of the research on the psychological transition after bariatric surgery has been qualitative. Phenomenological, narrative, grounded theory studies and case reports have given voice to bariatric patients who have experienced rapid weight loss but remain a ‘fat person’ on the inside (Faccio et al., 2016; Guardia et al., 2013; LePage, 2010; Lyons et al., 2014; Warholm, Oien, Raheim, 2014). For example, Faccio et al., (2016), stated that a year after surgery, the participants in their study “thought, behaved and related to others as though they were still obese.” She defines this in terms of conflicting ‘I-positions’, or identities. Previous qualitative researchers have defined this paradox as a ‘mind-body lag’ or ‘allocentric lock’ in which the patient’s body has physically become smaller, but remains obese in the patient’s mind (Lyons et al., 2014; Riva, 2012). This echoes the experiences of anorexics and amputees, where ‘the lived body’ and ‘the experienced body’ are not the same (Henderson, 2008). This phenomenon can be understood as a combination of physiological and psychological factors that work together to

prevent some bariatric surgery patients from successful post-surgical adjustment. This dissertation incorporated both of these views.

Neuroscience has highlighted the amygdalae, part of the limbic system of the brain, as playing a role in consolidating allocentric (body as object in the physical world) sensory input to long-term memory. Each amygdala is responsible for survival instincts, and strong emotions such as fear, anger and sadness. The stigma of obesity may result in negative emotions that are consolidated by the amygdala, and repeatedly resurface in bariatric surgery patients despite their diminished weight (Byrne, 2017; Riva, 2012).

A theoretical framework for understanding psychological issues associated with post-operative adjustment is Hermans' Dialogical Self Theory (2001). Hermans' theory, as opposed to the traditional Western view of individual and rational personhood, conceives the self as dialogical. As the person moves through space and time, the self also transitions through a number of imaginative positions or 'I-positions' (Hermans, Kempen & vanLoon, 1992). This theory uniquely combines the self (traditionally singular) and the concept of dialogue (traditionally plural). In DST, the self is made of a multiplicity of 'I-positions' that develop in response to the many roles and experiences of the individual. There is a constant dialogue between 'I-positions' where negotiations, debates and conflicts often arise. The self becomes a 'mini-society' of the mind. In Hermans' theory, it is completely healthy and normal for this dialogue to take place. As the individual experiences change in their life status and situations, the 'I-positions' also fluctuate in response. American philosopher David Antin describes the dialogical concept when he writes, "The self is an oral society in which the present is constantly running a dialogue with the past and the future inside of one skin" (Hermans & Geiser, 2012, p.xiv).

One ‘voice’ or ‘I-position’ may dominate a person’s life for many years, only to become subordinate when new ‘I-positions’ emerge and create discord (Faccio et al., 2016). An event, such as bariatric surgery, may create adjustment difficulty since it is simultaneously incorporated as ‘part of the self’ and also rejected as ‘not part of the self’. It becomes a “kernel around which the formation of I-positions and counter-positions can emerge” (Raggart, 2012, p. 36). Post-operatively, the individual's previous 'I-position' of 'I (as) obese' may not mesh with the new 'I-position' of 'I (as) ex-obese' after dramatic weight loss occurs. The effect that such psychological disquietude has on the recovery and subsequent weight management of the bariatric patient has not been quantitatively studied.

In an effort to understand the adjustment to diminished weight experienced by bariatric surgery patients, this research builds on both of these physiologic and psychologic frameworks. This three-manuscript dissertation study focused on four research questions:

1. Manuscript One: **Establish a clear definition of *disturbed body image in post-operative bariatric surgery patients* through concept analysis using Walker & Avant’s (2011) standardized method.**
2. Manuscript Two: (a) **Is there preliminary evidence that the two ‘I-positions’ (‘I-obese’ and ‘I-ex-obese’) exist in a larger sample of post-operative bariatric surgery patients?** The ‘Evolving Self View After Bariatric Surgery’ (ESV) tool was used to separate participants into the "I-obese" or "I-ex-obese" categories; (b) **How do the two ‘I-positions’ relate to the traditional assessment concept of body shape/body image in post-operative bariatric surgery patients?** The Body Shape Questionnaire (BSQ) was used to assess body image and the results were correlated with ‘I-positions’ as identified by the ESV.

3. Manuscript Three: **What is the relationship between the two ‘I-groups’ and locus of control, alexithymia and health quality of life?** The demographics and personal characteristics of both groups were assessed. Specific factors were studied through survey instruments: Locus of Control (MHLC), Weight-Specific LOC (WLOC), Alexithymia (TAS-20) and Health Related Quality of Life (SF36-v2).

Discussion of Findings

The concept analysis of *disturbed body image in bariatric surgery patients* (Manuscript 1) revealed that we can understand this concept through three defining attributes: (a) Disturbance of perception and experience, (b) Negative influence on quality of life, (c) Diminished functional health. The literature reveals that *disturbed body image* is not a completely physical or psychological phenomenon, but represents a merging of the two worlds. Even though anthropometric measurements might decrease rapidly during the post-operative phase, the internal experience of extreme weight loss often adjusts more slowly (Alegria & Larsen, 2015; LePage, 2010; Lyons et al., 2014). For a healthy outcome, both the allocentric view (attitudes, knowledge, and beliefs about the third-person perception of themselves in the world, and the egocentric view (experience of how that body moves through sensory input and tactile stimuli) need to dovetail together.

Bariatric surgery results in greatly diminished and persistent weight loss occurs in approximately 76% of post-operative patients (Courcoulas et al., 2013) at the three year post-op mark. While a primary goal however, that weight loss alone does not necessarily translate to overall satisfaction. Body image disturbance has been found to be an important facet of quality of life (Sarwer & Steffen, 2015) and may impact the satisfaction of bariatric patients. Even though it may appear counterintuitive, those experiencing massive weight loss do not always

show greater body image satisfaction and improved quality of life as their weight decreases (Kinzl, Lanthaler, Stuerz & Aigner, 2011; Pelle, Fortuin, Heck & Hout, 2008; Sarwer et al, 2010). Research findings remain inconclusive on this point.

A third aspect of the concept analysis of *disturbed body image* is diminished functional health. The inability to accept their new bodies may lead to a preoccupation with appearance (Masheb, Gilo, Burke-Martindale & Rothschild, 2006) and ultimately manifest itself physically. Body image dissatisfaction is a significant predictor of inflammation in the body, resulting in an increase in CRP and TNF- α , which are biomarkers of inflammation. If the interventions for obesity do not include treatment for body image disorders as well, the patient can experience increased inflammation, which can lead to prolonged co-morbid conditions such as diabetes and hypertension (Cernekić-Bizjak & Jenko-Praznikar, 2014; Muennig et al., 2008). In addition, there is an increased incidence of depression and other mental disorders associated with body image disorders.

Building upon the foundation of the concept analysis of *disturbed body image in bariatric surgery patients*, Manuscript 2 looked at the relationship between the traditional assessment of body image and whether such assessment could be related to the ‘I-position’ concept espoused by Hermans’ DST. A collection of questions called the ‘Evolving Self View After Bariatric Surgery’ (ESV) was introduced. The ESV questions were designed to measure the concept of ‘I-position’ introduced by Faccio et al., (2016) as it applies to post-operative bariatric surgery patients. This concept was previously explored through qualitative research, but has not been quantitatively defined or identified up to this point. Six of the ESV questions (#17, 15, 22, 9, 18 and 23) were strong predictors for ‘I-position’ group membership. The significant items on the ESV fell into two of the three stem concept areas. Two questions related

to physical feelings of how the participant moves and acts in the physical world. The other four strong predictor questions concerned how the participant interacts with others.

Cluster analysis revealed that in addition to the two possible 'I-positions' identified in Faccio et al.'s., (2016) phenomenological research study as 'I-obese' ($n=28$) and 'I-ex-obese' ($n=12$), there was a third group of participants who emerged as scattered between those two positions ($n=5$). These participants, designated as 'I-obese-mix' in this current study, demonstrated some views closer to 'I-obese' individuals and some closer to 'I-ex-obese'. The mixed position of these individuals seems to lend credence to Faccio et al.'s, assertion that the proposed 'I-positions' are actually on a continuum, rather than a dichotomous position with the recalcitrant position being 'I-obese', even after weight loss occurs. This research found that male and female participants clustered in different, significant ways. Even though the number of males participating in this study mirrored the national average for men having bariatric surgery (20% compared to 80% female), the overall number was not high enough to make sound conclusions about their data. Therefore, the bulk of the data analysis in Chapter 3 and 4 refers only to the female participants.

The 'I-position' as measured by the ESV, is strongly associated with body image concerns in this research. Cluster analysis on the BSQ results revealed two natural groupings of participants on the BSQ scale. There were 10 BSQ items that were strong predictors of group membership and concerned self-consciousness about their weight and appearance and view of others. One group labeled 'high concern' body image made up 69% ($n=31$) of study participants. The other group labeled 'low concern' body image made up 31% ($n=14$) of participants. Crosstabulation between the ESV and BSQ results, revealed that 79% ($n=22$) of those women identifying as 'I-obese' were in the high concern group on the BSQ. In contrast, of

the 12 women identifying as 'I-ex-obese', 58% ($n=7$) were in the low concern BSQ group and 42% ($n=5$) were in the high concern BSQ group. Of the 5 women who had a mixed 'I-position', the majority ($n=4$, 80%) were in the high concern group for BSQ.

When analyzing the BSQ and ESV scores together, a Chi-square test for independence indicated a significant relationship between the BSQ scores for women ($n=40$) who were on one end of the 'I-position' continuum or the other ('I-obese' or 'I-ex-obese'). Women who had lower body image concerns were more likely to have an 'I-ex-obese' position, and those women who had high body image concerns were significantly more likely to fall into the 'I-obese' position ($1, 40, p=0.02, \phi = 0.36$). In this sample, the majority of women can be categorized as having both high concern regarding body image and a psychological view of themselves as 'I-obese', even though they have a diminished post-op weight. The converse of this finding is also true, albeit to a lesser degree. The data shows that slightly more than half of women who report a low concern about their body image, also view themselves as 'I-ex-obese' ($n=7$, 58%). When theorizing how the concepts of body image and evolving self view fit together, it appears that one's body image may serve as the 'lynch pin' that impacts a post-operative patient's position along the 'I-obese' continuum. A healthy or 'low concern' body image is part of the healing and adjustment process for bariatric surgery patients and is reflected by lower scores on the ESV and a 'I-position' closer to the 'I-ex-obese' continuum end point. Conversely, a 'high concern' body image score often triangulates with a high score of the ESV to indicate that the patient may be struggling to adjust to their diminished weight and new view of self. This psychological explanation also fits within the neuroscience framework of how the hippocampi and amygdalae consolidate and process memories and emotions associated with physical events; especially negative experiences such as anger, fear and depression. Previously obese patients who have

experienced weight stigma and depressive feelings about their body image have imprinted that part of the brain to retain those feelings as part of their emotional ‘survival mode’. The amygdalae cache the traumatic experience to ensure a proper ‘fight or flight’ response for the next encounter, and the hippocampi ensure that the memory is maintained long-term. The theory would follow that even after the body weight diminishes, the brain’s management of negative emotions associated with previously being obese, keep the patient tethered to the ‘I-obese’ psychological position (Byrne, 2017).

Merely identifying the presence of the concept of ‘I-obese’ is interesting, but not necessarily helpful for health practitioners. Findings must be moved to the level of clinical application. Thus, another equally important goal of this research was to identify personality characteristics associated with the prolonged ‘I-obese’ psychological position, in an effort to pre-operatively identify bariatric surgery candidates who may experience post-op adjustment difficulty. In Manuscript 3, the use of the MHLC, WLOC, TAS-20 and SF36v2 survey instruments revealed that in nearly every aspect of the survey subscales the mean scores of the ‘I-obese’ participants moved as hypothesized in Chapter 1 (Chapter 1- Figure 3). That is to say that the ‘I-obese’ participants had higher mean scores in the MHLC external scales, the WLOC external scale and the TAS-20 indicating the potential for problematic post-op adjustment. In addition, the ‘I-obese’ participants exhibited lower mean scores (indicating less health) on 7 out of 8 subscales of the SF36v2. When analyzed for significance, there were aspects of health locus of control, weight locus of control, alexithymic personality characteristics and health quality of life significantly associated with the ‘I-obese’ psychological position in post-operative bariatric surgery patients. The ‘I-obese’ participants were more likely to see the locus of control for their health and weight in the control of powerful others, especially significant friends and family and

religious affiliations. In addition, those same participants demonstrated difficulty identifying their feelings, which may speak to the discord between what their amygdala has programmed them to feel, and what their new diminished weight tells them they *should* feel. Finally, ‘I-obese’ participants experienced significantly ($p<0.05$) diminished health within the SF36v2 subgroups of vitality and aspects of mental health. In addition, they were also more likely to experience a decrease in general health ($p=0.051$) and social functioning ($p=0.079$) with moderate effect sizes. These results fit with the previously discussed link between obesity and depression, body image issues and the theory of prolonged negative emotions as governed by the hippocampus’ link with the amygdala. Strong emotions from being teased or ostracized because of obesity can stimulate the amygdala and result in avoidance and negative feelings related to the body. The hippocampus ensures that the negative experience is stored long-term and not forgotten. Emotionally charged objects or situations reinforce these negative feelings (Riva, 2012).

Implications for Nursing and Future Research

The issue of obesity has led to a dramatic increase in those choosing bariatric surgery as a tool for weight control and abatement of co-morbidities. As bariatric surgery becomes more frequent, it is important to select patients through pre-operative screenings that will be able to adhere to the rigorous post-operative regimen and make a healthy psychological adjustment to their changing body. Recognizing antecedent conditions of disturbed body image in patients in either the pre-operative or early post-operative stage of their care may allow health providers to provide physical and psychosocial interventions. A concept analysis teaches us that body image disturbance in post-operative bariatric surgery patients cannot be defined in simplistic manner. The outcome depends on much more than the number of pounds lost. The nursing lens of holism

reminds us that we must consider the physical, psychological, emotional and social aspects of post-operative bariatric surgery patients to be truly helpful. To be healthy, these aspects of body image all need to be congruent and realistic (Tiggemann, 2004). Further research may make it possible to identify those bariatric surgery patients who do not have improved post-operative body image and who do not successfully integrate their new physical selves into their body schema.

Understanding how the physiological responses to being obese may be consolidated by the limbic system of the brain, may explain prolonged negative psychological positions in formerly obese persons, such as depression and body image disturbance. Mental assessment should be an important part of post-op checkups and timely referrals to counseling specialists can be made to aid in the post-operative transition. Patients who demonstrate a more external orientation toward health and weight management may need more extrinsic reinforcement, group participation, encouragement and reward to move past the 'I-obese' mindset. Nurses should include psychosocial questions that identify body image issues when they assess their patients and be especially mindful of the reactions and input of the patient and their significant others (Herdman & Kamitsuru, 2014). The incorporation of significant others, especially key friends and family members and religious figures, will allow them to assist patients who have a tendency to relinquish health and weight locus of control issues to those persons.

Assisting patients to correctly identify and label their feelings may help them with alexithymic tendencies. Another term for this ability is 'meta-cognition'. Without 'meta-cognition', the patient may not be self-aware about their eating and exercise plans. The counseling involved in helping patients improve in these areas does not have to be lengthy or complex. For example, Faccio et al., (2016) found that through a simple 'effort of awareness' or

single counseling session, patients were able to transition to a more realistic self view. Other research has shown that use of a visual or technological tool such as MRI scans (Bergelin & Lundgren, 2014), Experiential Cognitive Therapy groups or Virtual Reality software helped orient the patient to their new diminished weight (Cardenas-Lopez et al., 2014; Riva et al., 2012). By naming and explaining the concept of ‘I-obese’, providers are better able to prepare patients post-operatively for the body image challenges to come. Adding the cited survey instruments from this research (MHLC, WLOC, TAS-20, BSQ, SF36v2) to the pre-operative battery of tests will allow surgeons and bariatric clinics to more fully anticipate who will make a successful psychological transition to diminished weight. After surgery, the ESV can be administered to assess the post-op transition that weight loss patients are making. Future research in this area should include longitudinal research to implement the ESV at later post-operative periods in an effort to identify the attenuation or strengthening of these personality traits and ongoing weight maintenance.

Future research using the ESV instrument with larger sample sizes and a longitudinal design, may identify whether patients with higher scores along the ‘I-obese’ continuum show sustained or greater post-operative weight loss. If so, earlier recognition of patients with a concept of ‘I-obese’ should be highlighted and identified during both pre-op and post-op treatment programs for obese patients. The role of negative emotions and fear/survival instincts as consolidated by the amygdala, could be validated through qualitative and quantitative research on early weight stigma experiences and association with later ‘I-position’ as measured by the ESV. RCT research could isolate effective physiological and psychological interventions designed to encourage post-op bariatric patients to move along the ‘I-obese’ continuum from the ‘I-obese’ to ‘I-ex-obese’ position.

Conclusion

In summary, the transition to diminished weight for bariatric surgery patients is complex and involves both physiological and psychological aspects of adjustment. Focusing on only one aspect of care at the expense of the other may not meet the needs of all patients, especially women. Filling the gap between a ‘described’ phenomenon in qualitative research and a ‘measured’ phenomenon, this research establishes connections between body image, ‘I-position’ orientation and aspects of personality that may impact the success of bariatric surgery patients. Figure 1 illustrates the revised conceptual model associated with this dissertation research. The model is redesigned to reflect the findings that: (a) the established importance of the ‘I-obese’ position (as measured by the ESV) as a prominent distinguishing factor; (b) the ‘I-obese’ concept placed on a continuum instead of a dichotomy; (c) the mean score relationships between ‘I-obese’ and ‘I-ex-obese’ participants and the survey instruments; (d) the lack of conclusive data regarding weight regain in the two ‘I-obese’ groups.

Figure 1: REVISED Conceptual Model of the Psychological Adjustment to Surgically Induced Weight Loss

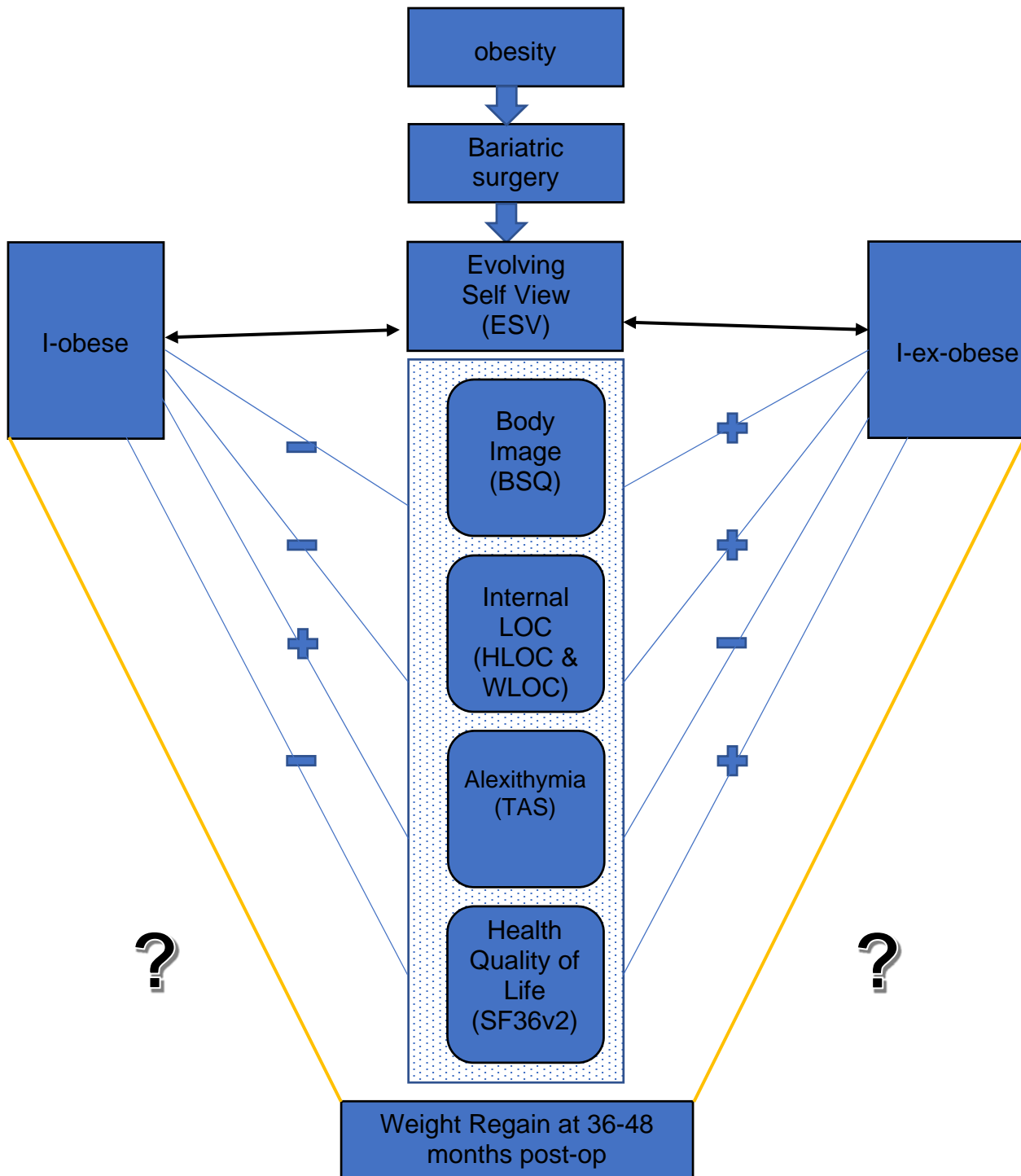


Figure 1. Revised conceptual model of psychological adjustment to normal weight in post-operative bariatric surgery patients illustrating the ‘I-obese’ continuum. Blue lines represent direction of mean survey scores for ‘I-obese’ and ‘I-ex-obese’ female participants. Yellow lines represent the need for future research of weight regain at a later post-op time frame.

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APPENDIX A: UMCIRB INITIAL APPROVAL & AMENDMENT APPROVAL



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building- Mail Stop 682
600 Moye Boulevard - Greenville, NC 27834
Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/ORIC/irb

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: Tamara Perdue
CC: Ann Schreier
Tamara Perdue
Date: 6/8/2017
Re: UMCIRB 16-002197
Psychological Adjustment to Normal Weight

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 6/8/2017 to 6/7/2018. The research study is eligible for review under expedited category #5, 7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
Body Shape Questionnaire	Surveys and Questionnaires
Data Collection	Interview/Focus Group Scripts/Questions
Data Collection	Data Collection Sheet
Dissertation Chapter 1	Study Protocol or Grant Application
Evolving Self View of Bariatric Surgery Patients	Surveys and Questionnaires
Health Related Quality of Life Questionnaire-spoken version	Surveys and Questionnaires
Health Related Quality of Life Questionnaire-written version	Surveys and Questionnaires
HIPAA Authorization.3	HIPAA Authorization
Interview Script	Interview/Focus Group Scripts/Questions
Letter of Consent	Consent Forms
Letter of Support	Dataset Use Approval/Permission
Multidimensional Health Locus of Control Survey	Surveys and Questionnaires
Recruitment Script for Phone Calls	Recruitment Documents/Scripts
Southern Surgical Prep Form	Additional Items
Toronto Alexithymia Scale Survey	Surveys and Questionnaires
Weight Locus of Control Survey	Surveys and Questionnaires

The Chairperson (or designee) does not have a potential for conflict of interest on this study.



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Notification of Amendment Approval

From: Social/Behavioral IRB
To: [Tamara Perdue](#)
CC: [Ann Schreier](#)
 [Tamara Perdue](#)
Date: 6/20/2017
Re: [Ame1_UMCIRB 16-002197](#)
 [UMCIRB 16-002197](#)
 Psychological Adjustment to Normal Weight

Your Amendment has been reviewed and approved using expedited review for the period of 6/19/2017 to 6/7/2018. It was the determination of the UMCIRB Chairperson (or designee) that this revision does not impact the overall risk/benefit ratio of the study and is appropriate for the population and procedures proposed.

Please note that any further changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. A continuing or final review must be submitted to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Document	Description
Social Media/Flyer Advertisement(0.01)	Recruitment Documents/Scripts

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
 IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

From: umcirb@ecu.edu
Subject: IRB: Amendment Approved
Date: July 5, 2017 at 2:39 PM
To: perduet14@students.ecu.edu



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Amendment Approved

ID: Ame2_UMCIRB 16-002197

Title: Amendment 2 for IRB Study #UMCIRB 16-002197
Psychological Adjustment to Normal Weight

Description: Your amendment has been approved. To navigate to the project workspace, click on the above ID.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

APPENDIX B: EVOLVING SELF VIEW AFTER BARIATRIC SURGERY TOOL

Evolving Self View After Bariatric Surgery	ID # _____					
<i>Directions: For each question, please mark your answer from the scale below.</i>						
Question	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
	1	2	3	4	5	6
1. Today, I think about myself as if I were still the weight I was before surgery.						
2. I have difficulty recognizing myself in a mirror or reflection in a window.						
3. I have difficulty recognizing my lighter weight self in photographs or videos.						
4. Who I am on the outside, is not the same as who I am on the inside.						
5. I feel sad about losing my previous, fatter self.						
6. When I look at myself in a mirror, the person I see is not really who I am.						
7. My thinner self battles with my fatter self.						
8. My body is the center of my attention even though I have lost weight.						
9. Today, I behave as if I were the same weight that I was before surgery.						
10. It is hard to get used to shopping for clothes for my new lower weight.						
11. I still turn sideways to pass through doors, turnstiles, or crowded areas as if I were my fatter self.						

Question	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
	1	2	3	4	5	6
12. I prefer to eat alone where no one can see me.						
13. I don't like to try new activities for health and recreation even though I am thinner.						
14. My thinner body fits into the world like my fatter body used to.						
15. In my mind, I can still 'feel' my fatter self when I move.						
16. I have difficulty acting like a thinner person acts.						
17. Today, I relate to others as if I were the same weight that I was before surgery.						
18. People compliment me on my appearance but I have trouble believing them.						
19. Losing weight has not made it easier to interact with others.						
20. Conversations about weight make me uncomfortable.						
21. When I get to know people, I feel that I need to share my weight loss story.						
22. I prefer to be with new friends, rather than old friends who knew me before my weight loss.						
23. I feel less powerful in my thinner body.						
24. People still think of me as being a fat person.						
25. Being a thinner person is harder than I thought it would be.						

Perdue, T.O. (2017). *Evolving self view after bariatric surgery*. Greenville, NC.

APPENDIX C: AUTHOR NOTE

Tamara O. Perdue is a doctoral student at the College of Nursing, East Carolina University, Greenville, NC.

This research was supported by a dissertation research grant from Sigma Theta Tau, Beta Nu Chapter, East Carolina University, Greenville, NC.

Correspondence concerning this dissertation should be addressed to Tamara O. Perdue, College of Nursing, Department of Nursing Science, Health Sciences Building, East Carolina University, Greenville, NC, 27834.

