

Using a Cognitive Behavioral Approach in Individual Counseling with
Patients Undergoing Bariatric Surgery

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Nina Marie DiTommaso

May 2021

Abstract

Morbid obesity is linked to physical and psychological well-being. Bariatric surgery has shown tremendous success with rapid weight loss in the patient population with morbid obesity. These patients experience issues with weight regain post-surgery, which can be linked to psychological and social factors. Despite this, mental health counseling is rarely offered in bariatric surgery programs. The primary investigator used a six-session Cognitive Behavioral Therapy (CBT) approach in individual counseling with patients following bariatric surgery. The primary investigator used a single case research design to treat four participants. The primary investigator measured the effectiveness of a six-session CBT treatment, assessing for psychosocial improvements (i.e., symptom distress, interpersonal relationships, social role) among the patients. Results suggested that each participant experienced psychosocial improvements, as well as a decrease in co-morbid maladaptive behavior post CBT treatment. Each of the four participants lost body weight during the study. In conclusion, CBT treatment may be beneficial for post-surgery bariatric patients.

Keywords: Bariatric Surgery, Clinical Trial, Cognitive Behavioral Therapy, Counseling, Single Case Research Design

Table of Contents

Chapter One	1
Purpose of the Study	2
Research Questions	3
Definition of Terms	3
Organization of the Study	5
Chapter Two.....	6
Obesity	6
Bariatric Surgery	8
Symptom Distress.....	10
Interpersonal Relationships	11
Social Functioning.....	11
Mental Health Concerns.....	12
Depression.....	13
Adverse Childhood Experiences	13
Problematic Eating and Eating Disorders.....	13
Substance Abuse.....	14
Cognitive Behavioral Therapy (CBT).....	15
Behavioral Strategies	16
Cognitive Strategies	18
CBT and Patients with Bariatric Surgery	19
Chapter Three	22
Research Questions.....	22
Participants.....	23
Addy	24
Bishop.....	25
Bubba	26
Dave.....	28
Measures	29
Outcome Questionnaire (OQ-45.2).....	30
Yale Food Addiction Scale Version 2.0 (YFAS-2).....	32
Emotional Eating Scale (EES)	33
Food Cravings Inventory (FCI).....	34
Alcohol Use Identification Test/Drug Use Identification Test (AUDIT/DUDIT)	34
Procedure.....	35
Recruitment and Screening.....	36
Data Collection	37
Time Frame Assessments	38
Time Frame Treatment	38
Treatment	39
Session One.....	40
Session Two.....	41
Session Three.....	41

Session Four.....	41
Session Five.....	42
Session Six.....	43
Counselor Credentials and Qualifications.....	43
Fidelity	44
Threats to External Validity	44
Data Analysis.....	46
Chapter 4	48
Results	48
Participant 1: Addy.....	48
Participant 2: Bishop	55
Participant 3: Bubba.....	61
Participant 4: Dave	67
Summary of Results.....	73
OQ45.2 Pre- and Post-Scores.....	73
Comparison of Combined Contextual Measures Pre- and Post-Treatment	74
Chapter 5	77
Discussion.....	77
Limitations.....	81
Counseling Implications	82
Implications for Bariatric Surgeons.....	83
Future Research	84
Conclusion	85
References.....	86
Appendix A. Informed Consent.....	97
Appendix B. Flyer for Recruitment	101
Appendix C. Patient Release Form	102
Appendix D. Script for Dietitian	103
Appendix E.	104
Appendix F.	105
Appendix G. Fidelity Checklist.....	106
Vita	108

List of Figures

Figure 1	105
Figure 2	51
Figure 3	52
Figure 4	53
Figure 5	54
Figure 6	54
Figure 7	58
Figure 8	58
Figure 9	59
Figure 10	59
Figure 11	60
Figure 12	64
Figure 13	65
Figure 14	65
Figure 15	66
Figure 16	66
Figure 17	70
Figure 18	71
Figure 19	71
Figure 20	72
Figure 21	72

Chapter One

Millions of individuals in the United States and Europe have obesity, and the number has grown in the last 20 to 30 years (de Zwaan et al., 2009; Jensen & Ryan, 2014; Muhlhans et al., 2009; Wang et al., 2015). Obesity impacts children, adolescents, and adults. Obesity affects physical and psychological well-being, as well as overall quality of life regardless of the person's age (Alizai et al., 2015). Although various treatment modalities for obesity exist, bariatric surgery is most effective for promoting weight loss among those with morbid obesity (Cassin et al., 2013; Lier et al., 2012; Muhlhans et al., 2009).

Although bariatric surgery promotes weight loss, it fails to address the underlying psychological issues present with many of these patients (Cassin et al., 2013; Cornette, 2008). Many bariatric patients struggle with weight loss, may regain weight within one and a half to two years' post-surgery, are dissatisfied with their body image, experience problematic eating (i.e., cravings, emotional eating), depression and anxiety, have consistent negative affect, emotion dysregulation, are at risk for suicide, and are susceptible to cross-addiction (i.e., alcohol, drugs) post-surgery (Cassin et al., 2013; Kubik et al., 2013; Lent et al., 2013; McFadden, 2010). Many patients struggle with symptom distress (e.g., anxiety disorders, affective disorders, adjustment disorders and stress related illness) (Cassin et al., 2013; Lent et al., 2013; McFadden, 2010), interpersonal relationships (e.g., loneliness, conflicts with others, family and marriage problems, etc.) (Kubik et al., 2013; Lier et al., 2015), and social role (e.g., social roles of worker, homemaker, student, etc.) (Bocchieri et al., 2002). Therefore, patients might benefit from mental health counseling before and after surgery to address the non-physical consequences of obesity (Cassin et al., 2013; Cornette, 2008). One counseling approach that may be helpful to patients that undergo bariatric surgery is Cognitive Behavioral Therapy (CBT), as it targets underlying

thoughts, emotions, and behaviors, and has been used to address many mental health areas that patients with bariatric surgery experience.

Cognitive Behavioral Therapy has been effective in treating clients with overweight or obesity, affective disorders, anxiety disorders, and eating disorders (Ashton et al., 2009; Ashton et al., 2011; Cassin et al., 2013). Co-occurrence of mental illness is very common within those who have had bariatric surgery (Alizai et al., 2015; Kvalem et al., 2016; Muhlhans et al., 2009). Although CBT is widely used for a number of issues related to obesity, use of CBT within those who have had bariatric surgery is just emerging. There have been two previous studies published using CBT to treat those who have had bariatric surgery post-surgery. The first study used a brief four session group CBT intervention. In the Ashton et al. (2009) study researchers referred patients to the CBT intervention if they met criteria for binge eating disorder, scored within the clinical range on the binge eating scale, or engaged in binge eating behaviors such as a loss of control with their graze eating patterns. Ashton et al. (2009) conducted the study with 128 bariatric surgery candidates and saw a decrease in binge eating episodes, binge eating cognitions, and binge eating behaviors post treatment. Cassin et al. (2013) conducted a pilot study with eight participants using a six-session individual CBT treatment intervention. Cassin et al. (2013) observed improvements with binge eating, emotional eating, and depressive symptomology post treatment.

Purpose of the Study

Few studies have explored effectiveness of mental health counseling with a CBT approach in those who have had bariatric surgery. There is a dearth of research related to mental health support for patients who have had bariatric surgery. Previous researchers have encouraged others to conduct more research related to mental health services within this population. For example,

Lodhia et al. (2015) recommended that further research include “implementing of cognitive therapy to improve coping resiliency” for patients with obesity (p. 997).

The purpose of this study is to evaluate the effectiveness of a six session CBT treatment approach with patients who have had bariatric surgery. The hope is that treatment will help decrease symptom distress, interpersonal relationship concerns, and social role difficulties. Another expectation is to identify how well CBT will address these issues within the post-surgery bariatric patient population.

Research Questions

Research questions provide the focus and guidance for the current study. The investigation will include the following three research questions. Is the CBT treatment approach effective in decreasing symptom distress as assessed by the OQ45.2 (Boswell et al., 2013)? Is the CBT treatment approach effective in decreasing interpersonal relationship concerns as assessed by the OQ45.2? Is the CBT treatment approach effective in decreasing social role difficulties as assessed by the OQ45.2? The dependent variables in this study are symptom distress, interpersonal relationship concerns, and social role difficulties. The identified instrument used to measure the dependent variables is the Outcome Questionnaire (OQ-45.2). I will discuss the research questions, variables, and measures in more detail in Chapter Three.

Definition of Terms

This section includes a list of key term definitions related to the present study. I will use these terms throughout the manuscript. I am offering the reader these definitions to clarify the meaning of terms for the purposes of this study. Terms are in alphabetical order.

Bariatric Surgery (weight loss surgery) – Bariatric surgery includes different surgical procedures performed on people who suffer from obesity or morbid obesity to achieve weight loss.

Cross Addiction – Cross addiction is the occurrence of addiction to multiple behaviors or substances simultaneously. Cross addiction can also mean the act of trading one addictive behavior or substance for another.

Problematic Eating – Problematic eating includes a variety of abnormal eating behaviors that can include restrictive dieting, compulsive eating, binge eating, or skipping meals.

Emotional Eating – Emotional Eating is the practice of consuming large amounts of food, usually high in sugar, fat, and salt in response to emotions or feelings instead of hunger.

Family History – Family history includes information about related disorders from the direct blood relatives of a patient.

Food Addiction – Food addiction is a disturbance with a person where a preoccupation exists with weight, body image, and food. Food is a source of pleasure and this may include episodes of binge eating, a feeling of loss of control over thoughts and food behavior. Food addiction may also include the presence of emotional, relational, or physical consequences.

Food Cravings – A food craving is an intense desire to consume a specific food and is different from normal hunger.

Interpersonal Relationship Concerns – Interpersonal relationship concerns include conflict, isolation, intimacy issues, or inadequacy within marriage or family.

Mental Health – Mental health is a person's condition or state in regard to their psychological and emotional well-being.

Obesity – Obesity encompasses ranges of weight that are greater than those considered healthy for a given height. To fall in this category a person's Body Mass Index score must be equal or greater than 30 kg/m².

Social Role Difficulties- Social role difficulties include conflict, distress, or inadequacy in work or social settings.

Symptom Distress – Symptom distress is the presence of anxiety, depression, emotional instability, increased stress, or adjustment issues.

Quality of Life – Quality of life is the general overall well-being of an individual.

Organization of the Study

This study is organized into five chapters. The current chapter is an introduction to the study. Chapter Two includes a review of the literature. I discussed a description of the methodology in detail in Chapter Three. Chapter Four includes the results and findings. Lastly, I included a discussion of the results and recommendations for further research in Chapter Five.

Chapter Two

I divided Chapter Two into four major sections, including foundational information on obesity, bariatric surgery, cognitive behavioral therapy, and use of cognitive behavioral therapy (CBT) with bariatric surgery patients. The obesity section includes criteria for obesity, co-morbidities, and information on prevention and treatment. The bariatric surgery section includes post-surgery benefits, post-surgery concerns, psychological characteristics of bariatric patients, and lastly, a section on addiction and patients who have had bariatric surgery. The CBT section includes a description of the theoretical approach, use with treating obesity and body image issues, behavioral strategies, and cognitive strategies. The section on CBT with patients who have bariatric surgery section includes discussion of the approach with this particular patient population.

Obesity

Obesity encompasses a range of weight that is considered to be too heavy and unhealthy for a given range of height. Body Mass Index (BMI) is a score calculated on a person's weight relative to their height. Commonly accepted BMI categories include: 18.5 to 24.9 kg/m², healthy weight; 25 to 29.9 kg/m², overweight; 30-39.9 kg/m², obese; and ≥ 40 kg/m², extremely obese. In the United States, one in seven people (i.e., roughly 14%) have a BMI of ≥ 35 kg/m² (Ogden et al., 2014). When individuals have severe obesity, they are typically carrying an excess of 100 pounds of body weight or more.

In 2013, Neff et al. reported that the rates of obesity are increasing, with 300 million people worldwide classified as having obesity. Ogden et al. (2014) reported 34.5% of adults (20 years and older) have obesity, and 16.9% of youth (ages two years to 19 years) have obesity. In the World Health Organization (2020) reported in 2016, 650 million adults were obese. in 2016

the World Health Organization (2020) also reported 340 million children and adolescents met criteria for obesity.

Individuals with obesity have co-morbidities such as type two diabetes, hypertension, heart disease, sleep apnea, cancer, and more (Alizai et al., 2015; Wang et al., 2015). Stigma, lowered quality of life, reduced life expectancy, increased morbidity and mortality, and increased health care costs are some of the undesired health risks and consequences associated with obesity (Bleich & Herring, 2012; Wang et al., 2015). Finkelstein et al. (2009) reported total medical obesity costs rose from \$78.5 billion in 1998 to about \$147 billion annually in 2008. In addition to the cost impact of obesity, those with obesity also must face issues that impact them emotionally and psychologically. These emotional and psychological issues may include low self-esteem and depression. The patients may experience symptom distress, interpersonal relationships problems, and social role difficulties. Examples of symptom distress include emotional eating, problems controlling food cravings, and alcohol and drug use. Examples of interpersonal relationship problems include romantic relationship problems, and difficulties with friendships. Social role difficulties include difficulties in the workplace, and difficulties in social situations where food is present.

Health care providers need to act quickly with treatment to help those who fit the criteria for obesity. Jensen and Ryan (2014) outlined five main approaches health care providers can use to help these individuals. The first step with obesity is to identify the patients that need to lose weight. Jensen and Ryan (2014) stated that the greater the BMI and waist circumference, the greater risk of cardiovascular disease, type two diabetes, and risk for mortality. Weight loss quickly addresses insulin resistance. As patients' insulin resistance diminishes, and they lose weight, BMI and waist circumference will typically decrease. The second step is providing

education for patients about the benefits of weight loss. Patients can benefit from receiving education regarding the benefits of losing as little as three to five percent weight loss. Weight loss can help in reducing triglycerides, blood glucose, and can lower the patient's risk of developing type two diabetes due to the resolution of insulin resistance (Jensen & Ryan, 2014). Larger amounts of weight loss will reduce blood pressure, improve cholesterol levels, and reduce the need for medication for blood pressure and blood glucose (Jensen & Ryan, 2014). The third recommendation is nutritional counseling for weight loss. The diet must include reduced calorie intake (Jensen & Ryan, 2014). The fourth recommendation is lifestyle intervention and nutrition counseling (Jensen & Ryan, 2014). This step includes high intensity onsite therapy and a minimum of 14 sessions over six months (Jensen & Ryan, 2014). Jensen & Ryan (2014) recommend individual and group counseling sessions be included with a trained health care provider. Lastly, Jensen & Ryan (2014) note the fifth approach for obesity treatment is bariatric surgery.

Bariatric Surgery

Bariatric surgery has become the most common recommendation in recent years to treat severe obesity (Ashton et al., 2009; Lier et al., 2015; Miras et al., 2014). Bariatric surgery has been shown to be more effective than non-surgical treatments for severe obesity (Neff et al., 2013). Bariatric surgery costs a minimum of \$10,000 per person (Bleich & Herring, 2012).

Four different bariatric surgery procedures are currently being used. The two most commonly used are Roux-en-Y gastric bypass and sleeve gastrectomy (Jensen & Ryan, 2014). Biliopancreatic diversion with a duodenal switch, and biliopancreatic diversion without a duodenal switch are less common but considered in extreme cases of obesity (Jensen & Ryan, 2014). When selecting patients for bariatric surgery the criteria include BMI, presence of co-

morbidities, and history of weight loss attempts. Neff et al. (2013) cited statistics from the National Institutes of Health and the National Institute of Clinical Excellence reported that bariatric surgery should be offered to those with BMI of 35-40 kg/m² who have co-morbidities, such as type two diabetes, obstructive sleep apnea, or those with BMI greater than 40 kg/m² regardless of weight related co-morbidities. Neff et al. (2013) suggested that bariatric surgery ought not be performed on patients with a BMI of less than 35 kg/m². When a patient is identified for surgery, a multi-disciplinary assessment is used. The multi-disciplinary assessment involves a psychological, surgical, dietetic, and medical review. Patients need to be psychologically and physically fit to proceed with the surgery, and they must be evaluated for their ability to comply with post-operative care (Neff et al., 2013). The practitioner has a duty to review the benefits and the risks for surgery with patients (Neff et al., 2013).

There is an increased risk for suicide after bariatric surgery (Neff et al., 2013). Major failures of bariatric surgery are due to psychological maladaptation, meaning the patient's expectations are not realistic of post-surgery life (Neff et al., 2013). Therefore, patients must be given all the correct and realistic information on what the procedure is going to achieve for them personally. Candidate selection and preparation is the key to achieve successful surgical outcomes (Neff et. al, 2013). The patient may experience many benefits post-surgery, but there are post-surgery concerns that could impact some patients in a negative way.

There are many positive benefits of bariatric surgery. Bariatric surgery is an effective treatment for obesity as it leads to substantial weight loss and reduction of obesity related comorbidities (Lier et al., 2012). Physical exercise, healthy eating habits, and psychological health correlate with healthy weight loss and postoperative improvement in quality of life (Lier et al., 2012). Bariatric surgery is effective with those with morbid obesity and improves physical

and psychological conditions associated with obesity. Kubik et al. (2013) reported benefits post-surgery associated with weight loss such as increased psychological health, improved depressive symptoms, better self-esteem, enhanced self-image, and improved quality of life. Kubik et al. (2013) indicated this improvement is largely associated with patient accountability and health care staff supporting the patients mentally and physically. Patients also show improved social functioning associated with self-esteem post-surgery and occupational improvement in correlation with decrease in obesity related physical co-morbidities (Herpertz et al., 2003).

Symptom Distress

Unfortunately, not all patients report increased quality of life post-surgery (Kubik et al., 2013). Some may have presence of symptom distress prior to surgery, and these may continue to persist post-surgery. Symptom distress may be the presence of physical problems, psychological problems, addiction problems, or a combination of the three. Some patients struggle with initial weight loss, may regain weight, and be dissatisfied with body image (Kubik et al., 2013). More than 50% excess weight loss is believed to signify successful bariatric surgery, and 15-20% of the patients in a meta-analysis of effectiveness of surgical treatment of obesity failed to achieve 50% excess weight loss (Kubik et al., 2013). Some patients may achieve their 50% weight loss goal, but then struggle with weight regain post-surgery. Postoperative weight gain is correlated with increased depression. Improved psychological health after surgery may be related to the amount of weight lost post-surgery (Kubik et al., 2013). Suicide rates may increase after surgery (Kubik et al., 2013). Preoperative patient expectations that life changes will be vast post-surgery may negatively impact psychological health if the patient does not meet their expectations even if weight loss is significant (Kubik et al., 2013). Mental illness (e.g., affective disorders and eating disorders) are common with obesity and this may have a negative impact on quality of life

(Kubik et al., 2013). The experience of obesity includes mental health concerns and these need to be addressed as part of comprehensive treatment.

Interpersonal Relationships

Interpersonal relationships may be an issue for patients after surgery. Many patients struggle with body image issues (Kubik et al., 2013). There is an increase in the desire to have body contouring surgery because of the excess skin that occurs after weight loss (Kubik et al., 2013). Some become disgusted about the way that they look naked and have interpersonal relationship issues, including issues with intimacy and sexual behavior post-surgery (Kubik et al., 2013; Lier et al., 2015). Romantic relationships can be a challenge due to the rapid weight-loss, changes in self-esteem, self-concept, and the added attention received from others. Conflict can arise with romantic relationships and due to these rapid physical changes, the patient's partner may not have the ability to cope (Herpertz et al., 2003). For some patients when marital problems arise, it may result in divorce post-surgery (Halverson et al., 1981).

Social Functioning

Not all patients experience improvements with social functioning post-surgery (Bocchieri et al., 2002). Patients may have trouble with friendships post-surgery which can be attributed to the changes in their outward appearance (Bocchieri et al., 2002). Friends could possibly feel envious or threatened by patients post-surgery due to the rapid weight loss (van Hout et al., 2006). Social activities where food is the focus may be awkward for the post-surgical patient because of feelings of anxiety and pressure to eat a certain way around others (van Hout et al., 2006). Surgery also greatly alters eating habits due to the physical limitations imposed by the surgery; the amount of food that can be consumed post-surgery is greatly diminished compared to the amount that could be consumed pre-surgery. Patients may experience trouble at work such

as sick days, job performance, or co-worker relationships, as a result of the physical changes in their body and how they relate to others mentally and emotionally.

Mental Health Concerns

Obesity is linked to increased risk of mental illness (Taylor et al., 2010; Taylor et al., 2013). Mental illness has been reported in as high as 40% to 70% of patients with a BMI of 35 kg/m² or more (Livhits et al., 2012; Muhlhans, 2009). Lifetime and current psychiatric disorders are highly common in individuals who have bariatric surgery (Alizai, 2015; Kvaalem, 2016; Muhlhans et al., 2009). In total, 72.6% of the patients reported mental illness across their lifetime (Muhlhans et al., 2009). Muhlhans et al. (2009) found that 50% of the patients surveyed had a lifetime affective disorder. Muhlhans et al. (2009) also found 21% of the patients had a lifetime anxiety disorder, and 15% had a substance use disorder history. Muhlhans et al. (2009) found that 50% of the patients had a lifetime eating disorder including eating disorder not otherwise specified, binge eating disorder, and bulimia nervosa.

Muhlhans et al. (2009) reported 56% of the patients had a current psychiatric disorder these included: eating disorders 37.7%, affective disorders 31.5%, 15.1% anxiety disorders, 1.4% current substance use disorder, and 3.4% somatoform disorder. In a more recent study Alizai et al. (2015) found 84% of the bariatric patients presenting for surgery met criteria for at least one psychiatric disorder. Findings by Alizai et al. (2015) are consistent with past studies examining patients with obesity. Fifty percent of the patients met criteria for three or more psychiatric disorders. These disorders included somatic disorders, affective disorders, major depressive disorder, panic disorder, anxiety disorder, bulimia nervosa, binge eating disorder, and alcohol use disorder (Alizai et al., 2015).

Depression

Prior to surgery de Zwaan et al. (2011) found that 56.1% of patients had a lifetime depressive disorder, and 32.7% met criteria for a current depressive disorder. Depression is still present among those who have had bariatric surgery. de Zwaan et al. (2011) found that 16.5% of patients had the presence of a depressive disorder six to 12-months post-surgery, and 14.3% of patients had the presence of a depressive disorder 24 to 36-months post-surgery. Scott et al., (2008) also reported high prevalence of depressive disorder among those who have a BMI of 35 kg/m² or more. The relationship between obesity and anxiety and depression is significant for individuals with a BMI of 30 kg/m² or more (Scott et al., 2008). Depressive symptoms tend to be higher among those with obesity presenting for surgery versus those not presenting for surgery (Kvalem et al., 2016).

Adverse Childhood Experiences

Lodhia, et al (2015) identified a number of common childhood experiences for patients who undergo bariatric surgery. Many of these patients experienced parental separation and divorce, household substance abuse, and/or sexual abuse. The researchers found that this patient population experienced high rates of emotional abuse and neglect and identified that their obesity may be their reaction to these adverse events. Patients that had a high occurrence of adverse childhood experiences had higher rates of depression. In conclusion, they encouraged further research be conducted focused on “implementing of cognitive therapy to improve coping resiliency” (Lodhia et al., 2015, p. 997).

Problematic Eating and Eating Disorders

Post-surgery patients may experience problematic eating and/or psychological distress (Kubik et al., 2013). It is not uncommon for them to struggle with poor body image, low self-

esteem, and negative self-concept (Kubik et al., 2013; Lier et al., 2015). Binge eating disorder is common for those who have bariatric surgery (Ashton et al., 2011; Ashton et al., 2009). Symptoms of binge eating disorder include feelings of “guilt, shame, eating rapidly, eating when not hungry, eating to the point of physical discomfort, and hiding eating from others” (Ashton et al., 2011, p. 315). A number of patients presenting for bariatric surgery tend to have addictive behaviors; studies have found high prevalence for food addiction among those who have bariatric surgery (Meule & Gearhardt, 2014; Meule et al., 2014). Obesity, disordered eating, and binge eating disorder are associated with neurobiology in the brain. Specifically, how these eating behaviors impact the reward system and the release of dopamine in the same way as other addictive substances (Garcia et al., 2014; Gearhardt et al., 2009; Volkow et al., 2011; Volkow et al., 2013).

Substance Abuse

“The co-occurrence of eating disorders and substance abuse is often cited in support of an addiction model” (Wilson, 2010, p. 345). Alizai et al. (2015) indicated a high prevalence for alcohol use disorder among patients presenting for surgery ranging from 4% to 30%. McFadden (2010) also discussed the issue of patients who have bariatric surgery and the formation of new addictions post-surgery. The phenomenon is referred to as addiction transfer (McFadden, 2010). The addiction transfer that takes place with patients who have bariatric surgery is a transfer from addiction with food to addiction with substances like drugs, alcohol, and tobacco (McFadden, 2010). Patients who have bariatric surgery are overrepresented in treatment centers for substance abuse (Reslan et al., 2014). Ashton et al. (2013) found that the bariatric surgery population may benefit from substance abuse prevention intervention. Current substance abuse or dependence are contraindications for having bariatric surgery. Mitchell et al. (2012) reported 33.2% within the

population have a lifetime history of substance abuse problems. Spadola et al. (2015) conducted a systematic review of 23 articles including large participant numbers and longitudinal studies, and concluded that the consensus is that bariatric patients, post-surgery, are high risk for alcohol use problems. Counselors should include alcohol and drug assessment as a routine part of intake with this patient population.

Cognitive Behavioral Therapy (CBT)

“Cognitive-behavioral therapy is one of the most extensively researched forms of psychotherapy” (Butler et al., 2006, p. 17). This form of therapy and counseling started in the 1970’s with Aaron Beck (Tinsley et al., 2015). CBT focuses on our thoughts, and how they impact our feelings and behaviors (Tinsley et al., 2015). Modifying thoughts and behaviors can help counselors facilitate change with their clients. In a recent meta-analysis, Butler et al. (2006) found that CBT is the most effective treatment with many different mental health disorders including: “depression, generalized anxiety disorder, panic, social phobia, OCD, sexual offending, schizophrenia, and childhood internalizing disorders” (p. 28). CBT is very effective in treating anger, chronic pain, and eating disorders (Butler et al., 2006). CBT is used in treatment with substance use disorders and weight loss, and it has been shown to be very effective in assisting in relapse prevention with drugs, alcohol, and negative food behavior.

CBT has been proven to be one of the most effective methods to assist clients with weight loss, eating disorders, and body image issues (Fursland & Watson, 2015; Michael et al., 2013). Typical CBT treatment for obesity consists of lifestyle intervention. Lifestyle interventions include changes to diet, addition of exercise, and behavior therapy (Jensen & Ryan, 2014; Michael et al., 2013).

Behavioral Strategies

This section includes behavioral strategies used in the application of CBT treating obesity and/or eating disorders, a definition for each behavioral strategy, and details for application for each behavioral strategy. The behavioral strategies in this section include self-monitoring, goal setting, stimulus control, relaxation training, and behavioral activation.

Self-monitoring is a behavioral strategy that involves monitoring dietary intake and physical activity (Michael et al., 2013). Self-monitoring can be used to assist clients with dysfunctional thinking (Ashton et al., 2009; Fursland & Watson, 2015). Self-monitoring includes the patient tracking thoughts, emotions, and behavior in addition to dietary intake, physical activity, and their weight (Fursland & Watson, 2015). Self-monitoring allows the patient to monitor their change over a specific time period (Michael et al., 2013). In addition to monitoring physical activity and dietary intake, clients can also self-monitor their emotions, maladaptive thinking, and negative self-talk, in relation to their eating patterns (Fursland & Watson, 2015). This can be extremely helpful with clients who are experiencing binge-eating episodes.

Goal setting is another tool used with a CBT approach. Patients will partner with the counselor and set goals to help them be successful with behavior changes. The goals should be short term, specific, measurable, realistic, achievable, and monitored over time (Michael et al., 2013). Goal setting is important to ensure patient success by keeping them on track in order to overcome challenges and obstacles. Patients set short term reasonable weight loss goals in coordination with the counselor (Michael et al., 2013).

Stimulus control refers to patient behavior in response to the presence or absence of a stimulus in the environment (Michael et al., 2013). Stimulus control can help a patient achieve behavior change by modifying their environment (Michael et al., 2013). Food may trigger

individuals, and it is recommended to increase the availability of healthy food and decrease the availability of unhealthy food in their environment. Individuals should also modify their environment and behaviors to increase their physical activity so they can become less sedentary and increase positive mood (Carek et al., 2011).

Relaxation training is a behavioral method used to promote relaxation and it can be used with CBT. Relaxation training can be taught to patients and may include breathing exercises, guided imagery, and muscle relaxation techniques (Michael et al., 2013). Relaxation training can help patient eliminate negative thoughts and eliminate negative feelings and emotions (Michael et al., 2013). This can be extremely helpful with clients who have problems with anxiety and affective disorders.

Behavioral activation is also a behavioral strategy that is consistent with CBT to help with mental illness. Behavioral activation includes spending time completing pleasurable activities on a regular basis. With behavioral activation, the counselor helps the patient set up regular experiments to complete pleasurable activities. The experiments should include attempts to engage in healthy behaviors to promote physical activity and improve the patient's mood. The patient will then process any thoughts and emotions in relation to the experiment that got in the way of them successfully completing the task at hand. A typical CBT strategy, assigning homework, is also used in behavioral activation. Homework entails agreeing in sessions to a strategy that the patient will implement outside the counseling session prior to the subsequent session. All counseling sessions should be guided by an agenda, be structured, connect to the prior session, review homework from the previous session, and end with a providing the patient with feedback and a session summary (Michael et al., 2013).

Cognitive Strategies

This section includes the cognitive strategies used in CBT. It also includes definitions and application details for the strategies. The list of cognitive strategies in this section are as follows: problem solving, cognitive restructuring, and relapse prevention.

Problem solving is the first cognitive strategy that is in line with CBT framework to assist with weight loss and quality of life. There are five STEPS to problem solving: (S) say the problem, (T) think of possible solutions, (E) examine each solution and weigh the positive and negative outcomes, (P) pick one solution and try it, (S) see if that solution worked and if not, go back to your list of solutions and try another one. The patient can join with the counselor and identify problems and work through each problem to come up with a solution. The counselor can assist the patient in examining consequences and come up with the plan to help them achieve their goals. Cognitive restructuring includes identifying and challenging maladaptive cognitions (Michael et al., 2013). Cognitive restructuring is another cognitive strategy that a counselor can use with clients to help them eliminate maladaptive thoughts and beliefs which are seen as barriers that keep them from achieving their goals (Michael et al., 2013). The patient learns how to monitor thoughts and the counselor has the patient keep a written or electronic thought record. Clients can monitor their negative automatic thoughts, their dysfunctional assumptions, and identify their core beliefs. Counselors need to be aware of moods and events with clients. Once they identify the negative thoughts, the counselor asks the client to examine each thought and its usefulness. The counselor then challenges these negative thoughts and encourages the patient to come up with positive thoughts to replace each of the negative thoughts. Application of cognitive restructuring is useful when patients try to give themselves permission to overeat or be inactive by excusing their behavior (Michael et al., 2013). Some symptoms may worsen with these clients

when they are having problems dealing with typical daily stressors and they may act out by inflicting self-harm or reverting to drug or alcohol abuse (Fursland & Watson, 2015). Relapse prevention is another key cognitive component (Fursland & Watson, 2015). Relapse prevention anticipates potential lapses in patients current desired behavior to prevent a relapse to the previous undesired behavior (Michael et al., 2013). The counselor joins with the patient to develop a plan of how to prevent a reoccurrence of the old behavior patterns (Fursland & Watson, 2015). Counselors do this by identifying potential triggers and formulating healthy responses to these triggers (Fursland & Watson, 2015). Relapse prevention is useful for clients because they learn to identify triggers that may interfere with their weight management goals (Michael et al., 2013).

CBT and Patients with Bariatric Surgery

Many individuals who have bariatric surgery would benefit from counseling. After surgery, 20% to 30% of patients are unsuccessful with weight management. Two different subgroups within the post-surgery bariatric population are prominent. The first group includes those patients who fail to meet their initial weight loss goal post-surgery. The second group includes those who meet their initial weight loss goal, but then experience weight re-gain post-surgery (Lier et al., 2015).

For those undergoing bariatric surgery, there is often a need to address their obesity that goes beyond the physiological component. The patient needs help with the underlying psychological factors that may be causing or perpetuating obesity (Cassin et al., 2013). CBT is a long-standing counseling practice that can be used to target these underlying psychological factors. CBT can likely help the patient continue to lose weight post-surgery, manage psychiatric disorders, work on self-esteem, body image issues, addictive behaviors, and any other self-

defeating thoughts and behaviors to increase quality of life. CBT can be used with bariatric patients to help them reframe dysfunctional and maladaptive thought patterns (Fursland & Watson, 2015; Michael et al., 2013).

Ashton et al. (2009), effectively used a four-session group CBT approach with 243 candidates for bariatric surgery (pre-surgery). Strategies reduced binge eating cognitions, behaviors, and binge eating episodes (Ashton et al., 2009). The symptom level for each patient was evaluated prior to the CBT intervention and post CBT intervention with use of the binge eating scale (BES) and by monitoring the number of binge eating episodes (BEEs) for each patient (Ashton et al., 2009). Prior to the CBT intervention, the breakdown of patient scores on the BES were as follows: Severe (30.78%), Moderate (38.46%), and Minimal (30.78%) (Ashton et al., 2009). After the CBT intervention the patient scores on the BES were as follows: Severe (9.83%), Moderate (20.51%), Minimal (69.66%) (Ashton et al., 2009). Prior to the CBT intervention 72.63% of patients reported experiencing two or more binge eating episodes, 18.42% experienced one binge eating episode, and 8.95% experienced no binge eating episodes (Ashton et al., 2009). Post CBT intervention 30.27% of the patients experienced two or more binge eating episodes, 31.89% reported one binge eating episode, and 37.84% reported no binge eating episodes (Ashton et al., 2009). Ashton et al. (2009) recommended future research involve CBT with patients after surgery and target other maladaptive eating behaviors.

Cassin et al. (2013) adapted Ashton et al.'s (2009) four-session CBT protocol into a six-session protocol. Cassin et al. (2013) did a pilot study, with eight patients some pre- and some post-surgery, and most patients showed improvements on binge eating severity, emotional eating, and depression. They used outcome measures pre- and post-treatment to determine patient change: the eating disorder examination questionnaire, the binge eating scale, the

emotional eating scale, and the patient health questionnaire. Five of the patients had notable improvements on all the outcome measures, one patient improved on binge eating frequency, but not the other measures, and two patients showed little improvement on the outcome measures (Cassin et al., 2013).

The next section includes the purpose statement and the research questions that guide the quantitative inquiry in the current study. I discuss the research setting and participants in this section, followed by a detailed explanation of the study procedures, measures, and treatment protocol.

Chapter Three

Although previous researchers have encouraged research related to mental health services, obesity, and eating disorders, there is a dearth of research related mental health support for bariatric patients. Very few researchers have explored the effectiveness of mental health counseling with a cognitive behavioral approach in the post-surgery bariatric population. Lodhia et al. (2015) recommended that research focused on obese patients should include “implementing of cognitive therapy to improve coping resiliency” (p. 997).

The purpose of this study was to evaluate the impact of a six-session Cognitive Behavioral Therapy (CBT) treatment approach on symptom distress, interpersonal relationships, and social role difficulties with patients who have undergone bariatric surgery. The researcher used a single-case research design (SCRD) to demonstrate experimental control within a small number of cases and rigorously evaluated the intervention (Kazdin, 2011). “SCRD is differentiated from case studies through its focus on the manipulation of the independent variable- the hallmark of experimental design- and lead to causal inference that links treatment to effectiveness” (Ray, 2014, p. 394). The researcher used the traditional A-B design with SCRD and measured the dependent variables at baseline, introduced the independent variable (i.e., CBT treatment), and continued to collect data from each of the dependent variables weekly over a period of ten weeks.

Research Questions

This study investigated three main research questions. The research questions included:

RQ1: Is the six session CBT treatment approach effective in decreasing symptom distress as assessed by the OQ45.2, administered pre-treatment, weekly, and post post-treatment?

RQ2: Is the six session CBT treatment approach effective in decreasing interpersonal relationship concerns as assessed by the OQ45.2, administered pre-treatment, weekly, and post-treatment?

RQ3: Is the six session CBT treatment approach effective in decreasing social role difficulties as assessed by the OQ45.2, administered pre-treatment, weekly, and post-treatment?

Participants

The study took place at The University of Tennessee, Knoxville, online, in partnership with three physicians' offices. The population of interest for this study was post-surgery adult bariatric patients who struggled with complications pertaining to weight management, maladaptive behaviors, and overall quality of life. In order to qualify for inclusion in this study, participants met the following criteria:

1. 18 years of age or older
2. six months, or greater, post-bariatric surgery
3. demonstration of elevated scores on the OQ-45.2 (i.e., a score of 63 or higher)
4. not actively participating in any other type of mental health counseling during the duration of the study

SCRD only requires one participant, and for multiple baselines across participants, three participants are the minimum, and increasing the sample to four or more adds strength (Ray, 2014). I used non-probability sampling based on my judgment (i.e., based on patient geographic location and matching study criteria) rather than by random selection (Creswell, 2013). Four post-bariatric surgery patients, from three different facilities participated in this study. Each completed the study treatment protocol with the primary investigator. I describe each participant to provide broader context.

Addy

Addy identified herself as a 58-year-old, Caucasian American female, and stood at 5' 0" tall. Her highest pre-surgery weight was 367 pounds, her lowest post-surgery weight was 191 pounds, and her weight at the start of the study was 207 pounds. Her biliopancreatic diversion with duodenal switch surgery was completed in March 2018. Addy was married and unemployed/retired at the time of the study. She reported mobility issues during the time of the study due to complications following knee replacement surgery. Addy also reported a strained relationship with her mother-in-law and noted that her husband's eating habits did not support the lifestyle changes she had made. She was experiencing some grief and loss issues at the time of the study, due to her mother's recent death.

Addy scored an 80 on the OQ-45.2 for inclusion in the study. Her three subscale scores on the OQ45.2 indicated symptoms of clinical significance for each category, meaning the scores were above the clinical cut off score, with a score of 43 for Symptom Distress, 15 for Interpersonal Relationships, and 22 for Social Role. These scores suggest Addy was experiencing a high level of distress related to experiencing a high number of symptoms (mainly anxiety, depression, somatic problems, and stress), difficulties in interpersonal relationships, social role (such as work or school), low satisfaction, and general quality of life.

Addy's initial score on the Yale Food Addiction Scale 2.0 was 4. This indicated she had a moderate food addiction. Addy's score on the Emotional Eating Scale was 41. This represents a reliance on food to help her manage her emotions and may have been impacting her quality of life. Addy's total score for the Food Cravings Inventory indicated she craved the craved food 85 times, and she ate the craved food 57 times over the previous month. On the High Fats scale, she craved the food 23 times, and ate the craved food 13 times over the previous month. On the

Sweets scale, she craved the food 29 times and ate the food 13 times over the previous month. On the Starches scale, she craved the food 23 times and ate the food 16 times over previous month. On the Fast-Food scale, she craved the food 11 times, and ate the food 10 times over the previous month. Her AUDIT score was 1 and her DUDIT score was 0. These scores indicate she did not report experiencing any alcohol or drug related problems over the previous year. Addy was fully engaged for the duration of the study; she attended all of her treatment sessions, completed assigned homework, and submitted all instrument measures.

Bishop

Bishop identified himself as a 44-year-old, Caucasian American male, and stood at 5' 10" tall. His highest weight pre-surgery was 426 pounds, and his lowest weight post-surgery was 240 pounds, and his weight at the start of the study was 327 pounds. His gastric sleeve surgery was completed in October 2012. He was divorced, single, and employed full time at the time of the study. He was diagnosed with generalized anxiety disorder and major depressive disorder and struggled with loneliness. He was taking medication for restless leg syndrome. He admitted to alcohol abuse, and there was discussion of him stopping alcohol use all together during the study, but he was unable to refrain from drinking alcohol completely.

Bishop scored a 73 on the OQ-45.2 for inclusion in the study. His three subscales on the OQ-45.2 indicated symptoms of clinical significance for each category, meaning each of his scores were above the clinical cut off score, with a Symptom Distress score of 37, an Interpersonal Relationship score of 20, and a Social Role score of 16. These scores suggest Bishop was experiencing a high level of distress related to him experiencing a high number of symptoms (mainly anxiety, depression, somatic problems, and stress), difficulties in

interpersonal relationships, social role (such as work or school), and a decreased level of satisfaction and general quality of life.

Bishop's initial score on the Yale Food Addiction Scale was a 15, which was clinically significant, and indicated Bishop had a Severe Food Addiction, with 6 or more symptoms present prior to treatment. His Emotional Eating Scale total score was a 43. This score represents a reliance on food to help him manage his emotions and may have been impacting his quality of life. Food Cravings Inventory Total Score indicates he craved the craved food 74 times over the previous month, and he ate the total food 101 times over the previous month. On the High Fats scale, he craved the high fat food 14 times over the previous month and ate the high fat food 28 times over the previous month. On the Sweets scale, he craved the sweet foods 22 times over the previous month and ate the sweet food 31 times over the previous month. On the Starches scale, he craved the starchy food 15 times over the previous month and ate the starchy food 24 times over the previous month. On the Fast-Food scale, he craved the fast-food 23 times over the previous month and ate the fast-food 18 times over the previous month. His pre-treatment AUDIT score was 16. This score indicates Bishop reported very hazardous alcohol use in the previous 12 months and suggests a high level of alcohol related problems. His score on the DUDIT prior to treatment was 1. This score indicates Bishop reported non-hazardous drug use over the previous 12 months, and no drug related problems were present. Bishop was engaged for the duration of the study, attended all of his treatment sessions, completed the majority of his homework, and submitted all instrument measures.

Bubba

Bubba identified himself as a 50-year-old, Caucasian American male, and stood at 6'0" tall. His gastric band surgery was completed in 2001. His weight prior to surgery was 300, his

lowest weight following surgery was 230 pounds, and his weight at the start of the study was 447 pounds. He was single and employed full time. He had strained relationships with his brother and sister. He discussed difficulty maintaining romantic relationships. He had physical limitations including chronic back pain and a hernia.

Bubba scored a 113 on the OQ-45.2 for inclusion in the study. His scores on the three subscales of the OQ45.2 indicated symptoms of clinical significance for each category, meaning each of his scores were above the clinical cut off score, with a score of 63 for Symptom Distress, 34 for Interpersonal Relationships, and 16 for Social Role. These scores suggest Bubba was experiencing a high level of distress related to experiencing a high number of symptoms (mainly anxiety, depression, somatic problems, and stress), difficulties in interpersonal relationships, social role (such as work or school), and a decreased level of satisfaction and general quality of life.

Bubba's score on the Yale Food Addiction Scale 2.0 prior to treatment was a 32. This score was clinically significant and indicated he had a severe food addiction, with 6 or more symptoms present. His Emotional Eating Scale score was a 63. This score indicates a very significant reliance on food to help him manage his emotions, which was impacting his quality of life, and may risk his long-term health. Bubba's Food Cravings Inventory Total Score indicated he craved the craved food 66 times over the previous month and ate the craved food 54 times over the previous month. His High Fats scale indicated he craved the high fat food 21 times over the previous month and ate the high fat food 14 times over the previous month. His Sweets scale indicated he craved the sweet food 24 times over the previous month and ate the sweet food 24 times over the previous month. His Starches scale indicated he craved the starchy food 7 times over the previous month and ate the starchy food 7 times over the previous month. His Fast-Food

scale indicated he craved the fast-food 14 times over the previous month and ate the fast-food food 8 times over the previous month. Bubba's AUDIT and DUDIT scores were both 0. These scores indicate he did not report experiencing any alcohol or drug related problems over the previous 12 months. Bubba was engaged for the duration of the study, attended all of his treatment sessions, partially completed his homework, and submitted all instrument measures.

Dave

Dave identified himself as a 42-year-old, Caucasian American male, and stood at 6'5" tall. He was married and employed full time. His highest weight pre-surgery was 499 pounds. His surgery date was in January 2015, and his surgery type was gastric bypass. His lowest weight following surgery was 251 pounds, and his weight at the beginning of the study was 295 pounds. His wife was mentally ill, and this was a big stressor for him during the study. He was diagnosed with heart failure and had to drastically modify his lifestyle. He reported struggling with alcohol and drug addiction for many years. He completely stopped abusing cocaine and drinking alcohol during the study. He admitted to continuation of marijuana use.

Dave scored an 86 on the OQ-45.2 for inclusion in the study. His scores on the three subscales for the OQ45.2 indicated symptoms of clinical significance for each category, meaning each of his scores were above the clinical cut off score, with a score of 44 for Symptom Distress, 23 for Interpersonal Relationships, and 19 for Social Role. These scores suggest Dave was experiencing a high level of distress related to a high number of symptoms (mainly anxiety, depression, somatic problems, and stress), difficulties in interpersonal relationships, social role (such as work or school), and a decreased level of satisfaction and general quality of life.

Dave's Yale Food Addiction Scale 2.0 score was 10. This score was clinically significant and indicated severe food addiction, with 6 or more symptoms present. His Emotional Eating

Scale score was 54. This score indicates a very significant reliance on food to help him manage his emotions, which was impacting quality of life, and may risk his long-term health. Dave's Food Cravings Inventory total score reported he craved the craved food 52 times over the previous month, and he ate the craved food 58 times over the previous month. His High Fats scale reported he craved the high fat food 16 times over the previous month and ate the high fat food 17 times over the previous month. Dave's Sweets scale reported he craved the sweet food 14 times over the previous month and ate the sweet food 14 times over the previous month. The Starches scale reported he craved the starchy food 12 times over the previous month, and he ate the starchy food 17 times over the previous month. The Fast-Food scale indicated he craved the fast-food 10 times over the previous month, and he ate the fast-food 10 times over the previous month. Dave's AUDIT score was a 26. This score indicates he reported very hazardous drinking in the previous 12 months, a high level of alcohol related problems, and possible alcohol dependence. Dave's DUDIT score was a 16. This score indicates he reported very hazardous drug use in the previous 12 months, and a high presence of drug related problems. Dave was engaged for the duration of the study, attended all his treatment sessions, partially completed his homework, and submitted most of the instrument measures.

Measures

The primary measure used in this study was the OQ – 45.2, to measure the dependent variables. I collected demographic information from each participant including age, sex, surgery date, weight, height, race, and ethnicity. I gathered any other reported personal information from participants throughout the treatment process with participants. I performed single case research design (SCRD) analyses with the results from the total score and the three subscales on the OQ-45.2.

The other four measures used include the Yale Food Addiction Scale– Version 2 (YFAS - 2), Emotional Eating Scale (EES), Food Cravings Inventory (FCI), and AUDIT/DUDIT. I used the YFAS-2, EES, FCI, and AUDIT/DUDIT as contextual measures to aid in the treatment process. These four measures helped to give a richer sense of the cases to be included in the study.

Outcome Questionnaire (OQ-45.2)

The OQ-45.2 (Lambert et al., 2013), is a self-report measure that has 45 questions and is used as an outcome assessment for clinical practice with an option for weekly administration (Boswell et al., 2013). The OQ-45.2 is designed to be sensitive to change that happens in short periods of time. Patients are asked to use a five-point Likert scale from Never to Almost Always to indicate how true each statement is for them during the previous week. “The OQ-45 provides an efficient measurement tool to assess the efficacy of clinical interventions of patients in therapy” (Boswell et al., p. 689). The measure has a total score of 180, and three subscales of Symptom Distress (assesses number of symptoms they are currently experiencing) ranging from 0 -100, Interpersonal Relations (assesses interpersonal difficulties) ranging from 0-44, and Social Role (assesses difficulties with life roles) ranging from 0-36.

The clinical significance cut point score for total score is 63 or greater, which indicates increased distress, a high level of symptoms, interpersonal difficulties, decreased satisfaction, and quality of life indicator. The clinical significance cut point score for the Symptom Distress (SD) scale is 36, the clinical significance cut point score for the Interpersonal Relations (IR) scale is 15, and the clinical significance cut point for the SR scale is 12.

The OQ-45.2 includes metrics for assessing improvement. Reliable improvement in patient symptoms can be assumed with a high degree of certainty if changes in the score post-

intervention are equal to, or exceed the Reliable Change Index (Lambert et al., 2013). Reliable Change Index in scores post intervention for the OQ45.2 is a change of 14 points or more for the total score, 10 points or more for Symptom Distress, 8 points or more for Interpersonal Relations, and 7 points or more for Social Role (Lambert et al., 2013). There is possible improvement in the patient's symptoms, if the OQ45.2 total score post-intervention has declined since the first session, however by less than the Reliable Change Index (Lambert et al., 2013). Possible improvement in patient symptoms is marked by a decline in total score of 1 to 13 points. Possible improvement for the symptom distress scale is marked by a decline in score of 1 to 9 points, Interpersonal relations scale a decline in score of 1 to 7 points, and Social Role scale a decline in score of 1 to 6 points.

The OQ-45.2 is also able to detect no change or worsening. There is no change in the patient's symptoms if the OQ45.2 total score post intervention is identical to their pre-intervention score (Lambert et al., 2013). No change in patient symptoms for each scale is marked by a change in score post-intervention of 0 points. There is a possible worsening in the patient's symptoms if the OQ45.2 total score post - intervention has increased since the first session, but by less than the Reliable Change Index (Lambert et al., 2013). Possible worsening in patient symptoms is marked by an increase in total score post-intervention of 1 to 13 points. Possible worsening for the symptom distress scale is marked by an increase in score of 1 to 9 points, Interpersonal relations scale an increase in score of 1 to 7 points, and Social Role scale an increase in score of 1 to 6 points. There is Reliable Worsening in the patient's symptoms if the total score post-intervention for the OQ45.2 score has increased since the first session by equal or more than the Reliable Change Index (Lambert et al., 2013). Reliable Worsening is marked by an increase in scores post intervention by 14 points or more for the Total Score, an increase of 10

points or more for the Symptom Distress scale, an increase of 8 points or more for the Interpersonal Relationship scale, and an increase of 7 points or more for the Social Role scale (Lambert et al., 2013).

Boswell et al. (2013) reported good internal consistency reliability with Cronbach's alpha .93 for Symptom Distress Scale, .78 for the Interpersonal Relationships Scale, .70 for the Social Role Scale, and .94 for the Total Score Scale. Anxiety, depression, and stress correlated the highest with the Total Score Scale in the Boswell et al. (2013) study, supporting the validity of the overall score, and the Symptom Distress Scale. Boswell et al. (2013) found statistically significant correlations between the Interpersonal Relationships subscale and relationship issues, family issues, sexual orientation, body image, sexual assault/rape, as well as anxiety, depression, and stress. Boswell et al. (2013) correlated the Social Role subscale with problems in work and school and career indecision. Refer to OQ Measures LLC (1996) to obtain a copy of the OQ-45.2.

Yale Food Addiction Scale Version 2.0 (YFAS-2)

The YFAS is a standardized tool to measure food addiction and addictive eating behavior (Meule & Gearhardt, 2014). The instrument is a self-report measure and based on the seven criteria in the DSM-IV-TR for substance dependence (Gearhardt et al., 2009; Meule & Gearhardt, 2014). Gearhardt et al. (2009) validated the YFAS by examining correlations between well-validated measures for alcohol use, impulsivity, and eating related problems.

The YFAS- 2 (Gearhardt et al., 2016), a revised and expanded version of the original was created to stay current with changes in addiction presented in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The YFAS-2 expanded from 25 to 36 items. Item examples from the YFAS- 2 include: "When I started to eat certain foods, I ate much more than

planned” and “I avoided social situations because people would not approve of how much I ate.” Respondents answer each item on a Likert scale ranging from 1 (never) to 7 (daily). Both versions (YFAS & YFAS-2) were validated for associations with elevated BMI, binge eating, and weight cycling. The YFAS-2 is more strongly associated with obesity and was used in this study.

Convergent validity was established by examining associations with other measures for problematic eating behavior. Scores were significantly correlated with all the measures ranging from .24 to .63 (Gearhardt et al., 2016). Internal consistency reliability was good with Kuder-Richardson $\alpha = .90$ (Gearhardt et al., 2016). Gearhardt et al. (2016) used the diagnosis scoring choice with the symptom count method, which indicates clinical significance for food addiction. YFAS-2 scores show: no food addiction (one symptom or fewer), mild food addiction (two or three symptoms), moderate food addiction (four or five symptoms), and severe food addiction (six or more symptoms). Refer to Gearhardt et al. (2016) to view a copy of the YFAS-2.

Emotional Eating Scale (EES)

The EES is a self-report measure that consists of 25 items (Arnold et al., 1995). Each item or emotion is measured using a Likert scale from one to five, where the individual indicates: no desire to eat (1), a small desire to eat, a moderate desire to eat, a strong desire to eat, and an overwhelming desire to eat (5) when they feel that emotion. Higher scores indicate an eating trigger associated with that emotion.

The EES has three subscales: Anger/Frustration, Anxiety, and Depression. All three scales were highly correlated with binge eating measures, which provide good evidence for construct validity (Arnold et al., 1995). Internal consistency was good for the total scale with coefficient alpha = .81, and all three subscales ranging from .72-.78 (Arnold et al., 1995). Test-

retest reliability was $r = .79$ (Arnow et al., 1995). Criterion related validity was established by assessing changes in the EES subscales and treatment to reduce binge eating (Arnow et al., 1995). Refer to Arnow et al. (1995) to see a copy of the EES.

Food Cravings Inventory (FCI)

The FCI is a self-report measure that consists of 28 food items (White et al., 2002). Each food item has a Likert scale from one to five (Never [1], Rarely (once or twice), Sometimes, Often, Always/Almost Every Time [5]), where the individual indicates the frequency of cravings for that food item, and a secondary Likert scale indicating the frequency the individual gave into the cravings for each food item and ate that food. Individuals rate themselves over the past month how often they have experienced the craving, and then how often they ate the food. The measure has four subscales high fats, sweets, carbohydrates/starches, and fast-food fats (White et al., 2002). The higher the score on each subscale indicates higher rates of cravings and or control in that class of foods, which can be problematic for weight gain.

White et al. (2002) used coefficient alpha indicating good reliability for each of the subscales (high fats = .86, sweets = .87, carbohydrates/starches = .79, fast-food fats = .87), and the total score = .86. Total test re-test reliability score = .86, high fats = .91, carbohydrates/starches = .79, sweets = .79, and fast-food fats = .87 (White et al., 2002). White et al. (2002) calculated concurrent and discriminant validity using the Conceptual Craving Scale and the Three Factor Eating Questionnaire. Refer to White et al. (2002) to see a copy of the FCI.

Alcohol Use Identification Test/Drug Use Identification Test (AUDIT/DUDIT)

The AUDIT is a self-report measure that has 10 items. Each item has a Likert scale with scores ranging from 0 to 4. There are three domains: hazardous alcohol use, alcohol dependence symptoms, and harmful/unhealthy alcohol use. The measure is calculated with a total score and

the highest score possible is 40. In a more recent study, Johnson et al. (2013) suggested cut scores to identify unhealthy alcohol use and alcohol use disorders, 5 for men, and 3 for women. Johnson et al. (2013) also suggested cut off scores of 15 for men and 13 for women to detect alcohol dependence. For this study, I used a cut off 5 for men and 3 for women to find possible unhealthy alcohol use. Test re-test reliability was $r = .86$ (Sinclair et al., 1992), internal consistency reliability was calculated by changing question ordering and wording and it did not change scores (Ivis et al., 2000). The AUDIT has been validated across many different settings, populations, and cultures over many years (Babor et al., 2001). Refer to Babor et al. (2001) to view a copy of the AUDIT.

The DUDIT is a self-report measure that has 14 questions and was developed parallel to the AUDIT (Berman et al., 2003) to measure drug related problems. The maximum score is 44 and a male with a score of six or more likely has drug related problems, and a female with a score of two or more likely has drug related problems (Berman et al., 2003). If the score is above 25, the person likely has a high drug dependence (Berman et al., 2003). Reliability Cronbach alpha = .80 for total score (Berman et al., 2004). Berman et al. (2004) found that the DUDIT predicted drug dependence with a 90% sensitivity and 78% to 88% specificity for both the DSM-IV and the ICD-10, when validated using SCAN diagnoses. Refer to Berman et al. (2003) to view a copy of the DUDIT.

Procedure

I consulted and followed the research protocol approved by the University of Tennessee Knoxville and adhered to the American Counseling Association (2014) *Code of Ethics*. I submitted the research proposal and all materials for the proposed study to the University of

Tennessee Institutional Review Board (IRB), and proceeded with the study after receiving IRB approval.

Recruitment and Screening

I reached out to the physician's offices and spoke to the staff the initially by phone. I then sent my dissertation proposal for the current study to the practices by email. The physicians agreed to support my participant recruitment and wrote letters of support for the current study. The physicians' offices currently offer routine checkups post-surgery with their dietitian and other staff, as well as a patient support group for patients who will receive or who have received bariatric surgery. The staff approached the patients, and briefly explained the study and selection criteria during the patient support group offered at the bariatric center. In addition, the staff approached potential participants individually when they came in for routine appointments with the medical staff at the bariatric center.

Practitioners had the ability to refer a patient to the study. The staff used the Recruitment Flyer, Release Form, and Script provided (Appendix. B, C, and D). I directed the staff to hand any patient that was six months or greater post-surgery a recruitment flyer and defer patient questions about the study to me. If a patient met study criteria and verbally agreed to take part, I verbally explained the study in detail by phone, or in person, and addressed any questions or concerns about the informed consent and agreement to take part in the research study form (see Appendix A). I sent a copy of the informed consent by mail or email, so they had sufficient time to review the document prior to our first meeting. I set up a date and time which was convenient for the first participant to come to the University of Tennessee to collect the informed consent and complete the initial assessment battery, in a confidential counseling location. The other three participants met with me online using Zoom. When these three participants arrived for their

scheduled appointment, I provided an electronic copy of the assessment battery comprised of the YFAS.2, the EES, the FCI, the AUDIT/DUDIT, and the OQ.45.2. The participants took the OQ.45.2 in person or online and received immediate feedback if they qualified to move forward with the study. I was available in person or by phone to offer assistance while they completed the assessment battery. I gathered demographic information including age, gender, race, ethnicity, weight, height, and surgery date. I informed participants verbally and in writing (consent form), that they could decline to take part in the study at any time without penalty. I followed up in person or by telephone with the individuals who completed the assessment battery to let them know if they were eligible to be included in the CBT treatment. In all, the physicians' offices referred seven patients for potential inclusion in the study, and all seven of the patients consented to the process following referral. Of the seven patients who were referred, all met criteria to take part, but only four of the seven patients took part in the current study. The other three patients elected not to participate due to various personal reasons.

Data Collection

After I obtained written informed consent from each participant (refer to Appendix A), I administered assessments using traditional pen and paper format, or through an electronic copy. I secured all paper documents in a locked case to which I only had access. I stored all electronic data on a password-protected personal computer. I de-identified the participant data by removing their name, and then I had each participant chose a pseudonym. I only allowed dissertation committee members access to the de-identified data. I secured the electronic data and I will store the data for six years on my password-protected personal computer, and I stored the paper documents in a locked case, and locked them in my personal office, following the completion of

the study. At the six-year period, I will shred, discard, and electronically delete all study-related data.

Once I screened each participant into the study, they continued taking the OQ45.2 weekly, either in person or online through Qualtrics, along with the weekly individual counseling. Each participant then took the entire assessment battery for a second time, after the sixth counseling session, and completion of the CBT treatment, during week 10. Refer to Table 1 (See Appendix E) for the A-B design intervention and data collection protocol.

Time Frame Assessments

I used weeks one through three to show baseline with each participant before going ahead with the CBT intervention. Three weeks was the minimum time frame used to establish a stable baseline prior to the intervention (Ray, 2014) and if a stable baseline was not established within three weeks, I continued testing weekly for two additional weeks until the baseline was stable prior to intervention. I administered the entire assessment battery at week one, and at week ten, after the participant completed the six weekly CBT treatment sessions. Each participant took the OQ-45.2 weekly, for a total of ten times. This allowed for a time series evaluation of the effectiveness of the counseling treatment. Each participant took the other four assessments twice, pre- treatment at week one, and post-treatment at week ten.

Time Frame Treatment

After each participant took the initial assessment battery, they took the OQ-45.2 a minimum of three times to establish a stable baseline. I proved a stable baseline with use of the OQ-45.2 for each participant's total score (i.e., individual administration total scores, not combined scores across the three initial administrations) that is the exact same (e.g., 65, 65, 65)

or less than the reliable change index of 14 (+/- 13 points) across the first three administrations (e.g., 63, 65, 76). Refer to Figure 1 (See Appendix F) for a diagram representing stable baseline.

Treatment

Once I obtained a stable baseline, each participant was scheduled for their first individual CBT treatment session. The treatment consisted of a total of six sessions. Individual sessions were approximately 60 minutes in length and were held with each participant one time per week for six sessions. Individual sessions took place at the Counselor Training Clinic on the University of Tennessee campus or online via a University of Tennessee Zoom account. In person sessions were recorded via the Counselor Training Clinic's secure Video Audio Learning Tool (VALT) system. The Zoom account was HIPPA compliant, approved for online counseling, and approved for secure recording of counseling sessions. I stored video recordings on my University of Tennessee One Drive account.

Materials utilized in the six treatment sessions consisted of worksheets and treatment protocol from three sources: *Preparing for Weight Loss Surgery: Therapist Guide* (Apple et al., 2006), *Preparing for Weight Loss Surgery: Workbook* (Apple et al., 2006), and *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Protocol* (Cassin et al., 2016). The preparing for Weight Loss Surgery Therapist Guide is a book written for therapists and counselors working with individuals presenting for bariatric surgery. The *Preparing for Weight Loss Surgery Workbook* is a book written for the patient who is to undergo bariatric surgery. Patients post-surgery struggle with weight loss and weight re-gain post-surgery. Cassin et al. (2013) used the *Preparing for Weight Loss Surgery Workbook* with both pre-surgery and post-surgery patients. The materials are appropriate for this population because they are used for weight management and weight-loss with a CBT focus. Cassin et al. (2013)

adapted the CBT treatment protocol and the *Preparing for Weight Loss Surgery Workbook* so that it could be used with patients post bariatric surgery.

I used the Cassin et al. (2013) CBT treatment session protocol for patients after they had bariatric surgery. I wrote to Dr. Cassin and informed her about this study. She was willing to share and granted me permission to use the adapted workbook and the full six session CBT protocol that she used for her 2013 study, *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy* (Cassin et al., 2016). Dr. Cassin and her team created the workbook, they adapted the *Preparing for Weight Loss Surgery* (Apple et al., 2006) material and made it specific for use with patients who have had bariatric surgery. Dr. Cassin has previously delivered this treatment to patients in person and by phone. Each week I gave patients a counseling session outline, and they signed off each week to ensure completion of the session protocol for that week. A brief explanation of each session is provided below.

Session One

In session one, I reviewed findings from the contextual measures with each participant as they related to the CBT model. I included an introduction to CBT. CBT techniques of goal setting and psychoeducation were utilized here. I explained the CBT model by teaching how thoughts, feelings, and behaviors have connections to overeating (Cassin et al., 2013), and we set treatment goals. I used pages 1-11 from the *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy: Patient Post-op Workbook*. I referred to Chapter Two from the therapist guide. Chapter Two in the therapist guide covers how to teach the patient about the CBT model for their understanding of weight and eating issues, how to help the patient to personalize the CBT model, and how to help them understand the way in which the surgery impacts these issues.

Session Two

Session two included CBT techniques of psychoeducation and self-monitoring. I employed psychoeducation materials about regular eating and weighing patterns. Patients learned how to keep track of their food intake and weight. Patients were taught how to self-monitor with use of food records, thought records, and a weekly weight chart (Cassin et al., 2013). I used pages 12-22 from the *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Workbook*. I referred to Chapter Three in the therapist guide. Chapter Three in the therapist guide covers how to explain to the patient the rationale for establishing a regular pattern of eating, teach them how to establish a regular pattern of eating, how to introduce food records, and how teach the patient a method for keeping track of eating using food records.

Session Three

Session three included CBT techniques of psychoeducation, behavioral activation, and self-care. Patients learned why eating has been so pleasurable for them. Patients also learned the importance of self-care and planning pleasurable activities that do not involve food (Cassin et al., 2013). I used pages 23-36 from the *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Workbook*. Chapter Five in the therapist guide covers how to educate the patient about pleasurable activities that do not involve food, how to help them form a list of these activities, how to help the patient understand the importance of self-care, and how to help them improve their self-care regime.

Session Four

Session four included CBT techniques of identifying triggers for problematic eating and problem-solving. Patients identified the people, places, and foods that trigger them. Patients also

learned problem-solving skills to handle situations when food is a challenge for them (Cassin et al., 2013). I used pages 37- 47 from the *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Workbook*. Chapter Six in the therapist guide discusses how to help the patient identify situations, people, places, and foods that are challenging, how to help the patient identify alternatives to these challenging situations, people, places, and foods that will aid them in development of healthy eating behaviors and attitudes, and how to help the patient identify a list of challenging foods and a method for becoming more comfortable with the challenging foods.

Session Five

Session five included CBT techniques of problem solving, psychoeducation on cognitive distortions, and cognitive restructuring with use of thought records. Patients learned problem-solving skills, how to identify maladaptive thoughts that in turn lead to maladaptive behavior, and how to reframe those thoughts into more productive ones (Cassin et al., 2013). Patients learned more about body image and body checking. I used pages 48-63 from the *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Workbook*. Chapter Seven in the therapist guide explains how to help the patient learn methods for identifying and working through challenging problems, how to help the patient identify common types of cognitive distortions, how to teach the patient to work through problem thoughts when they become aware of the distorted thinking, and how to teach the patient methods that combine problem solving and working through the thoughts so they can better handle situations that in the past might have led to overeating or other negative behaviors to cope with stress.

Session Six

Session six included CBT techniques of decisional balance, goal setting, and relapse prevention. Patients explored their ambivalence about lifestyle changes, how their relationship to food has changed since surgery, reviewed progress on treatment goals, set new goals, and reviewed CBT skills to continue using to prevent relapse (Cassin et al., 2013). I used pages 56-63 from the *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Workbook*.

Counselor Credentials and Qualifications

I am a Licensed Professional Counselor Mental Health Service Provider and Approved Supervisor (LPC-MHSP-AS) in Tennessee (#2324), a National Certified Counselor (NCC - #90093), a Certified Clinical Mental Health Counselor (CCMHC), and have been conducting individual counseling for sixteen years. My master's degree is in Mental Health Counseling, and I am a doctoral candidate in Counselor Education. My primary theoretical framework is CBT. I meet and surpass all the required state and national credentials to provide CBT to individuals who have had bariatric surgery. I had some experience working with this population at Cornerstone of Recovery, in Louisville, TN.

I received consultation during the active treatment portion of study while engaged with the participants weekly. The consultation lasted for a minimum of six weeks, and took place as needed, until treatment was complete with each participant. The consultation was conducted with Dr. Hollie Raynor, RD/LDN who is an expert with this population. She consulted and provided oversight while I conducted the treatment portion of the study in the event issues or concerns arose with which I was unfamiliar.

Fidelity

To ensure treatment fidelity I had one of my committee members conduct video reviews of the individual CBT counseling sessions. I verbally informed the committee member of the treatment protocol prior to the review of the sessions, and they received an outline of the treatment protocol to ensure that I followed the treatment protocol for each session. I included the treatment session data in the study, only after the colleague verified that the treatment protocol was properly adhered to as per the verbal instructions and written outline. A committee member reviewed recordings and did not discover any issues with adherence to the treatment protocol. They reviewed two out of six session videos for each participant intentionally viewing the full range of treatment sessions and found 100% treatment protocol adherence. They reviewed the videos from counseling sessions 2 & 4 for participant one, 1 & 3 for participant two, 3 & 5 for participant three, and 4 & 6 for participant four. Refer to (Appendix G) for the fidelity checklist.

Threats to External Validity

External validity refers to how generalizable the findings are from the sample in this study to another group of subjects or conditions. Bracht and Glass (1968) defined external validity as “the extent and manner in which the results of an experiment can be generalized to different subjects, settings, experimenters, and, possibly, tests” (p. 438). Given this study used a single-subject experimental design, participants served as their own control. This limits generalizability due to sample selection, the recruitment site, and inclusion criteria.

Threats to ecological validity in this study include accurately describing the independent variable, which is the CBT treatment and counseling content (Bracht & Glass, 1968; Creswell, 2013). A second threat to the ecological validity in this study is experimenter effect, since I am

the one who administered the treatment to the participants, my behavior may influence the participants in some way (Bracht & Glass, 1968). To address ecological threats, I adhered to a pre-established agenda and outline for each CBT counseling session, in an attempt to provide similar treatment protocol to each patient. A third threat to ecological validity is history and treatment effects (Creswell, 2013), which Bracht and Glass (1968) say can occur because of other events that impact the results. Historical events are constantly occurring, although the specific events that happen will be unique to this study. The most salient historic event that coincided with the study was the COVID-19 pandemic, which resulted in a modality shift from in person delivery of the CBT treatment intervention, to delivery of the intervention over Zoom for three of the four participants. I administered the counseling and CBT treatment in person for the first participant Addy, and due to the COVID-19 pandemic I had to administer the CBT treatment with Bishop, Bubba, and Dave online. Cassin et al. (2013) delivered the CBT treatment to participants via telephone. Also, I am familiar with the use of telehealth and experienced with the delivery of online counseling. From my perspective it did not appear to impact delivery of the CBT treatment. Although the ideal method of treatment modality may be debated, Richards and Vigano' (2013) completed a review of the literature, and reported online counseling was positive and capable of replicating face to face counseling. A fourth threat to ecological validity is the manner in which I measured the dependent variables. I purposely chose instruments that most directly measured the dependent variables with the least amount of time required for respondents. Lastly, the interaction of time of measurement and time of treatment can be a threat to external validity, because variables measured at different points in time may yield different results based on the time when the treatment took place (Bracht & Glass, 1968; Creswell, 2013).

Again, I used a pre-established timeline to conduct measurements following treatment on a consistent basis across patients to minimize this impact.

Data Analysis

Consistent with SCRD, I used visual analysis of the dependent variables (i.e., OQ-45.2 subscale scores) to determine the CBT treatment effect (Ray, 2014). The visual analysis includes comparison of baseline to intervention time point data (Ray, 2014). Graphs with the Total Score scale and a score for each participant with the three subscales of the OQ-45.2 including Symptom Distress, Interpersonal Relationships, and Social Role, are shown in Chapter Four. I observed changes in the scores of the Total Score scale of the OQ- 45.2, and each subscale to assess the clinical significance of the score change during and after the CBT intervention as indicated within the reliable change index.

Data analysis included calculation of the effect size of the treatment intervention for each participant. I calculated effect size using the Percentage of Data Exceeding the Median (PEM) (Ma, 2006), and by using the non-overlap calculation for effect size, Tau-U (Parker et al., 2011). I used the percentage of data points exceeding the median of baseline phase (PEM) approach (Ma, 2006). The PEM calculation helps to account for outliers in baseline data (Lenz, 2013). When the PEM calculation is used, it is assumed that if the treatment was effective, the majority of the data points during the treatment phase will fall on the therapeutic side of the baseline median (Lenz, 2013). Secondly, I calculated effect size using the non-overlap method, Tau-U (Parker et al., 2011). This method of calculation “combines nonoverlap between phases with trend from within intervention phase” (Parker, 2011, p. 284). This method of nonoverlap calculation is superior to any other for single case research that currently exists, possessing the highest statistical power (Parker, 2011). Lastly, I completed an omnibus, overall treatment effect

across all four cases, using the Tau-U method (Parker et al., 2011). I reported scores for each measure and all data analysis results in Chapter Four and then I further discussed the results in Chapter Five.

Chapter 4

Results

In this chapter I provide the results for each participant. I divided the results by participant, by dependent measures, and by contextual measures. Figures provide a visual representation of results for each participant over the course of the treatment protocol.

Participant 1: Addy

Addy's OQ-45.2 total score baseline median was 79. During her treatment phase 4/6 (67%) of her OQ-45.2 total scores fell below the median, with a Tau-U of $-.22$, $p = .60$, indicating a moderate treatment effect that was not statistically significant. Clinically this resulted in a shift in Total Score from 79 to 48, a decrease in score of 31 points. This reduction in score indicated a reliable improvement in her symptoms, well exceeding the reliable change index of 14 points for the Total Score on the OQ-45.2.

Addy's Symptom Distress median was 43, during the treatment phase 3/6 (50%) of her Symptom Distress scores fell below the median, with a Tau-U of $-.22$, $p = .60$, indicating no treatment effect, and was not statistically significant. Clinically, this resulted in a shift in Symptom Distress score from 43, to 26, a decrease in score of 17 points. This reduction in score indicates a reliable improvement in her symptoms, well exceeding the reliable change index of 10 points for Symptom Distress.

Addy's Interpersonal Relationships median was 13, and during the treatment phase 2/6 (33%) of her Interpersonal Relationship scores fell below the median, with a Tau-U of $.22$, $p = .60$, indicating no treatment effect, and was not statistically significant. Clinically, this resulted in a shift in score from 13 to 11 points, which did not meet the threshold of 8 points for reliable improvement. This failed to meet a change in score of 8 points for reliable change in

Interpersonal Relationships but indicates a slight improvement in symptoms with a decrease in score of 2 points.

Addy's Social Role median was 18, and during the treatment phase 4/6 (67%) of her Social Role scores fell below the median, with a Tau- U of $-.67$, $p = .15$, indicating a moderate treatment effect that was not statistically significant. Clinically, this resulted in a shift in score from 18 points to 11 points, which indicated a reliable improvement in symptoms.

Although not part of the SCRD, analysis of contextual items indicated that Addy moved from a YFAS 2.0 pre-treatment score of 4 (i.e., moderate food addiction) to a post-treatment score of 0 (i.e., no food addiction symptoms). Addy started with an EES pre-treatment score of 41, which indicated a reliance on food to help her manage her emotions, which was most likely impacting her quality of life, to a score of 11 post treatment, which indicated a shift from an unhealthy relationship with food to manage her emotions pre-treatment to a healthy relationship with food post-treatment.

Addy's total score on the FCI decreased from her pre-treatment scores of 85 and 57, to post-treatment total scores of 48 and 49, which indicated she craved the total foods 37 instances less post-treatment and ate the craved food 8 instances less. The pre-treatment high fats scale scores were 23, and 13 and post-treatment 12 and 13. This indicates she craved the high fat foods 11 instances less post-treatment and ate the craved food an equal number of instances pre- and post-treatment. The pre-treatment sweets scale scores decreased from 29 and 15 to post-treatment scores of 16 and 13. This indicates she craved the sweets 13 instances less and ate the sweets 3 instances less. The pre- to post-treatment cravings on starches scale scores decreased from 23 to 13. This indicates she craved the starchy foods 10 instances less post treatment. Her frequency of eating starchy foods did not change; Addy reported eating starchy food 16 instances

pre-treatment and 16 instances post-treatment. On the fast-food scale, her pre-treatment scores decreased from 11 fast-food cravings and 10 instances of eating the fast-food, to craving the fast-food 7 instances and eating the fast-food 7 instances post-treatment; Addy craved the fast food 4 instances less and ate the fast food 3 instances less post-treatment. Addy's scores on the AUDIT and DUDIT post-treatment were both 0, consistent with her pre-treatment scores which reported no issues with alcohol or drugs. Addy's weight at the beginning of the study was 207 pounds. Her weight at the end of the study was 204 pounds. Addy lost a total of 3 pounds.

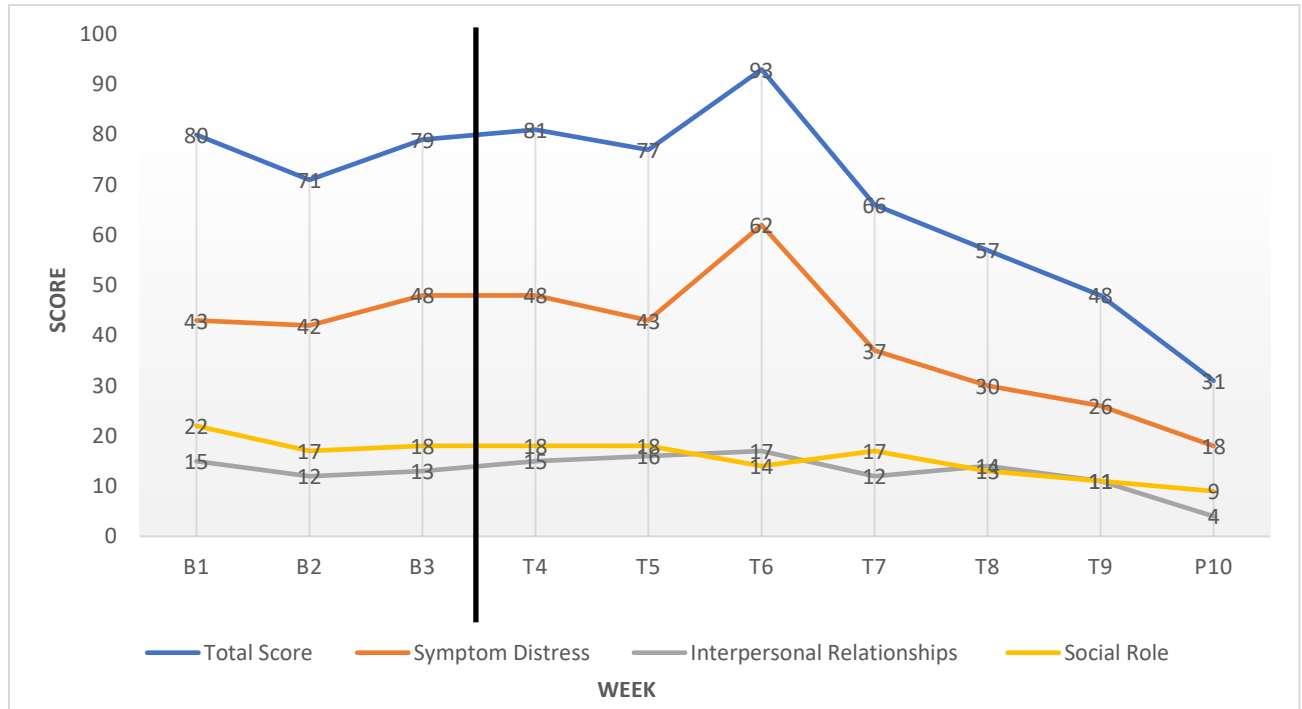


Figure 2

Addy OQ-45.2 Scores over the 10-week time period

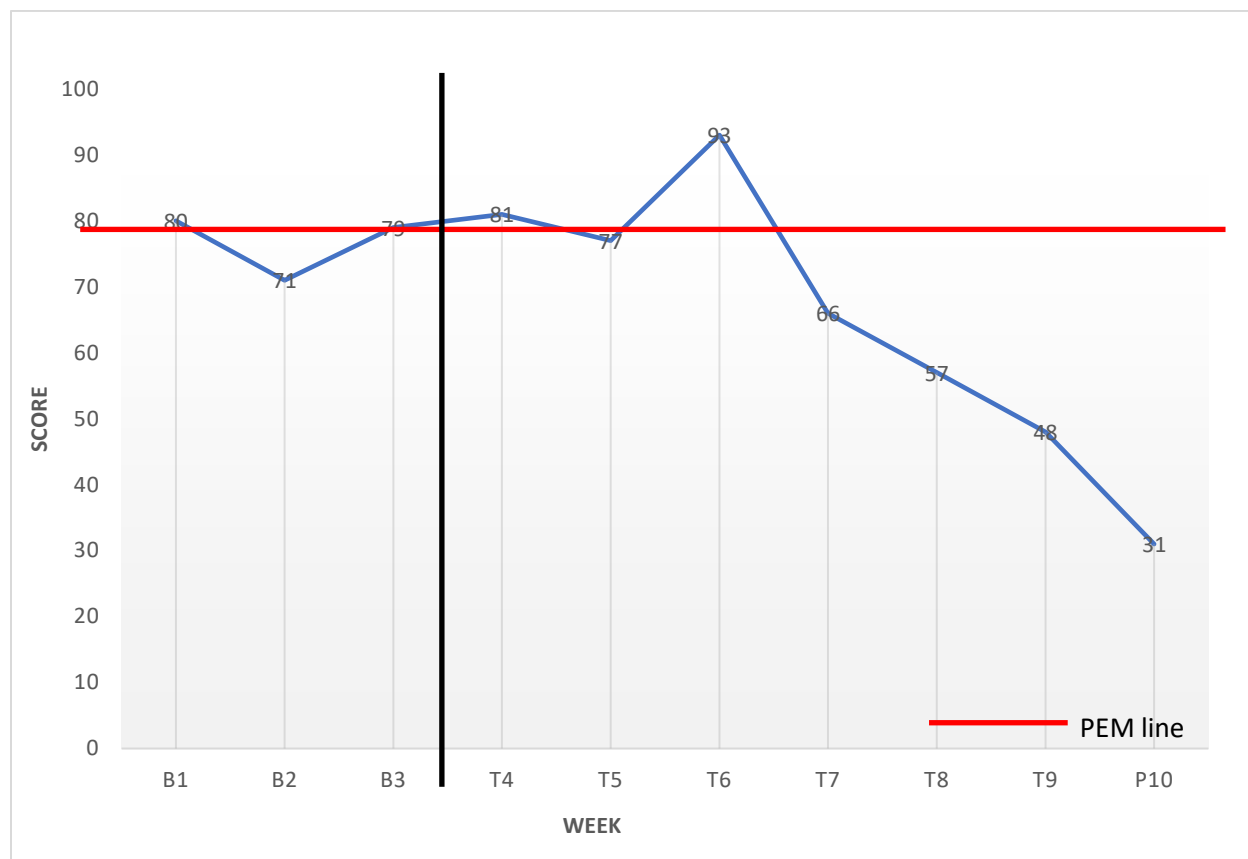


Figure 3

Addy Total Scores on the OQ-45.2 over the 10-week time period

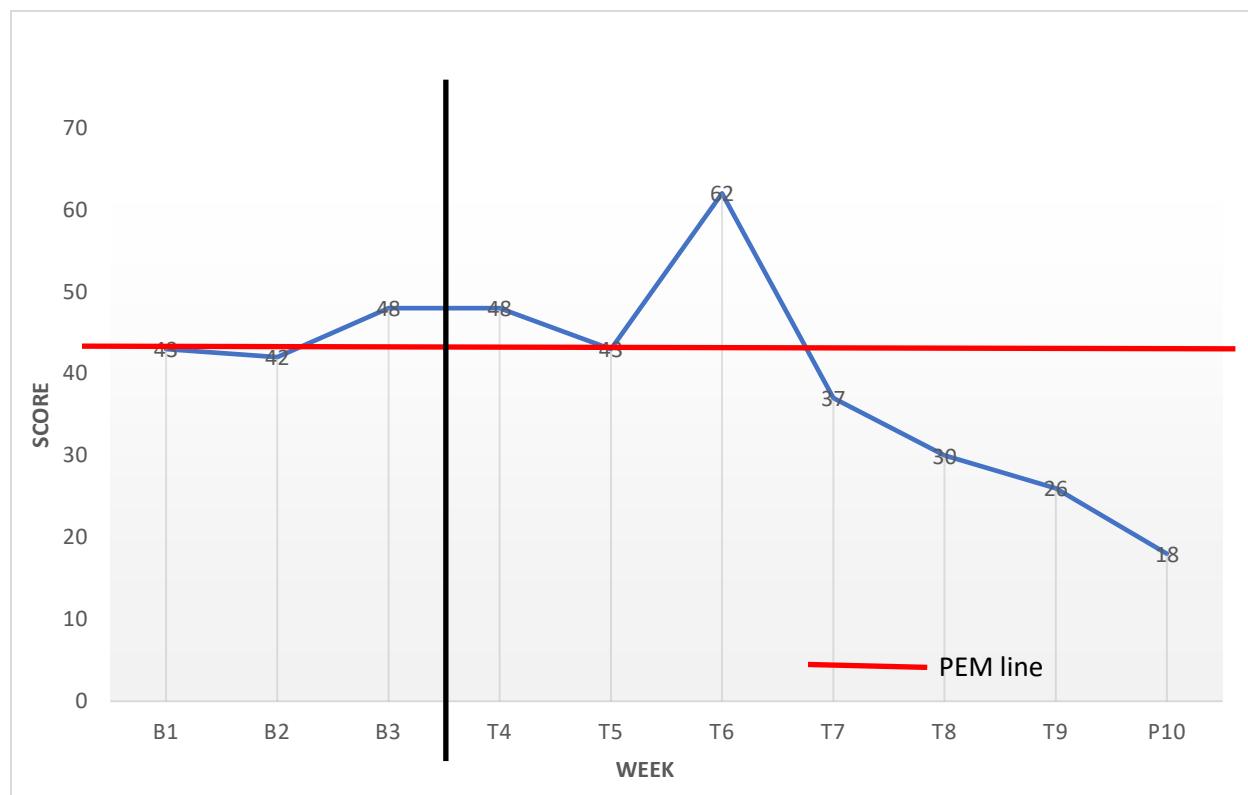


Figure 4

Addy Symptom Distress Scores on the OQ45.2 over the 10-week time period

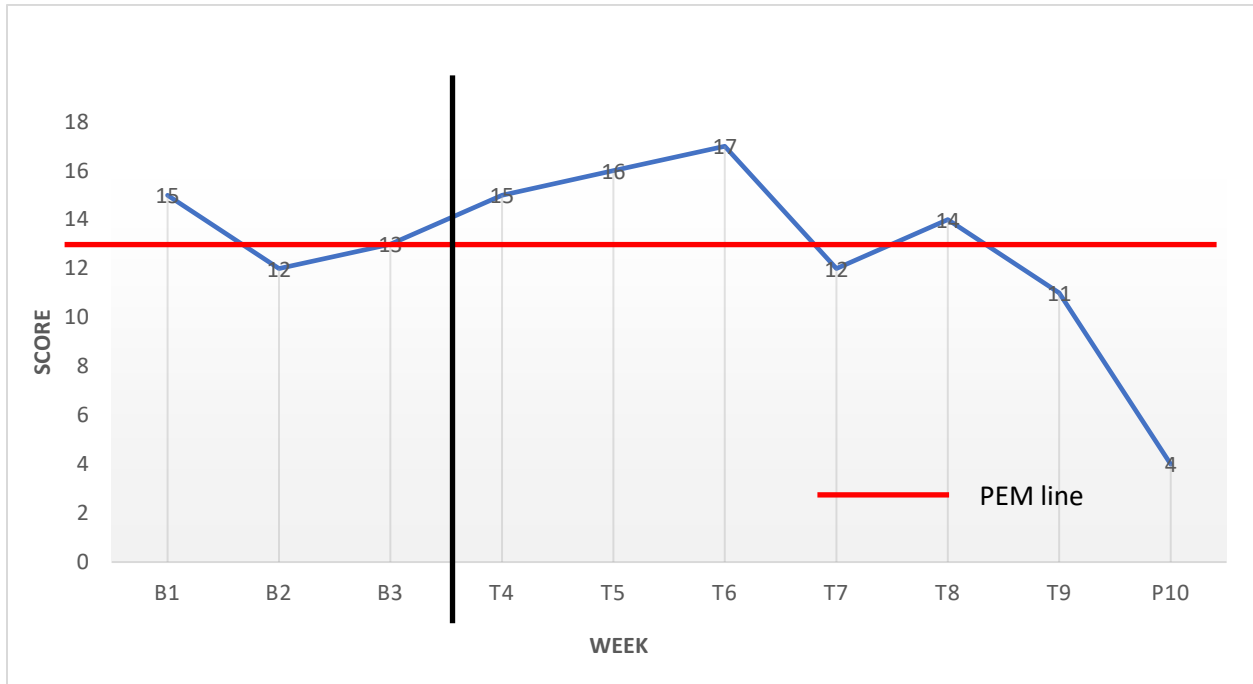


Figure 5

Addy Interpersonal Relationship scores on the OQ-45.2 over the 10-week period

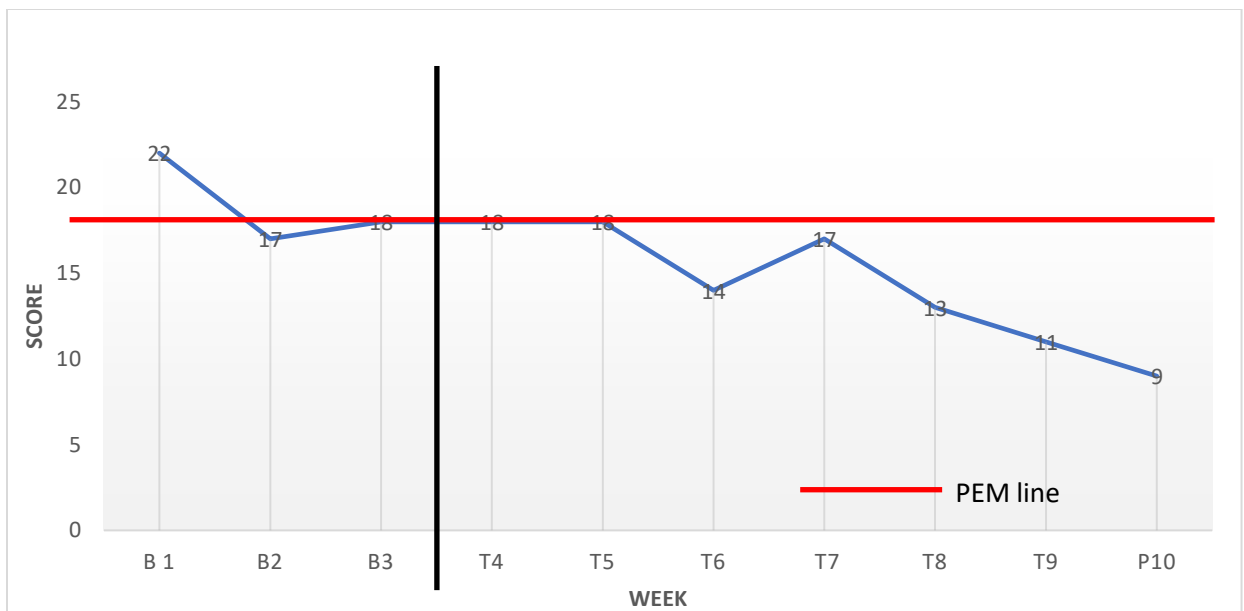


Figure 6

Addy Social Role scores over the 10-week time period

Participant 2: Bishop

To calculate the treatment effect size for Bishop, first the method of Percentage of the Data Exceeding the Median (PEM) was used. Bishop's OQ-45.2 total score baseline median was 80. During the treatment phase 4/6 (67%) of his weekly OQ-45.2 total scores fell below the median, with a Tau-U of $-.27$, $p = .51$ indicating a moderate treatment effect that was not statistically significant. Clinically, this resulted in a shift from 80 to 66, a decrease in score of 14 points, which indicated a reliable improvement in his total symptoms.

Bishop's Symptom Distress baseline median was 41, and during the treatment phase 4/6 (67%) of his weekly symptom distress scores fell below the median with a Tau-U of $-.33$, $p = .43$, indicating a moderate treatment effect that was not statistically significant. Clinically, this resulted in a shift from 41 to 34, a decrease in score of 7 points, which did not meet the threshold for the reliable change index of 10 points for Symptom Distress but indicates a possible improvement.

His Interpersonal Relationships baseline median was 22, and during the treatment phase 4/6 (67%) of his Interpersonal Relationships scores fell below the median, with a Tau-U of $-.39$, $p = .36$ indicating a moderate treatment effect that was not statistically significant. Clinically, this resulted in a shift from 22 to 18, a decrease in score of 4 points, which did not meet the threshold for the reliable change index of 8 points for Interpersonal Relationships but indicates a possible improvement.

Bishop's Social Role baseline median was 16, and during the treatment phase 3/6 (50%) of his weekly social role scores fell below the median, with a Tau-U of $-.11$, $p = .79$, indicating no treatment effect and no statistical significance. Clinically this resulted in a shift from 16, to

14, a decrease in score of 2 points, which did not meet the threshold for the reliable change index of 7 for Social Role but indicates a possible improvement in Social Role.

Although not part of the SCRD analysis, analysis of contextual items indicated that Bishop moved from a score of 15 pre-treatment on the YFAS 2.0, which indicated severe food addiction with 6 or more symptoms, to a score of 0 post-treatment, which indicates no food addiction symptoms were present for Bishop post treatment. Bishop's score on the Emotional Eating scale moved from a score of 43 pre-treatment which indicated a reliance on food to help him manage his emotions and may have been impacting his quality of life, to a score of 23 post-treatment which indicates a very healthy relationship with food.

On the Food Cravings Inventory, Bishop's Total Score went from pre-treatment 74 and 101, to post-treatment 47 and 38, which indicated he craved the foods 27 instances less frequently over the previous month and ate the craved foods 63 instances less over the previous month. On the High Fats scale, pre-treatment he craved the foods 14 instances over the previous month and ate the high fat foods 28 instances over the previous month. On the High Fats scale post-treatment, he decreased to 10, and 9, which indicated he craved the foods 4 instances less over the previous month and ate the craved foods 19 instances less. Pre-treatment on the Sweets scale, he craved the foods 22 instances over the previous month and ate the sweet food 31 instances over the previous month. Post-treatment he decreased to 14, and 12, which indicated he craved the sweet food 8 instances less and ate the sweet food 19 instances less. Pre-treatment on the Starches scale, he craved the food 15 instances over the previous month, and ate the starchy food 24 instances over the previous month. Post treatment he dropped to 10, and 8, which indicated he craved the starchy food 5 instances less and ate the starchy food 16 instances less frequently. Pre-treatment on the Fast-Food scale, he craved the food 23 instances over the

previous month and ate the food 18 instances over the previous month. Post-treatment he decreased to 13, and 9, which indicated he craved the fast food 10 instances less and ate the craved food 9 instances less often.

Bishop's AUDIT score was a 16 pre-treatment which indicated very hazardous alcohol use, and high level of alcohol related problems. His score decreased to 12 post-treatment which indicated hazardous alcohol use, and a moderate level of alcohol related problems. Bishop attempted to decrease his alcohol consumption during the study but was unable to commit to a period of abstinence. Bishop's DUDIT score was a 1 pre-treatment and a 0 post-treatment, which indicated no change, non-hazardous drug use, and no presence of drug related problems. Bishop's weight at the start of the study was 327 pounds. His weight at the end of the study was 320 pounds. Bishop lost a total of 7 pounds.

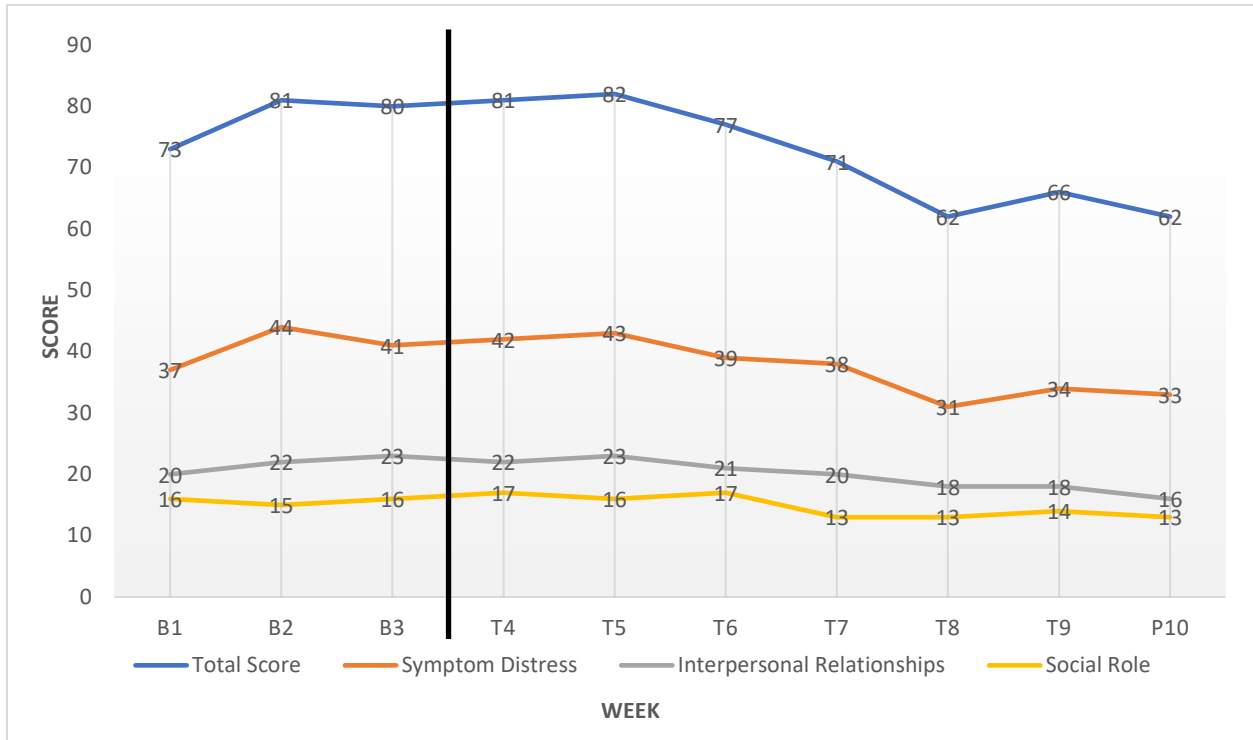


Figure 7

Bishop OQ-45.2 scores over the 10-week time-period

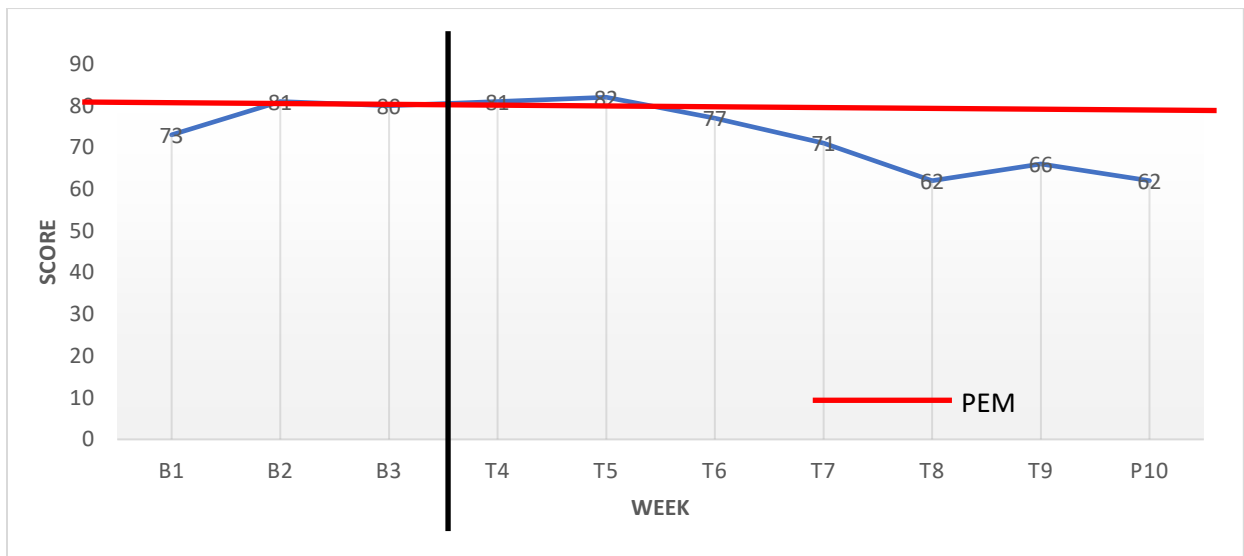


Figure 8

Bishop Total Scores on the OQ-45.2 over the 10-week time period

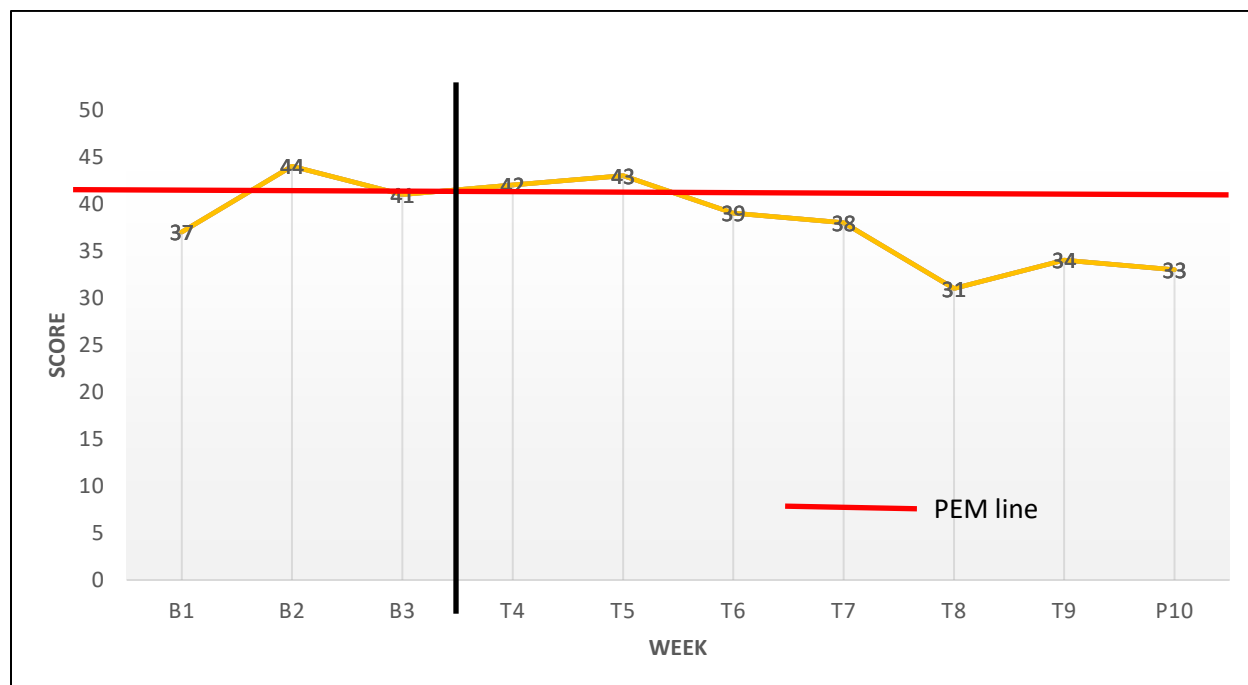


Figure 9

Bishop Symptom Distress Scores on the OQ-45.2 over the 10-week time period

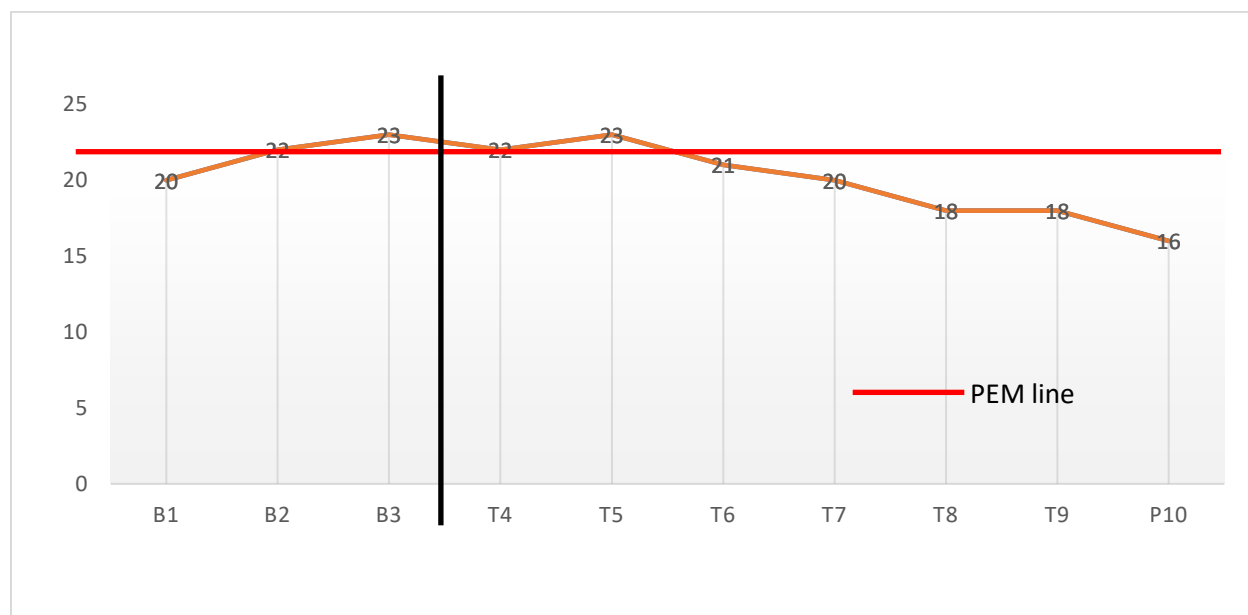


Figure 10

Bishop Interpersonal Relationship scores over the 10-week period

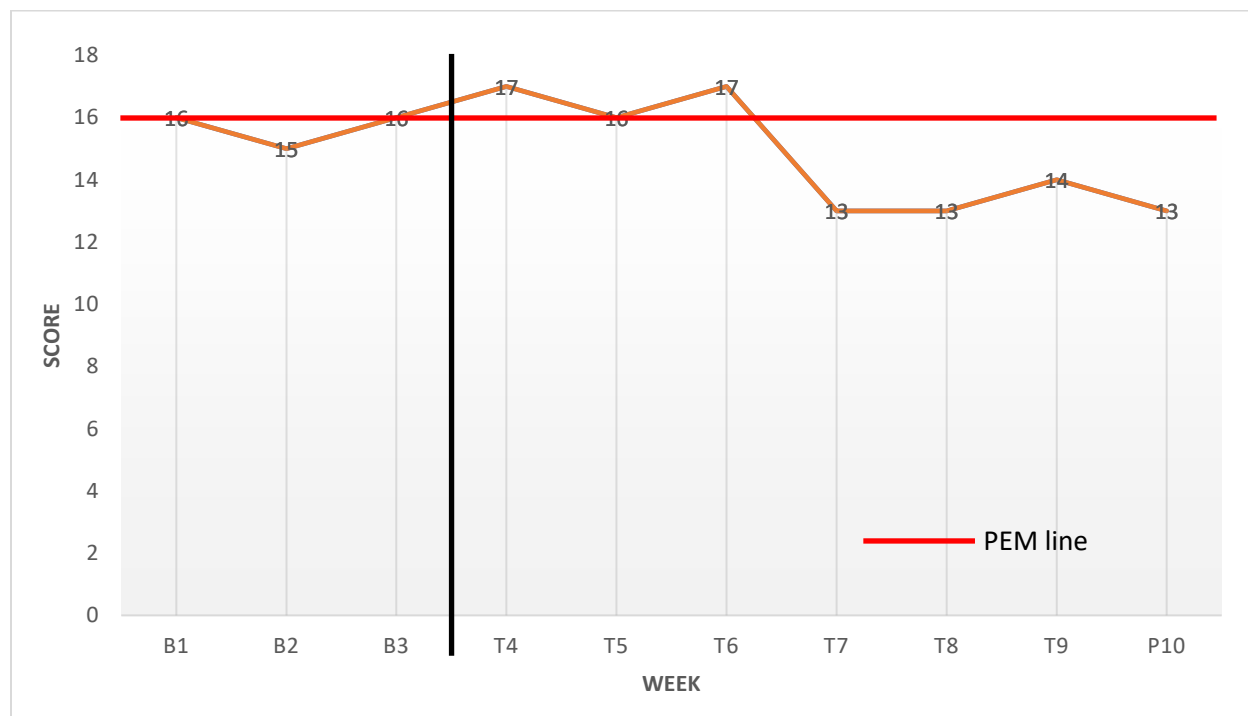


Figure 11

Bishop Social Role scores over the 10-week time period

Participant 3: Bubba

To calculate the treatment effect size for Bubba, first the method of Percentage of the Data Exceeding the Median (PEM) was used. Bubba's total score baseline median was 101. During the treatment phase 5/6 (83%) of his weekly total scores fell below the median, with a Tau-U of $-.66$, $p = .06$ indicating a strong treatment effect that was not statistically significant. Clinically this resulted in a shift from 101 to 88, a decrease in score of 13 points, which did not meet the threshold for the reliable change index of 14 points for Total Score but indicates a possible improvement.

His baseline median for Symptom Distress was 53. During the treatment phase 6/6 (100%) of his symptom distress scores fell below the median, with a Tau-U of $-.80$, $p = .02$, indicating a strong treatment effect that was statistically significant. Clinically this resulted in a shift from 53 to 42, a decrease in 11 points, which exceeds the reliable change index of 10 points for Symptom Distress.

Bubba's Interpersonal Relationships baseline median was 32. During the treatment phase 4/6 (67%) of his weekly Interpersonal Relationships scores fell below the median, with a Tau-U of $-.23$, $p = .52$, indicating a moderate treatment effect that was not statistically significant. Clinically this resulted in a shift from 32 to 30, a decrease in score of 2 points, which did not meet the threshold for reliable change of 8 points for Interpersonal Relationships but indicates a possible improvement.

His baseline median for Social Role was 17, and during the treatment phase 2/6 (33%) of his weekly social role scores fell below the median, with a Tau-U of $-.3$, $p = .41$ indicating no treatment effect or statistical significance. Clinically this resulted in a shift from 17 to 16, a

decrease in score of 1 point, which did not meet the threshold for reliable change of 7 points for Social Role but indicates a possible improvement.

Although not part of the SCRD analysis, analysis of contextual items indicated that pre-treatment Bubba's score on the Yale Food Addiction Scale 2.0 was a 32, which was clinically significant and indicated he had a severe food addiction with 6 or more symptoms present. Post-treatment his score on the YFAS 2.0 decreased to 26, still indicating clinically significant, severe food addiction. It should be noted that Bubba had a reduction in score, but not enough to move him out of the severe food addiction category. Bubba was non-compliant with some of his homework during treatment; he did not track his food intake daily and did not use the thought record weekly. This lack of structure, accountability, and compliance with the CBT treatment protocol may have influenced the lack of reduction in his food addiction behaviors and symptoms. Given Bubba did not make use of the treatment tools, his lack of participation in treatment may have affected his level of awareness of his thoughts, emotions, and behavior. This, in turn, would likely block some of his level of awareness, responsibility, and ability to make the changes necessary to control his eating behavior. Given our understanding of addictive behavior, it could prolong his denial and avoidance, which could result in a block in behavior change.

Pre-treatment Bubba's Emotional Eating Scale score was a 63, which indicated a very significant reliance on food to help him manage his emotions, which was impacting his quality of life. Post-treatment Bubba's score increased to 82, which indicated a very significant reliance on food to help him manage his emotions, impacting his quality of life. Pre-treatment Bubba's Food Cravings Inventory total score indicated he craved the total foods 66 instances over the previous month and ate the craved food 54 instances over the previous month. Post treatment his total score increased to 82 and 64, which indicated he craved the total foods 16 instances more post-

treatment, and at the craved food 10 instances more frequently over the previous month. Pre-treatment his High Fats scale indicated he craved the high fat foods 21 instances over the previous month and ate the high fat foods 14 instances over the previous month. Post treatment on the high fats scale his scores increased to 23 and 22, which indicated he craved the high fat food two instances more frequently and ate the high fat food 8 instances more frequently over the previous 30 days. Bubba's Sweets scale pre-treatment indicated he craved the sweet food 24 instances over the previous month and ate the craved food 24 instances over the previous month. Post-treatment his scores on the Sweets scale decreased to 22 and 15, which indicated he craved the sweet food two instances less frequently and ate the craved food 9 instances less frequently. Pre-treatment his Starches scale indicated he craved the starchy food 7 instances over the previous month and ate the craved food 7 instances over the previous month. Post treatment his scores increased to 19, and 12, which indicated he craved the starchy food 12 instances more frequently and ate the starchy food 5 instances more frequently over the previous month. Pre-treatment Bubba's Fast-Food scale indicated he craved the fast food 14 instances over the previous month and ate the craved food 8 instances over the previous month. Post-treatment Bubba's scores on the Fast-Food scale increased to 19 and 15, which indicated he craved the fast-food five instances more frequently and ate the fast-food one instance more frequently over the previous month.

Bubba's AUDIT and DUDIT scores pre-treatment were both 0, which indicated no alcohol or drug related problems over the previous 12 months. Bubba's AUDIT and DUDIT scores were also 0 post-treatment which indicated no change, and no alcohol or drug related problems over the previous 30 days. His weight at the start of the study was 447 pounds. His weight at the end of the study was 440 pounds. Bubba lost a total of 7 pounds.

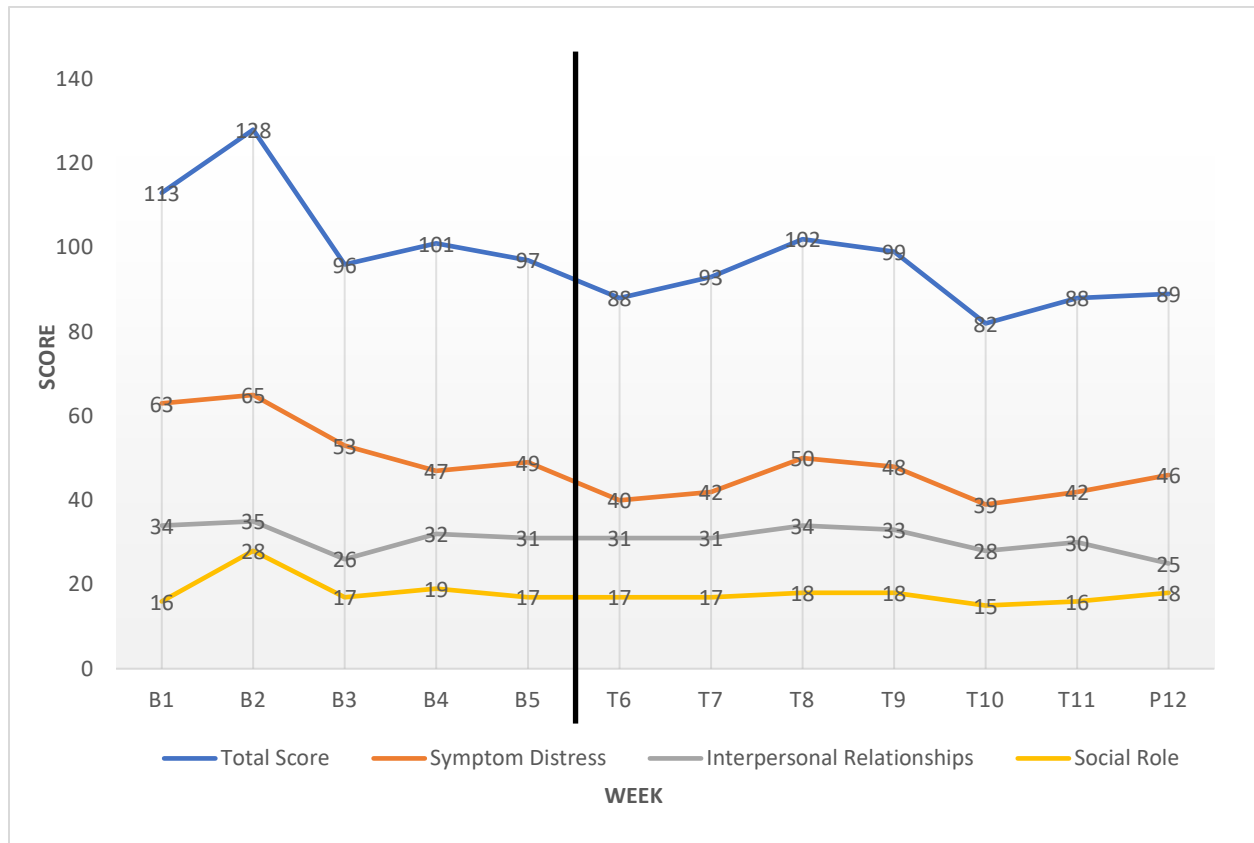


Figure 12

Bubba OQ45.2 Scores over the 12-week time period

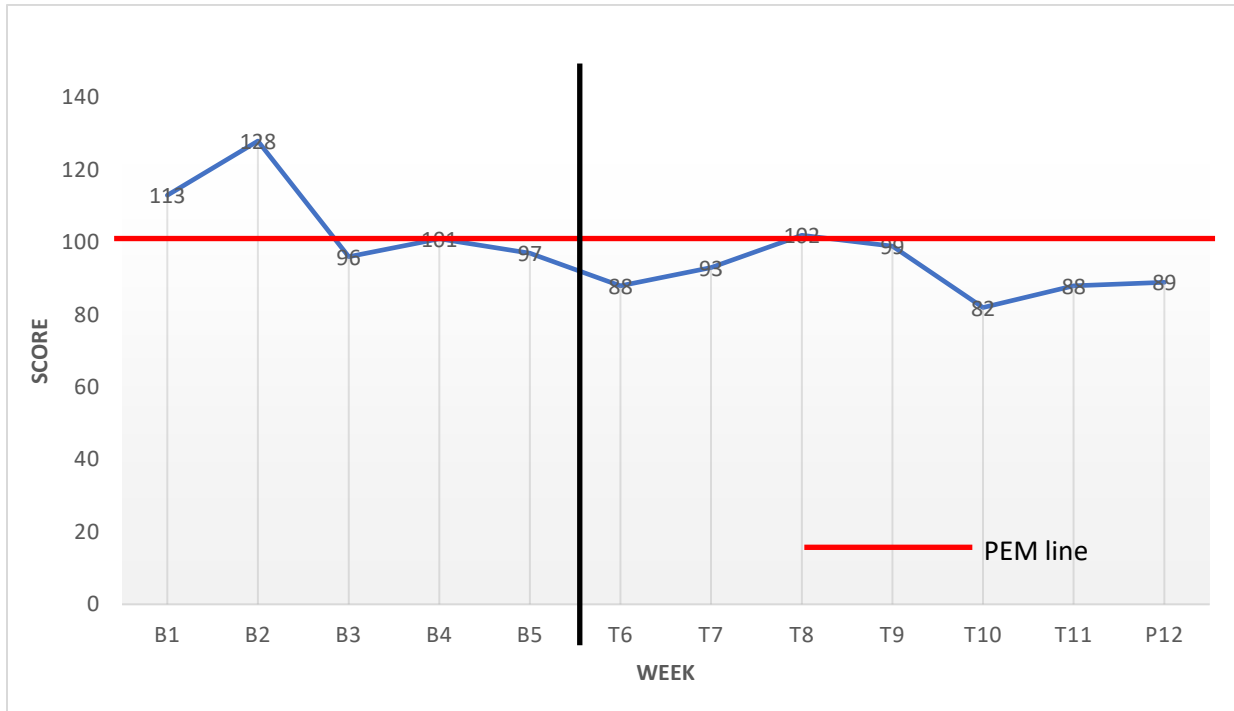


Figure 13

Bubba Total Score on the OQ45.2 over the 12-week time period

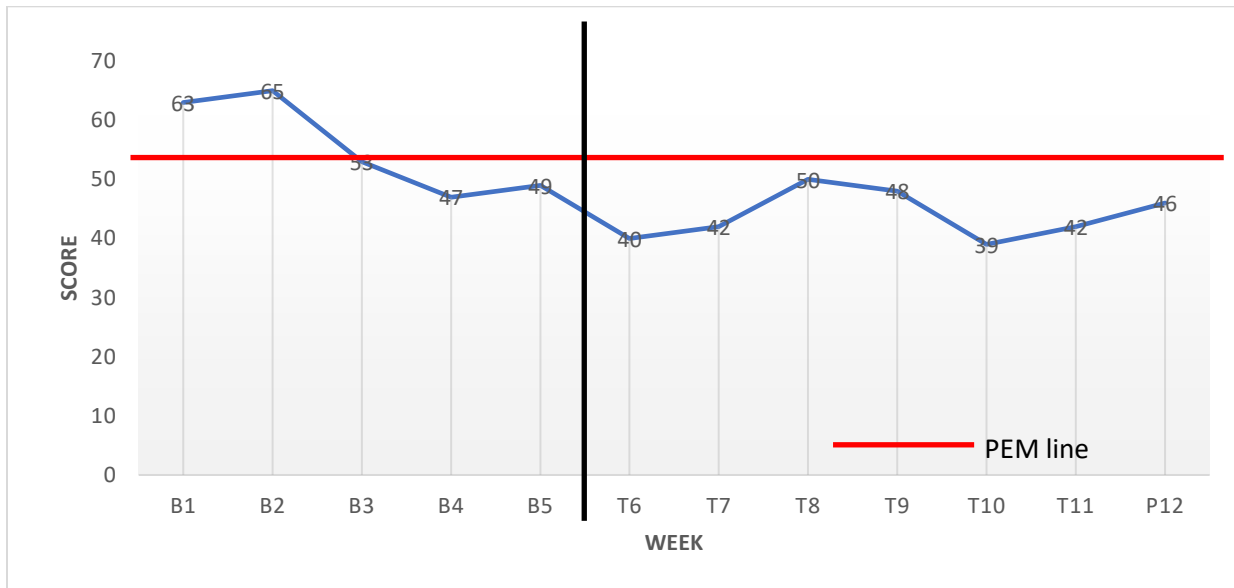


Figure 14

Bubba Symptom Distress scores over the 12-week time period

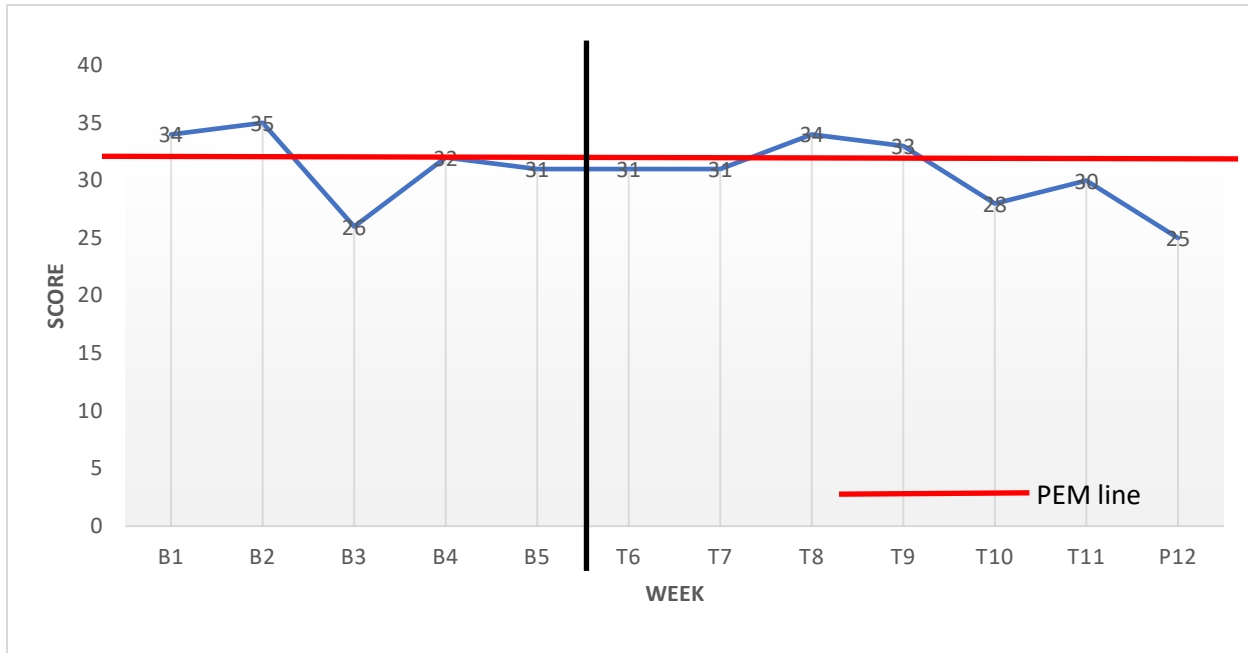


Figure 15

Bubba Interpersonal Relationship scores over the 12-week time period

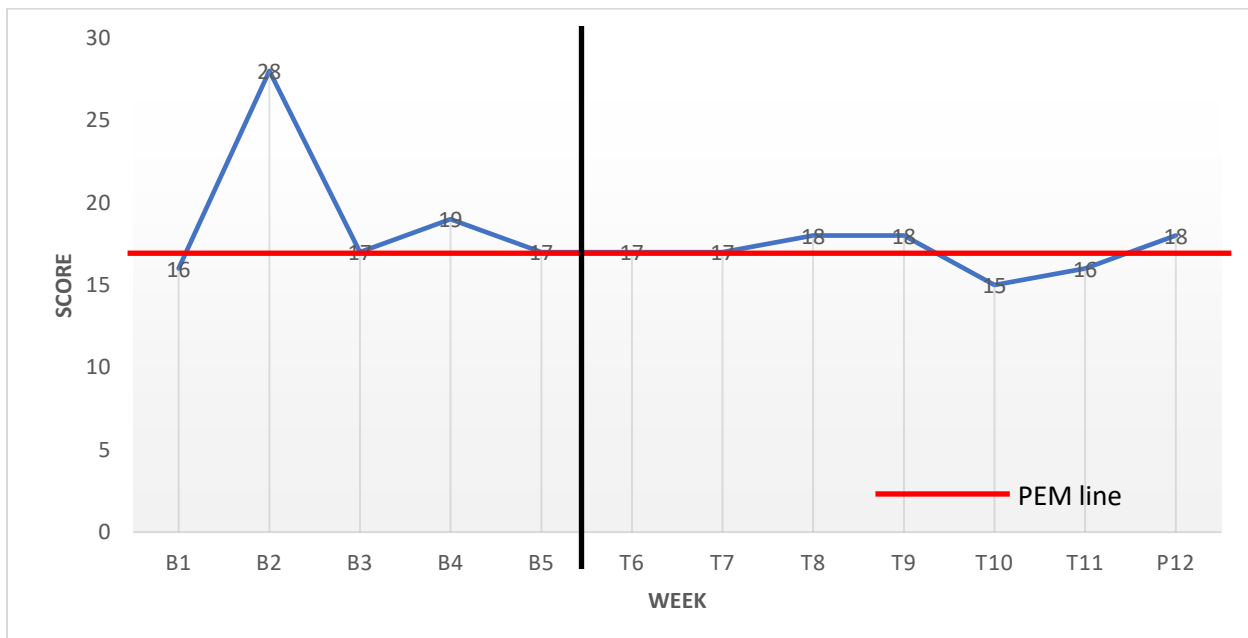


Figure 16

Bubba Social Role scores over the 12-week time period

Participant 4: Dave

To calculate the treatment effect size for Dave, first I used the method of Percentage of the Data Exceeding the Median (PEM). Note that Dave missed taking his OQ45.2 assessment during week 9 despite a reminder from the primary investigator. Dave's total score baseline was 85, and during the treatment phase 5/5 (100%) of his total scores fell below the median with a Tau-U of -1, $p = .02$, indicating a strong treatment effect that was statistically significant. Clinically this resulted in a shift from 85 to 70, a decrease in score of 15 points, which exceeds the threshold for the reliable change index of 14 points for Total Score.

Dave's Symptom Distress baseline median was 43, and during the treatment phase, 4/5 (80%) of his weekly symptom distress scores fell below the median, with a Tau-U of -.87, $p = .05$ indicating a strong treatment effect that was statistically significant. Clinically, this resulted in a shift from 43 to 36, a decrease in score of 7 points, which did not meet the threshold for reliable change of 10 points for Symptom Distress but indicates a possible improvement.

His baseline median for Interpersonal Relationships was 23, and during the treatment phase, 4/5 (80%) of his weekly Interpersonal Relationships scores fell below the median, with a Tau-U of -.47, $p = .29$ indicating a strong treatment effect that was not statistically significant. Clinically this resulted in a shift from 23 to 19, a decrease in score of 4 points, which did not meet the threshold for reliable change of 8 points for Interpersonal Relationships but indicates a possible improvement.

Dave's Social Role baseline median was 19, during the treatment phase 5/5 (100%) of his weekly Social Role scores fell below the median, with a Tau-U of -1, $p = .02$, indicating a strong treatment effect that was statistically significant. Clinically this resulted in a shift from 19 to 15,

a decrease in score of 4 points, which did not meet the threshold for reliable change of 7 points for Social Role but indicates a possible improvement.

Although not included in the SCRD analysis, analysis of contextual items indicated that pre-treatment Dave's Yale Food Addiction Scale 2.0 score was 10, which was clinically significant, and indicated Severe Food Addiction. Post-treatment his score on the YFAS 2.0 decreased to 0, which indicated no food addiction symptoms were present for Dave post-treatment. Dave's Emotional Eating Scale score was 54, which indicated a significant reliance on food to manage his emotions, impacting quality of life. Dave's Emotional Eating Scale score decreased to 13 post-treatment representing Dave had a healthy relationship with food post-treatment.

Dave's Food Cravings Inventory pre-treatment total score reported he craved the total foods 52 instances over the previous month, and he ate the craved food 58 instances over the previous month. Post treatment Dave's total score increased to 79 and 80, which indicated he craved the total foods 27 instances more frequently and ate the craved food 22 instances more frequently over the previous month. His pre-treatment High Fats scale reported he craved the high fat food 16 instances over the previous month and ate the craved food 17 instances over the previous month. Post treatment his scores increased to 22 and 24, which indicated he craved the high-fat food 6 instances more and ate the craved food 7 instances more frequently over the previous month. Dave's pre-treatment Sweets scale reported he craved the sweet food 14 instances over the previous month and ate the craved food 14 instances over the previous month. Post-treatment his scored increased to 18 and 16, which indicated he craved the sweet food 4 instances more frequently and ate the craved food two instances more frequently over the previous month. The pre-treatment Starches scale reported he craved the starchy food 12

instances over the previous month, and he ate the starchy food 17 instances over the previous month. Post treatment his scores increased to 24 and 24, which indicated he craved the starchy food 12 instances more frequently, and ate the starchy food seven instances more frequently over the previous month. The pre-treatment Fast-Food scale indicated he craved the fast food 10 instances over the previous month, and he ate the fast-food 10 instances over the previous month. Post-treatment his scores increased to 15 and 16, which indicated he craved the fast-food five instances more frequently and ate the fast-food 6 instances more frequently over the previous month.

Dave's AUDIT score pre-treatment was a 26, which indicated very hazardous drinking in the previous 12 months, a high level of alcohol related problems, and possible dependence. Dave's AUDIT score post-treatment was a 0, which indicated non-hazardous drinking over the previous 30 days and no presence of alcohol related problems. Dave stopped drinking alcohol completely during the study and made the commitment to abstain from alcohol. Dave's DUDIT score pre-treatment was a 16, which indicated very hazardous drug use in the previous 12 months, and a high presence of drug related problems. Dave's post-treatment DUDIT score decreased to a 9. Which indicated hazardous drug use over the previous 30 days, and a moderate presence of drug related problems. Dave stopped using cocaine but continued use of marijuana during the study. Dave's weight at the start of the study was 295 pounds. His weight at the end of the study was 270 pounds, which indicated he lost a total of 25 pounds.

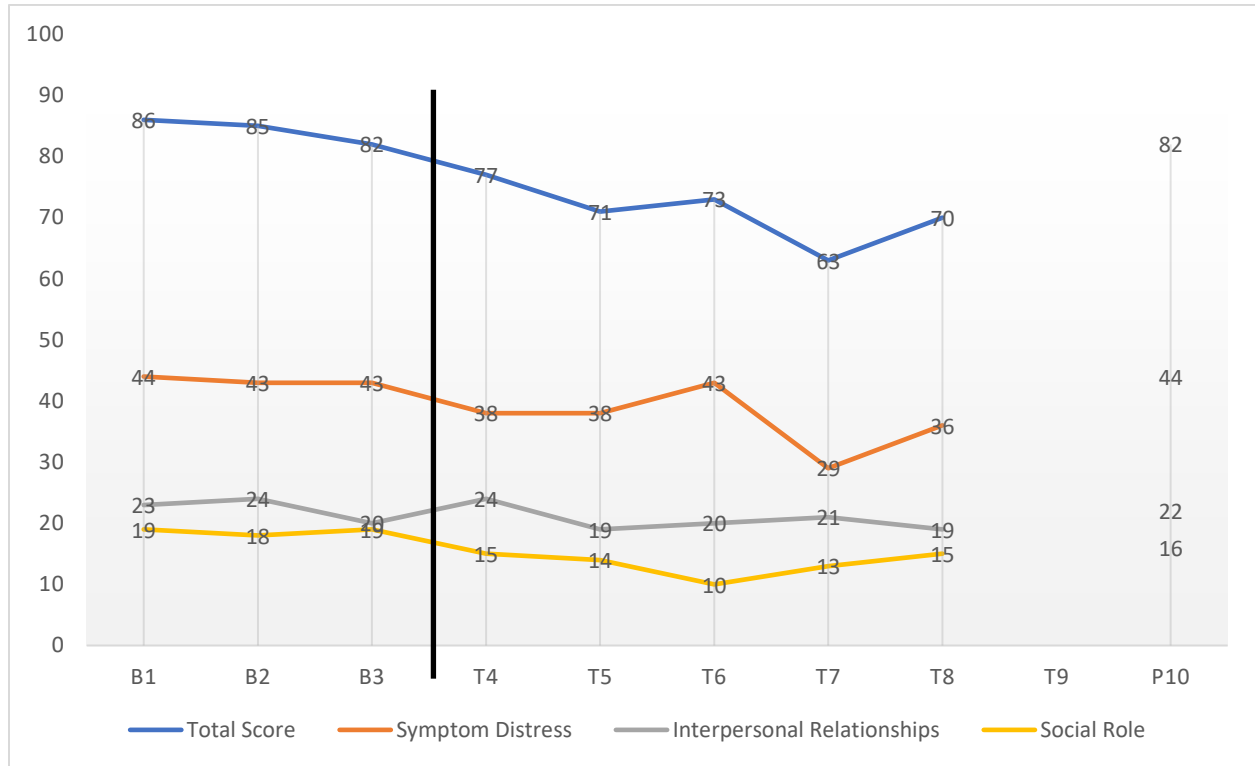


Figure 17

Dave OQ-45.2 scores over the 10-week period

Note: missing scores week 9 (T9) on all Dave's figures

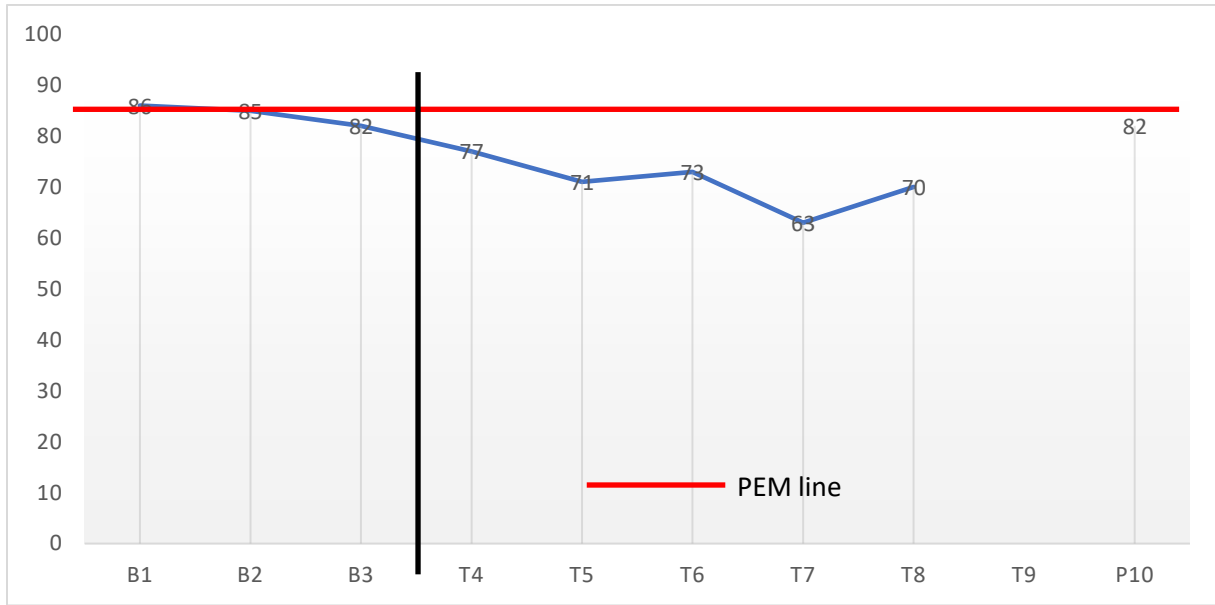


Figure 18

Dave Total Score on the OQ-45.2 over the 10-week period

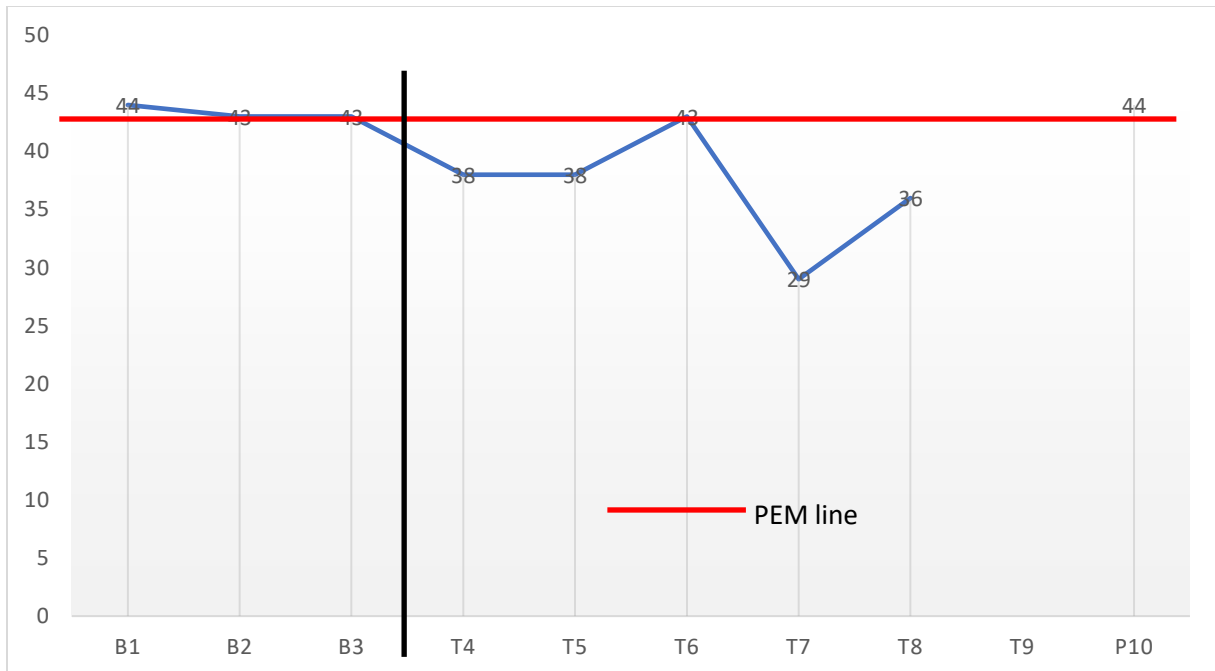


Figure 19

Dave Symptom Distress scores on the OQ-45.2 over the 10-week period

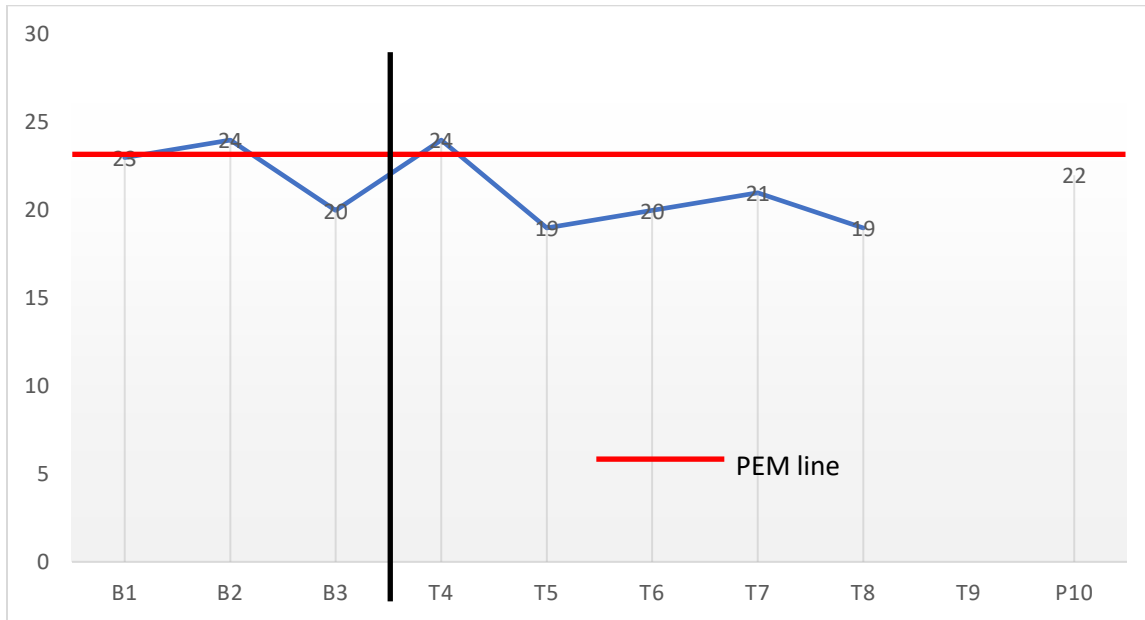


Figure 20

Dave Interpersonal Relationship scores on the OQ-45.2 over the 10-week period

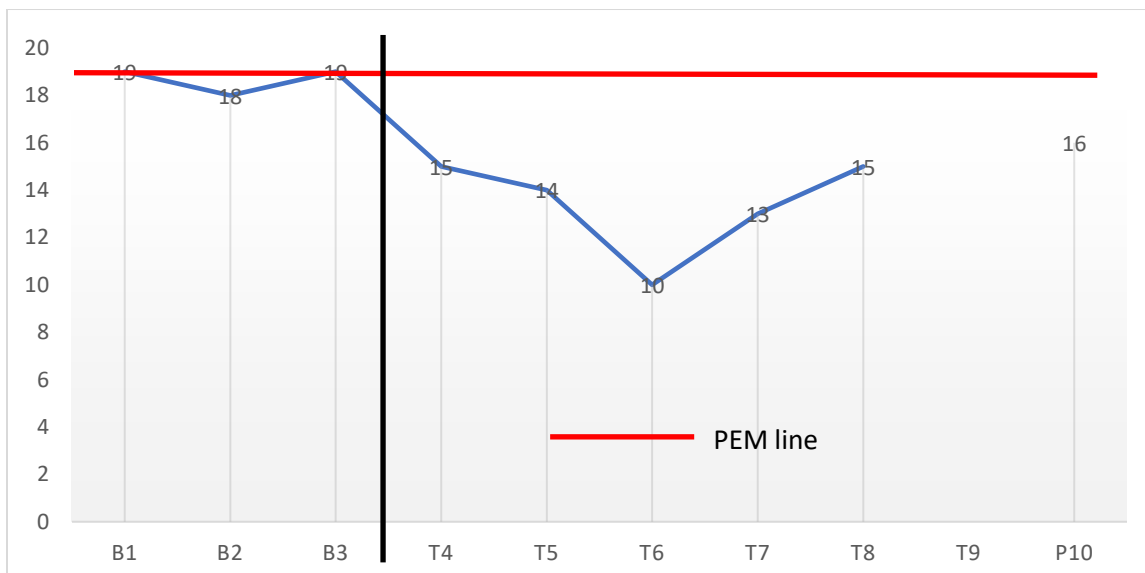


Figure 21

Dave Social Role scores on the OQ-45.2 over the 10-week period

Summary of Results

OQ45.2 Pre- and Post-Scores

On the Total Score scale on the OQ45.2, two participants (Addy & Bishop), demonstrated moderate treatment effect, while two participants (Bubba & Dave), demonstrated a strong treatment effect, with combined Tau-U of $-.54$, $p = .009$, indicating statistical significance. On the Symptom Distress scale, one participant demonstrated no treatment effect (Addy), one participant demonstrated a moderate treatment effect (Bishop), and two participants demonstrated a strong treatment effect (Bubba & Dave), with a combined Tau-U of $-.56$, $p = .007$, indicating statistical significance. On the Interpersonal Relationships scale, one participant had no treatment effect (Addy), two participants had a moderate treatment effect (Bishop & Bubba), and one participant demonstrated a strong treatment effect (Dave), with a combined Tau-U of $-.21$, $p = .30$, which was not statistically significant. On the Social Role scale, two participants demonstrated no treatment effect (Bishop & Bubba), one participant a moderate treatment effect (Addy), and one participant a strong treatment effect (Dave), with a combined Tau-U of $-.49$, $p = .01$, indicating statistical significance.

In summary, the CBT treatment had a moderate to strong effect across participants on the Total Score scale. On the Symptom Distress scale, the CBT treatment ranged from no treatment effect to a strong treatment effect across participants. On the Interpersonal Relationships scale the CBT treatment ranged from no treatment effect to a strong treatment effect across participants. Lastly, on the Social Role scale, the CBT treatment ranged from no treatment effect to a strong treatment effect across participants.

Comparison of Combined Contextual Measures Pre- and Post-Treatment

Pre- and post-treatment scores on the YFAS 2.0 indicated that one participant started with a moderate food addiction (Addy), and three participants (Bishop, Bubba, & Dave), started with a severe food addiction. Therefore, all four of the participants initially identified clinically as food addicted individuals in the pre-treatment time frame. Post-treatment, one participant (Bubba), remained in the severe food addiction category, and three of the participants (Addy, Bishop, & Dave), shifted into having no food addiction symptoms present post-treatment. It appears that the CBT treatment may have corresponded to three (Addy, Bishop, & Dave) of the four participants placing their food addiction in early remission.

On the Emotional Eating Scale, two participants (Addy & Bishop), started with pre-treatment scores indicating a moderate reliance on food to help them manage their emotions. The other two participants (Bubba & Dave) started pre-treatment in the category indicating a strong reliance on food to help them manage their emotions. Therefore, pre-treatment all four of the participants reported to be engaging in emotional eating behaviors. Three of the four participants shifted into the healthy relationship with food category post-treatment (Addy, Bishop, & Dave). Therefore, the CBT treatment may have helped three of the four participants (Addy, Bishop, & Dave) to exercise more self-control and reduce incidents of problematic eating behavior. Post-treatment these three participants reported the ability to avoid using food as a coping mechanism when they would get emotional, and the learned ability to use healthier coping mechanisms and replacement behaviors such as those listed on the pleasurable activities list (i.e., guided meditation, playing a game, taking a walk). Post-treatment, one participant (Bubba), remained in the unhealthy category indicating a continued strong reliance on food to help him manage emotions.

On the Food Cravings Inventory, two participants had a decrease in food cravings and engaging in the food item eating instances post-treatment (Addy & Bishop), and two participants (Bubba & Dave), had an increase in food cravings and the eating instances post-treatment. Therefore, the treatment may have helped two of the participants (Addy & Bishop) to reduce cravings and eating instances but did not seem to aid the other two participants (Bubba & Dave) with cravings and eating instances. In fact, they had the opposite response; they had an increase in food cravings and eating instances post-treatment.

On the AUDIT and DUDIT, two participants (Addy & Bubba), started in the pre-treatment time frame reporting no drug or alcohol related problems, and post-treatment, remained in these categories with no change. Two participants, (Bishop & Dave), started in the pre-treatment time frame with scores representing “a high presence of alcohol and drug related problems.” One participant (Dave) was able to stop drinking completely during the study, and moved into the category indicating, “no presence of alcohol related problems,” post-treatment. Dave also lowered his drug use level from pre-treatment “very hazardous drug use,” to a post-treatment score falling in the “hazardous drug use,” category. The other participant (Bishop) was able to decrease his alcohol consumption from pre-treatment, “very hazardous alcohol use, to post-treatment “hazardous alcohol use,” but failed to abstain from alcohol completely. Therefore, it can be said that for one participant (Dave) the treatment may have helped him to completely abstain from alcohol, and moderate his drug use, as he was able to achieve early remission status with his alcohol use disorder. The treatment may have helped one participant (Bishop) to moderate his alcohol use.

All four participants (Addy, Bishop, Bubba, & Dave), lost body weight during the study. The weight loss ranged from a total of three pounds up to 25 pounds for each participant post-

treatment. Therefore, the CBT treatment may have assisted all four of the participants with their weight loss goals.

Four participants (Addy, Bishop, Bubba, and Dave) successfully completed the six-week CBT treatment. Each participant experienced a decrease in symptoms in most if not all of the categories post CBT treatment. Each participant also experienced an improvement with most of their co-morbid behaviors (i.e., problematic eating behavior, substance use), identified prior to the CBT treatment. Chapter Five includes a discussion section where I identify implications for clinicians, surgeons, and educators. A review of limitations, and suggestions for future research follow.

Chapter 5

Discussion

Bariatric surgery fails to address the underlying psychological issues present with many bariatric surgery patients (Cassin et al., 2013; Cornette, 2008). This study confirms findings from prior studies including presence of struggles with weight loss post-surgery, regaining weight post-surgery, body image issues, problematic eating, psychological issues, and cross-addiction within the bariatric patient population (Cassin et al., 2013; Kubik et al., 2013; Lent et al., 2013; McFadden, 2010). Prior to receiving the CBT treatment in this study, all four participants struggled with weight loss, had regained weight, were dissatisfied with their body image, and experienced problematic eating (i.e., cravings, emotional eating). All four participants also experienced some symptoms of depression and/or anxiety. Two of the four participants (Bishop & Dave) showed susceptibility to cross-addiction (i.e., alcohol, drugs) post-surgery. This comorbid susceptibility appears to be a common according to previous research (Cassin et al., 2013; Kubik et al., 2013; Lent et al., 2013; McFadden, 2010; Spadola et al., 2015).

Consistent with findings by Kubik et al. (2013) and Lier et al. (2015), all four participants in the current study struggled with interpersonal relationships such as loneliness, conflicts with others, and family and marriage problems. Study criteria and pre-treatment assessments indicated that all four study participants had family and/or marital problems and struggled with social role (e.g., worker, homemaker, student) as previously identified by Bocchieri et al (2002). In addition, two of the participants (Bishop & Bubba) also struggled with loneliness. Bishop admitted that he would go to bars to get out of the house and would end up drinking beer and ordering something off the menu when he should not have out of loneliness. Bubba admitted that

he would go to a restaurant to get out of the house and end up ordering food that was unhealthy or eating more than intended because he was seeking out social interaction.

Cassin et al. (2013) and Cornette (2008) argued that bariatric patients might benefit from mental health counseling before and after surgery to address cognitive, emotional, and behavioral precursors and repercussions associated with obesity. Mental health counselors typically operate from a wellness model or approach, which includes focus on mental, emotional, physical, and spiritual wellbeing. Counseling post-surgery may assist patients in accountability post-surgery. This is where they are putting their newly learned skills into practice and have a safe space to process how it is going not only physically, but cognitively, emotionally, behaviorally, and spiritually as well. This study provides preliminary evidence that one form of counseling (i.e., CBT) may help patients effectively address mental health issues related to their obesity post-surgery. Because CBT holistically targets underlying thoughts, emotions, and behaviors, it may be well geared toward effectively helping bariatric surgery patients.

Current study results indicated that post CBT treatment, all four of the participants experienced a decrease in symptoms related to psychological distress, interpersonal relationships, and social role. All four participants lost weight during the time of the study. This decrease in symptoms may have assisted the participants with their other problematic eating behaviors. Although it was not the main focus of the study, findings also indicated a decrease in food cravings for two participants (Addy & Bishop), and an increase in food cravings for two participants (Bubba & Dave), and a decrease in emotional eating for three (Addy, Bishop, & Dave) of the four participants, while Bubba's emotional eating increased post CBT treatment. Additionally, three of the four participants (Addy, Bishop, & Dave) experienced a remission in their problematic eating behaviors related to food addiction, Bubba's addictive food behaviors

decreased but it was not enough to move him out of the severe food addiction category. The two participants (Bishop & Dave) who endorsed substance abuse pre-treatment, also experienced a decrease in their substance use during the time of the study. The results in the current study confirm results from previous studies which also reported a decrease in problematic eating behavior post CBT treatment. Ashton et al. (2009) reported a decrease post CBT treatment in binge eating episodes, binge eating cognitions, and binge eating behaviors in a study with 243 bariatric surgery candidates. Cassin et al. (2013) observed a decrease in behaviors associated with binge eating, emotional eating, and depressive symptomology post CBT treatment with eight bariatric surgery candidates.

In the current study, a drop in OQ-45.2 scores did not occur until after the third week of treatment. Further comparison of the results and the content of the treatment manual led to some preliminary conclusions. The participants did not start using the tracking methods (i.e., food record & thought record) until after their second counseling session. At this time, participants started to track food intake using their food records, and they also started to implement use of the CBT thought record. Perhaps the specific behaviors of tracking food intake using the food records alongside tracking and reframing their thoughts influenced the decrease in their level of symptoms. It may be beneficial to extend the session protocol to allow for more practicing and stabilizing of the newly learned and acquired skills across participants. The current treatment protocol allowed for the skills to be gradually introduced over the weekly sessions. Extension of the counseling sessions beyond the six-week learning phase would allow for continued practice and accountability of these self-monitoring activities. The CBT treatment protocol included teaching the participants how to identify and tracking thoughts, identify and track emotions, identify related food behavior, learn how to problem solve, learn how they see themselves and

define body image, and helped them to identify body checking behaviors. The CBT treatment protocol also included information on how often they should weight themselves, how to keep a daily food record.

Another study implication is participant homework completion. Between the weekly counseling sessions, it was hard to hold participants accountable to complete their assigned homework. Participants who continued to struggle with food cravings (Bubba & Dave), addictive food behavior (Bubba), and emotional eating (Bubba) did not complete some of their weekly homework between counseling sessions. This lack of intrinsic motivation to complete their homework may have been a sign of them not trying hard enough and could be related to lack of readiness for change or how committed they were to make the lifestyle changes during the time of the study. This lack of effort and lack of self-discipline is worth further exploration with the participants to understand more deeply what is contributing to this. One example could be the participant not believing that they can be successful or make the changes necessary to succeed. This may be identified as a block in their level of success and treatment protocols could be adjusted to encourage more homework completion or participant engagement. The lack of homework completion may have contributed to the increase of food cravings for Bubba and Dave, and Bubba's continuation of problematic addictive eating behavior and emotional eating. It may have been beneficial for the primary investigator to send the participants a reminder mid-week encouraging participants to complete their homework. The increase in food cravings and eating instances for the two participants (Bubba and Dave) was surprising and unexpected and is not fully understood at this time. One possible explanation of the craving increase could have been a result of them trying to restrict or control their food behavior, and since they were trying to avoid those foods with high fat, high carb, high sugar, and fast foods, they may have

developed an obsession with these food items. Another explanation could be that during the time of the study, Bubba and Dave developed more self-awareness related to the frequency of their food cravings and the number of instances they were eating the food items, so they self-reported a higher frequency of these post-treatment.

Limitations

Limitations are characteristics of the study's design or methodology that affect the interpretation of the findings. One limitation in this study included the use of self-report measures. Participants may have the tendency to inaccurately report, by under or over reporting due to their perception of themselves. A second limitation was the lack of control with the frequency of participant involvement in the treatment sessions. Fortunately, none of the participants missed any weekly sessions, but a couple sessions had to be rescheduled during the same week. A third limitation was I assumed the role of the interventionist, as well as the researcher in this study, the participants may have reported decreases in scores out of obligation to help me complete my dissertation. A four limitation was the use of six sessions was a limitation. The six sessions occurred over a six-week period, and this time period may not have been enough time to observe sustained change across participants.

One additional limitation was the number of participants included in the study; the primary investigator had some difficulty in recruiting due to COVID-19 pandemic that was active at the time of the study. The primary investigator initially started with one practice and due to the slow recruitment rate, added a second practice, followed by a third practice, in order to recruit enough participants. The doctors' offices were closed for several months during the recruitment phase of the current study as a result of the pandemic. Closed offices significantly slowed down the recruitment process. The participants may have been additionally stressed due

to the COVID-19 pandemic; it is hard to know how might confound as the study unfolded, which may have influenced the results. Due to results being based on the treatment and outcome of four participants, generalization of the results should be done cautiously.

Implications

Counseling Implications

Clinical Mental Health Counselors (CMHCs) have knowledge and skills to work in a broad range of settings with a broad range of clients. Within the existing CACREP standards, CMHCs are to be prepared to understand theories and models of addiction related to substance use as well as behavioral and process addictions, in accordance with Section 5.C, *Addiction Counseling* (CACREP, 2016). Obesity rates are high, and bariatric surgery has become the most effective treatment for the morbidly obese (Lier et al., 2012; Muhlhans et al., 2009). Due to the increase in use of bariatric surgery to treat obesity and aid in weight loss, there is a likelihood that the CMHCs will come across these post-surgery bariatric patients within their client population. Mental health counselors should be aware that they will likely have an opportunity to work within the post-surgery bariatric patient population. Ideally CMHCs should be educated about the common co-morbidities (i.e., Affective disorders, Substance Use Disorders) within this population of bariatric patients. The CMHCs should also learn that CBT is a well-matched and effective form of treatment in aiding these patients with problematic thoughts, and emotions, related to problematic eating behavior (i.e., food addiction, preoccupation with food, emotional eating, food cravings, uncontrolled eating) and body image issues. Clinical Mental Health Counselors should evaluate stages of change with the client to understand their level of motivation, create clear treatment goals, and understand the benefits of client self-monitoring and holding the client accountable with their lifestyle changes related to weight loss goals. In the

current study, week three within the treatment protocol was pivotal for the participants which may have been a result of homework completion with self-monitoring activities like the food tracking logs and the CBT thought records. The CBT thought records included evaluation of current level of emotions, identifying the initial automatic thought, evidence to support and challenge the thoughts, as well as the client creating a healthier more balanced thought, re-evaluation of the emotional experience, and identification of the related cognitive distortions. This client population will likely be experiencing a high level of symptom distress, interpersonal relationship issues, and social role issues. Due to the complexity of these clients, the CMHCs will most likely have to take a more systematic approach in treating this clientele, even if it is not their preferred counseling modality. Clinical Mental Health Counselors should also understand the importance of working within a multi-disciplinary team, in tandem with the physicians, nursing staff, and registered dietitian nutritionists. It is important that the CMHCs understand their role in helping the patient and understand professional limitations with these patients to avoid operating outside of their scope of practice.

Implications for Bariatric Surgeons

Bariatric surgeons typically work on a multi-disciplinary team with nurses and registered dietitian nutritionists. The two bariatric centers I partnered with to recruit participants did not have any mental health counselors on staff. Typical protocol prior to bariatric surgery is for the patients to receive a psychological evaluation prior to surgery, and no counseling. Although psychological testing is beneficial to ensure patient fit and appropriateness for surgery, it may miss underlying problems that may impede patient success post-surgery. Counseling post-surgery may help to identify any major issues for the patients. Bariatric surgeons may be wise to employ a mental health counselor as part of the multi-disciplinary team to increase the

probability of patient success post-surgery. The mental health counselor can work in tandem with the physicians, nursing staff, and registered dietitian nutritionists. The mental health counselor can work with the patients to assist them as they transition and are in the process of making major lifestyle changes post-surgery.

Future Research

Two Participants (Bubba & Dave) had an increase in scores on their Food Cravings Inventory, and on some of their OQ-45.2 post-treatment scores. Future studies should examine a variation in length of treatment, as six weeks of treatment may not have been long enough for these two participants. Future researchers might consider longer interventions, perhaps testing 12 weeks of treatment, or even longer, to determine which length of time produces the best treatment outcomes. A recent study used a more personalized approach to CBT with obesity offering residential and/or outpatient, and lasted 24 weeks, or even up to 48 weeks depending on severity of patient needs (Dalle Grave et al., 2020). A future study could focus on continuation for a number of weeks so researchers can determine the length of time when most participants will benefit from the treatment.

Another suggestion for future research would be to broaden the study to a larger group of participants. The current study only included four participants that successfully completed the full treatment process, three males and one female. All four of the participants in the current study were Caucasian. The age range of the four participants was from 42 years old to 58 years old. Future studies should seek to achieve a broader range in gender, include a larger age range, and incorporate representation of racially and ethnically diverse individuals. In a recent study Wood et al. (2019) included a total of 7,105 patients who had bariatric surgery from 2006-2017. Wood et al. (2019) findings show more African American patients experience a higher rate of

complications post-surgery than the Caucasian patients. Wood et al. (2019) urged for customization based on race and culture to ensure more successful outcomes post-surgery.

Another suggestion for future research would be to broaden the study to different populations of participants. In the future a treatment structure like this may be beneficial to treat those bariatric patients specifically with substance use disorders. This type of treatment manual could possibly be adapted to incorporate additional focus on alcohol and drug related addictive behavior. Li et al. (2016) conducted a review of 40 articles indicating susceptibility to substance abuse problems. The review concluded a range of 34.3% - 89.5% of new onset substance use disorders post bariatric surgery (Li et al., 2016). Pre-operative substance use was an indicator of continued use post-surgery (Li et al., 2016), confirming the need for counseling and treatment focused with this vulnerable population.

Conclusion

Bariatric surgery is one of the most effective solutions to aid in weight loss for the morbidly obese (Lier et al., 2012; Muhlans et al., 2009). Bariatric surgery fails to address the underlying psychological, emotional, and behavioral issues for a lot of these patients, which may contribute to their obesity in the first place (Cassin et al., 2013; Cornette, 2008). Post-surgery bariatric patients struggle with psychological issues, emotional regulation, are at risk for suicide, experience body image issues, problematic eating behavior, struggle with weight-loss, regain weight post-surgery, struggle with interpersonal relationships, and problems with social role. Participants in the current study confirmed the fact that these struggles are present within the post-surgery bariatric patient population. The current study provides some evidence that CBT treatment may assist these post-surgery bariatric patients in addressing these co-morbidities. Mental health counseling with a CBT focus may increase patient success post bariatric surgery.

References

- Alizai, P. H., Akkerman, M. K., Kaemmer, D., Ulmer, F., Klink, C. D., Ernst, S., Mathiak, K., Neumann, U. P., & Perlitz, V. (2015). Presurgical assessment of bariatric patients with the Patient Health Questionnaire (PHQ)—A screening of the prevalence of psychosocial comorbidity. *Health & Quality of Life Outcomes*, 13(1), 80-86.
<https://doi.org/10.1186/s12955-015-0278-5>
- American Counseling Association. (2014). 2014 ACA code of ethics: As approved by the ACA governing council [Electronic version]. <http://counseling.org/docs/ethics/2014-aca-code-of-ethics.pdf?sfvrsn=4>
- Apple, R. F., Lock, J., & Peebles, R. (2006). *Preparing for weight loss surgery: Therapist guide*. Oxford University Press. <https://doi.org/10.1093/med:psych/9780195189391.001.0001>
- Arnow, B., Kenardy, J., & Agras, W. S. (1995). The Emotional Eating Scale: The development of a measure to assess coping with negative affect by eating. *International Journal of Eating Disorders*, 18(1), 79-90. [https://doi.org/10.1002/1098-108X\(199507\)18:1%3C79::AID-EAT2260180109%3E3.0.CO;2-V](https://doi.org/10.1002/1098-108X(199507)18:1%3C79::AID-EAT2260180109%3E3.0.CO;2-V)
- Ashton, K., Drerup, M., Windover, A., & Heinberg, L. (2009). Brief, four-session group CBT reduces binge eating behaviors among bariatric surgery candidates. *Surgery for Obesity and Related Diseases*, 5(2), 257-262. <https://doi.org/10.1016/j.soard.2009.01.005>
- Ashton, K., Heinberg, L., Merrell, J., Lavery, M., Windover, A., & Alcorn, K. (2013). Pilot evaluation of a substance abuse prevention group intervention for at-risk bariatric surgery candidates. *Surgery for Obesity and Related Diseases*, 9(3), 462-467.
<https://doi.org/10.1016/j.soard.2013.01.016>

- Ashton, K., Heinberg, L., Windover, A., & Merrell, J. (2011). Positive response to binge eating intervention enhances postoperative weight loss. *Surgery for Obesity and Related Diseases*, 7(3), 315-320. <https://doi.org/10.1016/j.soard.2010.12.005>
- Babor, T. H., Biddle, J., Saunders, J., & Monteiro, M. (2001). *AUDIT: The Alcohol Use Disorders Identification Test. Guidelines for use in primary care*. Geneva: WHO. <https://apps.who.int/iris/handle/10665/67205>
- Berman, A. H., Bergman, H., Palmstierna, T., & Schlyter, F. (2003). DUDIT: The drug use disorders identification test manual. *Karolinska Institutet, Department of Clinical Neuroscience*. <https://paihdelinkki.fi/sites/default/files/duditmanual.pdf>
- Berman, A. H., Bergman, H., Palmstierna, T., & Schlyter, F. (2004). Evaluation of the Drug Use Disorders Identification Test (DUDIT) in criminal justice and detoxification settings and in a Swedish population sample. *European Addiction Research*, 11(1), 22-31. <https://doi.org/10.1159/000081413>
- Bleich, S. N., & Herring, B. J. (2012). Medicaid coverage for weight loss counseling may make ‘cents’. *Journal of General Internal Medicine*, 28(1), 3-5. <https://doi.org/10.1007/s11606-012-2201-7>
- Bocchieri, L. E., Meana, M., & Fisher, B. L. (2002). A review of psychosocial outcomes of surgery for morbid obesity. *Journal of Psychosomatic Research*, 52(3), 155-165. [https://doi.org/10.1016/S0022-3999\(01\)00241-0](https://doi.org/10.1016/S0022-3999(01)00241-0)
- Boswell, D. L., White, J. K., Sims, W. D., Harrist, R. S., & Romans, J. S. (2013). Reliability and validity of the Outcome Questionnaire–45.2. *Psychological Reports*, 112(3), 689-693. <https://doi.org/10.2466/02.08.PR0.112.3.689-693>

- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review*, 26(1), 17-31. <https://doi.org/10.1016/j.cpr.2005.07.003>
- Council for the Accreditation of Counseling and Related Educational Programs. (2015). 2016 standards. Author. <https://www.cacrep.org/for-programs/2016-cacrep-standards/>
- Cassin, S., Hawa, R., Sockalingam, S. (2016). *Toronto Western Hospital Bariatric Surgery Program Telephone Cognitive Behavioural Therapy Protocol. Unpublished manual.*
- Cassin, S. E., Sockalingam, S., Wnuk, S., Strimas, R., Royal, S., Hawa, R., & Parikh, S. V. (2013). Cognitive behavioral therapy for bariatric surgery patients: Preliminary evidence for feasibility, acceptability, and effectiveness. *Cognitive and Behavioral Practice*, 20(4), 529-543. <https://doi.org/10.1016/j.cbpra.2012.10.002>
- Cornette, R. (2008). The emotional impact of obesity on children. *Worldviews on Evidence-Based Nursing*, 5(3), 136-141. <https://doi.org/10.1111/j.1741-6787.2008.00127.x>
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications, Incorporated.
- Dalle Grave, R., Sartirana, M., & Calugi, S. (2020). Personalized cognitive-behavioural therapy for obesity (CBT-OB): theory, strategies and procedures. *BioPsychoSocial Medicine* 14(5). <https://doi.org/10.1186/s13030-020-00177-9>
- de Zwaan, M., Enderle, J., Wagner, S., Mühlhans, B., Ditzen, B., Gefeller, O., Mitchell, J., & Müller, A. (2011). Anxiety and depression in bariatric surgery patients: A prospective, follow-up study using structured clinical interviews. *Journal of Affective Disorders*, 133(1), 61-68. <https://doi.org/10.1016/j.jad.2011.03.025>

- de Zwaan, M., Petersen, I., Kaerber, M., Burgmer, R., Nolting, B., Legenbauer, T., Benecke, A., & Herpertz, S. (2009). Obesity and quality of life: A controlled study of normal-weight and obese individuals. *Psychosomatics*, 50(5), 474-482. [https://doi.org/10.1016/S0033-3182\(09\)70840-0](https://doi.org/10.1016/S0033-3182(09)70840-0)
- Finkelstein, E. A., Trogdon, J. G., Cohen, J. W., & Dietz, W. (2009). Annual medical spending attributable to obesity: payer-and service-specific estimates: Amid calls for health reform, real cost savings are more likely to be achieved through reducing obesity and related risk factors. *Health Affairs*, 28(Suppl1), w822-w831. <https://doi.org/10.1377/hlthaff.28.5.w822>
- Fursland, A., & Watson, H. J. (2015). Enhanced Cognitive–Behavioral Therapy Approach to Counseling Clients with Eating Disorders. In *Eating Disorders and Obesity* (ed L. H. Choate), American Counseling Association, Alexandria, VA, USA. <https://doi.org/10.1002/9781119221708.ch13>
- García-García, I., Horstmann, A., Jurado, M. A., Garolera, M., Chaudhry, S. J., Margulies, D. S., Villringer, A., & Neumann, J. (2014). Reward processing in obesity, substance addiction and non-substance addiction. *Obesity Reviews*, 15(11), 853-869. <https://doi.org/10.1111/obr.12221>
- Gearhardt, A. N., Corbin, W. R., & Brownell, K. D. (2009). Food addiction: An examination of the diagnostic criteria for dependence. *Journal of Addiction Medicine*, 3(1), 1-7. <https://doi.org/10.1097/ADM.0b013e318193c993>
- Gearhardt, A. N., Corbin, W. R., & Brownell, K. D. (2016). Development of the Yale Food Addiction Scale Version 2.0. *Psychology of Addictive Behaviors*, 30(1), 113-121. <https://doi.org/10.1037/adb0000136>

- Halverson, J. D., Zuckerman, G. R., Koehler, R. E., Gentry, K. A., Michael, H. E., & DeSchryver-Kecskemeti, K. (1981). Gastric bypass for morbid obesity: a medical-surgical assessment. *Annals of Surgery*, 194(2), 152.
<https://dx.doi.org/10.1097%2F00000658-198108000-00007>
- Herpertz, S., Kielmann, R., Wolf, A. M., Langkafel, M., Senf, W., & Hebebrand, J. (2003). Does obesity surgery improve psychosocial functioning? A systematic review. *International Journal of Obesity*, 27(11), 1300. <https://doi.org/10.1038/sj.ijo.0802410>
- Ivis, F. J., Adlaf, E. M., & Rehm, J. (2000). Incorporating the AUDIT into a general population telephone survey: A methodological experiment. *Drug & Alcohol Dependence*, 60(1), 97-104. [https://doi.org/10.1016/S0376-8716\(00\)80012-5](https://doi.org/10.1016/S0376-8716(00)80012-5)
- Jensen, M., & Ryan, D. (2014) New obesity guidelines: promise and potential. *Journal of the American Medical Association*, 311(1), 23-24. <https://doi.org/10.1001/jama.2013.282546>
- Johnson, J. A., Lee, A., Vinson, D., & Seale, J. P. (2013). Use of AUDIT-based measures to identify unhealthy alcohol use and alcohol dependence in primary care: A validation study. *Alcoholism: Clinical and Experimental Research*, 37, E253-E259.
<https://doi.org/10.1111/j.1530-0277.2012.01898.x>
- Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings*. Oxford University Press.
- Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). *Single-case designs technical documentation*. What Works Clearinghouse website: <https://files.eric.ed.gov/fulltext/ED510743.pdf>

Kubik, J. F., Gill, R. S., Laffine, M., Karmali, S. (2013). The Impact of Bariatric Surgery on Psychological Health. *Journal of Obesity*, 2013, 1-5.

<https://doi.org/10.1155/2013/837989>

Kvalem, I. L., Bergh, I., Soest, T., Rosenvinge, J. H., Johnsen, T. A., Martinsen, E. W., & Mala, T., & Kristinsson, J. A. (2016). A comparison of behavioral and psychological characteristics of patients opting for surgical and conservative treatment for morbid obesity. *BMC Obesity*, 3(1), 6. <https://doi.org/10.1186/s40608-016-0084-6>

Lambert, M. J., Kahler, M., Harmon, C., Burlingame, G. M., Shimokawa, K., White, M. M. (2013). *Administration and Scoring Manual: Outcome Questionnaire OQ®-45.2*. OQMeasures.

Lenz, A. S. (2013). Calculating effect size in single-case research: A comparison of nonoverlap methods. *Measurement and Evaluation in Counseling and Development*, 46(1), 64-73. <https://doi.org/10.1177%2F0748175612456401>

Li, L., & Wu, L. T. (2016). Substance use after bariatric surgery: A review. *Journal of psychiatric research*, 76, 16–29. <https://doi.org/10.1016/j.jpsychires.2016.01.009>

Lier, H. Ø., Aastrom, S., & Rørtveit, K. (2015). Patients' daily life experiences five years after gastric bypass surgery: A qualitative study. *Journal Of Clinical Nursing*, 25(3/4), 322-331. <https://doi.org/10.1111/jocn.13049>

Lier, H., Biinger, E., Stubhaug, B., Tangen, T., (2012), The impact of preoperative counseling on postoperative treatment adherence in bariatric surgery patients: A randomized controlled trial, *Patient Education and Counseling*, 87, 336-342. <https://doi.org/10.1016/j.pec.2011.09.014>

Ma, H. H. (2006). An alternative method for quantitative synthesis of single-subject researches: Percentage of data points exceeding the median. *Behavior Modification*, 30(5), 598-617.

<https://doi.org/10.1177%2F0145445504272974>

Manchester, S., & Royce, G. D. (2011). Bariatric surgery: An overview for dietetics professionals. *Nutrition Today*, 46(6), 264-275.

<https://doi.org/10.1097/NT.0b013e318239478c>

McFadden, K. (2010). Cross-addiction: From morbid obesity to substance abuse. *Bariatric Nursing and Surgical Patient Care*, 5(2), 145-178. <https://doi.org/10.1089/bar.2010.9922>

Meule, A., & Gearhardt, A. N. (2014). Five years of the Yale Food Addiction Scale: Taking stock and moving forward. *Current Addiction Reports*, 1(3), 193-205.

<https://doi.org/10.1007/s40429-014-0021-z>

Meule, A., Heckel, D., Jurowich, F., Vogele, C., & Kubler, A. (2014) Correlates of food addiction in obese individuals seeking bariatric surgery. *Clinical Obesity*, 4, 228-236.

<https://doi.org/10.1111/cob.12065>

Meule, A., Hermann, T., & Kübler, A. (2015). Food addiction in overweight and obese adolescents seeking weight-loss treatment. *European Eating Disorders Review*, 23(3), 193-198. <https://doi.org/10.1002/erv.2355>

Michael, J. C., Belendiuk, K. A., Kuchera, A. M., & Rofey, D. L. (2013). Cognitive behavioral therapy for weight management. *The Behavior Therapist*, 36, 28-38.

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.672.8561&rep=rep1&type=pdf>

Miller, W. R., Zweben, A., DiClemente, C. C., & Rychtarik, R. G. (1992). *Motivational enhancement therapy manual: A clinical research guide for therapists treating*

- individuals with alcohol abuse and dependence*. Project MATCH Monograph Series, Volume 2. NIAAA. <https://pubs.niaaa.nih.gov/publications/projectmatch/match02.pdf>
- Miras, A. D., Al-Najim, W., Jackson, S. N., McGirr, J., Cotter, L., Tharakan, G., Vusirikala, A., le Roux, C. W., Prechtel, C. G., & Scholtz, S. (2014). Psychological characteristics, eating behavior, and quality of life assessment of obese patients undergoing weight loss interventions. *Scandinavian Journal of Surgery*, 104(1), 10-17.
<https://doi.org/10.1177/1457496914543977>
- Mühlhans, B., Horbach, T., & de Zwaan, M. (2009). Psychiatric disorders in bariatric surgery candidates: A review of the literature and results of a German prebariatric surgery sample. *General Hospital Psychiatry*, 31(5), 414-421.
<https://doi.org/10.1016/j.genhosppsych.2009.05.004>
- Neff, K. J., Olbers, T., le Roux, C. W., (2013). Bariatric surgery: The challenges with candidate selection, individualizing treatment and clinical outcomes. *BMC Medicine*, 11(8).
<https://doi.org/10.1186/1741-7015-11-8>
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA*, 311(8), 806-814.
<https://doi.org/10.1001/jama.2014.732>
- Parker, R. I., Vannest, K. J., Davis, J. L., & Sauber, S. B. (2011). Combining nonoverlap and trend for single-case research: Tau-U. *Behavior Therapy*, 42(2), 284-299.
<https://doi.org/10.1016/j.beth.2010.08.006>
- Ray, D. C. (2015). Single-case research design and analysis: Counseling applications. *Journal of Counseling & Development*, 93(4), 394-402. <https://doi.org/10.1002/jcad.12037>

- Reslan, S., Saules, K. K., Greenwald, M. K., & Schuh, L. M. (2014). Substance misuse following Roux-en-Y gastric bypass surgery. *Substance Use & Misuse*, 49(4), 405-417.
<https://doi.org/10.3109/10826084.2013.841249>
- Richards, D., & Viganó, N. (2013). Online counseling: A narrative and critical review of the literature. *Journal of Clinical Psychology*, 69(9), 994-1011.
<https://doi.org/10.1002/jclp.21974>
- Scott, K. M., Bruffaerts, R., Simon, G. E., Alonso, J., Angermeyer, M., de Girolamo, G., Demyttenaere, K., Gasquet, I., Haro, J. M., Karam, E., Kessler, R. C., Levinson, D., Medina Mora, M. E., Oakley Brown, M. A., Ormel, J., Villa, J. P., Uda H., & Von Korff, M. (2008). Obesity and mental disorders in the general population: Results from the world mental health surveys. *International Journal of Obesity*, 32(1), 192-200.
<https://doi.org/10.1038/sj.ijo.0803701>
- Sinclair, M., McRee, B., & Babor, T. F. (1992). *Evaluation of the reliability of AUDIT*. University of Connecticut School of Medicine, Alcohol Research Center, (unpublished report).
- Spadola, C. E., Wagner, E. F., Dillon, F. R., Trepka, M. J., De La Cruz-Munoz, N., & Messiah, S. E. (2015). Alcohol and drug use among postoperative bariatric patients: A systematic review of the emerging research and its implications. *Alcoholism: Clinical & Experimental Research*, 39(9), 1582-1601. <https://doi.org/10.1111/acer.12805>
- Taylor, V. H., Curtis, C. M., & Davis, C. (2010). The obesity epidemic: The role of addiction. *Canadian Medical Association Journal*, 182(4), 327-328.
<https://doi.org/10.1503/cmaj.091142>

- Taylor, V. H., Forhan, M., Vigod, S. N., McIntyre, R. S., & Morrison, K. M. (2013). The impact of obesity on quality of life. *Best Practice & Research Clinical Endocrinology & Metabolism*, 27(2), 139-146. <https://doi.org/10.1016/j.beem.2013.04.004>
- Tinsley, H. E., Lease, S. H., & Wiersma, N. S. G. (Eds.). (2015). *Contemporary Theory and Practice in Counseling and Psychotherapy*. Sage Publications, Incorporated.
- van Hout, G. C., Boekestein, P., Fortuin, F. A., Pelle, A. J., & van Heck, G. L. (2006). Psychosocial functioning following bariatric surgery. *Obesity Surgery*, 16(6), 787-794. <https://doi.org/10.1381/096089206777346808>
- Volkow, N., Wang, G. J., Fowler, J. S., Tomasi, D., & Baler, R. (2011). Food and drug reward: Overlapping circuits in human obesity and addiction. In *Brain imaging in behavioral neuroscience* (pp. 1-24). Springer.
- Volkow, N. D., Wang, G. J., Tomasi, D., & Baler, R. D. (2013). Obesity and addiction: Neurobiological overlaps. *Obesity Reviews*, 14(1), 2-18. <https://doi.org/10.1111/j.1467-789X.2012.01031.x>
- Wang, Y. C., Pamplin, J., Long, M. W., Ward, Z. J., Gortmaker, S. L., & Andreyeva, T. (2015). Severe obesity in adults cost state Medicaid programs nearly \$8 billion in 2013. *Health Affairs*, 34(11), 1923-1931. <https://doi.org/10.1377/hlthaff.2015.0633>
- White, M. A., Whisenhunt, B. L., Williamson, D. A., Greenway, F. L., & Netemeyer, R. G. (2002). Development and validation of the food-craving inventory. *Obesity Research*, 10(2), 107-114. <https://doi.org/10.1038/oby.2002.17>
- Wilson, G. T. (2010). Eating disorders, obesity, and addiction. *European Eating Disorders Review*, 18(5), 341-351. <https://doi.org/10.1002/erv.1048>

Wood, M. H., Carlin, A. M., Ghaferi, A. A., Varban, O.A., Hawasli, A., Bonham, A. J., Birkmeyer, N. J., & Finks, J. F., (2019). Association of race with bariatric surgery outcomes. *JAMA Surgery*, 154(5), e190029.

<https://jamanetwork.com/journals/jamasurgery/issue/154/5>

World Health Organization (April 1, 2020). <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

Appendix A. Informed Consent

Consent to Take Part in a Research Study

Title: Treatment Using Cognitive Behavioral Approach in Individual Counseling with Patients Undergoing Bariatric Surgery

Principal Investigator: Nina DiTommaso Morgan, LPC/MHSP/AS, CCMHC, NCC

The purpose of this research study is twofold: first to examine symptoms and behavior in a post-surgery bariatric population, and the second aim is to evaluate effectiveness of a six-session cognitive behavioral therapy approach to improve coping skills, reduce problematic eating, and enhance overall quality of life. Participants will undergo screening that includes up to five assessments in traditional pen and paper format. Once screening is complete, participants who are selected, will participate in six online weekly individual counseling sessions. Each session will take about one hour. Participants will also be asked to complete one assessment per week in traditional pen and paper format. Following the conclusion of the six counseling sessions participants will again be asked to complete the five assessments in traditional pen and paper format. Total study duration is about ten weeks. The potential benefits to you include time to process your post-surgery experience and you may gain new insight about yourself or your behavior. While there are no perceived risks associated with this study, questions about eating patterns and behavior may elicit discomfort.

If you are interested in learning more about this study, please continue reading below.

You are being asked to take part in a research study. This information is provided to tell you about the study. Please read this form carefully. Your participation is voluntary. Saying no will not affect your rights to health care or services. You are also free to withdraw from this study at any time. You will be notified if new information becomes available about the risks or benefits of this research. Then you can decide if you want to stay in this study.

What is the purpose of the study?

The purpose of this study is to evaluate the effectiveness of a six session CBT treatment approach with patients who have had bariatric surgery. The hope is that treatment will help decrease symptom distress, interpersonal relationship concerns, and social role difficulties. Another expectation is to identify how well CBT will address these issues with this population.

How long will I be in the study?

You will be in the study for a minimum of ten weeks and a maximum of twelve weeks. The maximum 12 weeks may be necessary if you need an additional two weeks prior to starting the six treatment sessions in an effort to achieve a stable baseline on your initial intake assessment.

What will happen to me during the study?

The following tests or procedures that are required in this study for research purposes are completion of five assessments in traditional pen and paper format, if eligible, participation in six individual online counseling sessions, completion of one assessment in traditional pen and paper format per week during the counseling session, and completion of the same five assessments in

traditional pen and paper format at the conclusion of counseling. The counseling sessions will be online and recorded using zoom videotaping and securely stored on Nina's University of Tennessee One Drive account, to protect your privacy and confidentiality. The only people who will view the video tapes will be Nina DiTommaso Morgan and Dr. Hollie Raynor to ensure that the treatment protocol is being adhered to.

What side effects or risks can I expect from being in the study?

Questions about eating patterns and behavior may elicit discomfort. Should you desire additional counseling as a result, I will provide a referral to a qualified mental health professional. You will be responsible for any and all costs associated with services related to this referral. A potential risk of the study is a loss of confidentiality. The information shared will remain confidential with a few exceptions. The exceptions where the primary investigator would have to breach confidentiality should you disclose suicidal ideation, homicidal ideation, current child abuse, or current elderly abuse.

Are there benefits to taking part in the study?

You may not benefit from participating in this research. The potential benefits to you include time to process your post-surgery experience and you may gain new insight about yourself or your behavior. Your involvement may help you with coping skills, problematic eating, mood, and enhance your overall quality of life.

An altruistic benefit is that your involvement may help to enhance helping professionals understanding of the bariatric patient population and improve counseling and treatment.

What other choices do I have if I do not take part in this study?

If you choose not to participate in the research, alternative procedures or treatments include participation in the support group or a referral to outside counseling.

How many people will be in the study?

A minimum of 4 people and a maximum of 10 people will be in this study at the University of Tennessee, Knoxville.

What will it cost me to be in the study?

Participation in this study will not cost you anything.

Will I be paid for taking part?

No, you will not be paid for taking part in the study

Is the Investigator paid to do this study?

No, the investigator is not being paid to enroll people in this study.

What if I am injured in this study?

You will get medical treatment if you are injured as a result of taking part in this study. You and/or your health plan will be charged for this treatment. The study will not pay for medical treatment.

It is important that you tell Nina DiTommaso Morgan, if you feel that you have been injured because of taking part in this study. You can tell her in person or call her at (865) 603-2200.

You are not waiving any legal rights or releasing the University of Tennessee or its agents from liability for negligence. In the event of physical injury resulting from research procedures the University of Tennessee does not have funds budgeted for compensation either for lost wages or for medical treatment.

In the case of injury resulting from this study, you do not lose any of your legal rights to seek payment by signing this form.

Who do I call if I have questions about the study?

Questions about the study: Contact Nina DiTommaso Morgan at (865) 603-2200 or Dr. Joel Diambra (Nina's Faculty Advisor), at (865) 974-8774.

Questions about your rights as a research subject: You may contact the University of Tennessee Knoxville Institutional Review Board (IRB) at 865-974-7697. The IRB is a group of people that reviews studies for safety and to protect the rights of study subjects.

Can I stop being in the study?

You may withdraw from the study at any time. Your treatment, payment or enrollment in any health plans or eligibility for benefits will not be affected if you decide not to take part.

Could I be removed from the study?

You may be withdrawn from the study for any of the following reasons:

- The person in charge of the study may feel it is in your best interest to change treatments
- If you do not keep your appointments as scheduled, you may be removed from the study.

Identifiable private information or identifiable bio specimens:

Your information or bio specimens collected as part of the research, even if identifiers are removed, will not be used or distributed for future research studies.

Will my medical information be kept private?

All reasonable efforts will be made to keep your protected health information (PHI) private and confidential. PHI is health information that is, or has been, collected or maintained and can be linked back to you. Using or sharing ("disclosure") of such information must follow federal privacy guidelines. By signing the consent document for this study, you are giving permission ("authorization") for the uses and disclosures of your personal health information. A decision to take part in this research means that you agree to let the research team use and share your PHI as described below, for the purpose of this research.

As part of the study, Nina DiTommaso Morgan and her study team may share the results of your assessments. They may also share portions of your medical record, with the groups named below:

- The Federal Government Office for Human Research Protections,
- The University of Tennessee Knoxville Institutional Review Board

Federal privacy regulations may not apply to these groups; however, they have their own policies and guidelines to assure that all reasonable efforts will be made to keep your personal health information private and confidential.

The study results will be retained in your research record for at least six years after the study is completed. At that time, the research information not already in your medical record will be deleted and shredded. Any research information entered into your medical record will be kept indefinitely.

Unless otherwise indicated, this permission to use or share your PHI does not have an expiration date. If you decide to withdraw your permission, we ask that you contact Nina DiTommaso Morgan in writing and let her know that you are withdrawing your permission. The email address is nditomma@vols.utk.edu. At that time, we will stop further collection of any information about you. However, the health information collected before this withdrawal may continue to be used for the purposes of reporting and research quality. Your decision to participate, not to participate, or withdraw from the study will not affect your relationship with or the ability for you to receive treatment at the New Life Bariatric Center, Foothills Weight Loss Surgeons, or Pro Touch Rehab.

CONSENT OF SUBJECT

I have read or have had read to me the description of the research study. The investigator or his/her representative has explained the study to me and has answered all of the questions I have at this time. I have been told of the potential risks, discomforts and side effects as well as the possible benefits (if any) of the study. I will receive a copy of this form after it is signed. I freely volunteer to take part in this study.

Printed Name of Subject

Signature of Subject or
Authorized Representative

Date & Time

Printed Name of Representative

Relationship to Subject

Printed name of person
Obtaining Consent

Signature of person
Obtaining Consent

Date

Printed name of Investigator

Signature of Investigator

Date

Appendix B. Flyer for Recruitment



Treatment Using Cognitive Behavioral Approach in Individual Counseling with Patients Undergoing Bariatric Surgery

This research study is taking place in partnership with the University of Tennessee, New Life Bariatric, Foothills Weight Loss Surgeons, and Pro Touch Rehab. Your participation in this research will help to enhance knowledge in the field and assist in quality of future patient care. The purpose of this research study is twofold: first to examine symptoms and behavior in a post-surgery bariatric population, and the second aim is to evaluate effectiveness of a six-session cognitive behavioral therapy approach to improve coping skills, reduce problematic eating, and enhance overall quality of life. Participants will undergo screening that includes up to five assessments in traditional pen and paper format. Once screening is complete, participants who are selected, will participate in six weekly online individual counseling sessions at no cost. Each session will take about one hour. Total study duration is about ten weeks.

- You must be 18 years of age or older
- You must be 6 months or greater post- surgery
- Participation is strictly voluntary and will not impact your relationship with New Life Bariatric, Foothills Weight Loss Surgeons, Pro Touch Rehab, or interfere with your ability to receive your typical medical treatment and care.
- The potential benefits to you include screening and 6 online individual counseling sessions at no cost to you, which will give you time to process your post-surgery experience and the potential to gain new insight about yourself or your behavior.

Principal Investigator: Nina DiTommaso Morgan, LPC/MHSP & AS, CCMHC, NCC
Nina is conducting this study to fulfill her dissertation requirements to graduate from the Counselor Education Program with her PhD.

If you are interested in participating or have any questions pertaining to this study, please contact Nina at (865) 603-2200, or her faculty advisor Dr. Joel Diambra at (865) 974-8774.

Appendix C. Patient Release Form

Use of Your Identifiable Health Information

A law, called the Health Information Portability and Accountability Act (HIPAA), protects your health information. When choosing to receive information about this study where we contact you, you are giving us permission to obtain and use your health information. This health information includes information that can identify you (like your name and phone number), so generally this information cannot be used in research without your written permission.

I authorize my healthcare provider to use and disclose the protected health information described below to the researcher at the University of Tennessee, Knoxville. I understand that that may include other organizations, listed below:

- Members of the research team and other authorized staff at the University of Tennessee, Knoxville who make sure it is safe for me to be in this study, conduct the study and analyze the research data.
- People at the University of Tennessee, Knoxville who oversee and evaluate research. This includes the ethics board and quality improvement program that work to ensure research is conducted properly.
- People from and agencies and organizations that perform independent accreditation and/or oversight of research, such as the Department of Health and Human Services, Office for Human Research Protections.

I know my name and telephone number may be disclosed to the researcher, so that the researcher can contact me about a research study.

Your permission to use and share your health information for this study will continue until the research study ends and will not expire, unless you cancel it sooner.

Can I change my mind about the use of my health information?

I understand my permission to use and share my health information for this study will continue until the research study ends and will not expire, unless I cancel it sooner. I know I can change my mind and withdraw my permission for my health care provider(s) to share or use my name and telephone number for the researcher to contact me; however, I cannot get back information that was already shared.

If I want to take back my permission for my healthcare provider to share my name and telephone number, I will contact the researcher (contact information listed below) and tell her of my decision. I will also send a copy of this written notification to my health care provider. In the letter, I will state that I changed my mind and do not want my name and telephone number shared.

Nina DiTommaso Morgan, LPC/MHSP & AS, NCC, CCMHC University of Tennessee Counselor
Education Department nditomma@vols.utk.edu, 865-603-2200

I know I do not have share my name and telephone number. I also know that if I do not want to provide authorization to share my information, I will not be penalized, it will not affect my relationship with the researchers, the University of Tennessee, my health care provider(s), or any of the services and benefits I and my family receive from them in any way.

I authorize the release of my name and telephone number. I will be given a copy of this waiver, with knowledge that only my name and telephone number would be shared.

Signature of patient or personal representative: _____

Date: _____

Phone number: _____

Printed name of patient or personal representative, including his or her relationship:

Appendix D. Script for Dietitian

Health Care Provider Script

“There is a research study at the University of Tennessee for patients six months or greater post Bariatric Surgery who are interested in six mental health counseling sessions that are of no cost to you. Here is a handout about the program. You do not have to be in the research study if you do not want to. If you are interested in getting information about the study, please complete this form and they will contact you by phone.”

As the handout is provided to the patients, point to where the contact information is located. If patients have questions about the program, indicate that they need to contact Nina for information.

Appendix E.

Table 1

A-B Design Intervention and Data Collection Protocol

	Week									
Variable	1	2	3	4	5	6	7	8	9	10
Phase	A	A	A	B	B	B	B	B	B	A
Intervention	N	N	N	CBT	CBT	CBT	CBT	CBT	CBT	N
Data	YFAS-2	OQ-	OQ-	OQ-	OQ-	OQ-	OQ-	OQ-	OQ-	YFAS-2
Collection	AUDIT/ DUDIT EES FCI OQ- 45.2	45.2	45.2	45.2	45.2	45.2	45.2	45.2	45.2	AUDIT/ DUDIT EES FCI OQ- 45.2

N= no intervention; CBT = Cognitive Behavioral Therapy

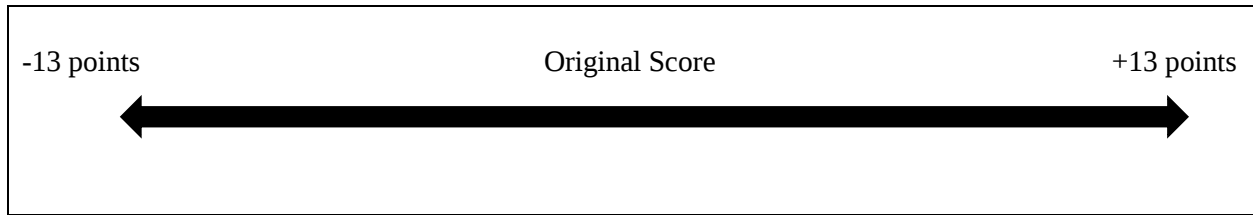
Appendix F.**Figure 1**

Diagram representing the reliable change index and patient scores considered to be stable across the first three administrations of the OQ45.2.

Appendix G. Fidelity Checklist

Session 1

Provided Intro to Cognitive Behavioral Therapy	☐ YES	☐ NO
Established Treatment Goals	☐ YES	☐ NO
Described Types of Overeating	☐ YES	☐ NO
Explained the Cognitive Behavioral Model of Overeating	☐ YES	☐ NO
Reviewed Overeating – thoughts, feelings, and behaviors	☐ YES	☐ NO
Discussed the Cognitive Behavioral Model and Bariatric Surgery	☐ YES	☐ NO
Assigned Homework	☐ YES	☐ NO

Session 2

Reviewed Homework	☐ YES	☐ NO
Described a food record	☐ YES	☐ NO
Reviewed a CBT thought record	☐ YES	☐ NO
Discussed reasons weighing oneself regularly is important	☐ YES	☐ NO
Discussed Compliments Post Surgery	☐ YES	☐ NO
Assigned Homework	☐ YES	☐ NO

Session 3

Reviewed Homework	☐ YES	☐ NO
Discussed reasons Eating is so Pleasurable	☐ YES	☐ NO
Identified Other Pleasurable Activities	☐ YES	☐ NO
Described the Importance of Self-Care	☐ YES	☐ NO
Identified Problem Thoughts	☐ YES	☐ NO
Assigned Homework	☐ YES	☐ NO

Session 4

Reviewed Homework	☐ YES	☐ NO
Identified Challenging Places	☐ YES	☐ NO
Identified Challenging People	☐ YES	☐ NO
Identified Challenging Foods	☐ YES	☐ NO
Identified Challenging Situations	☐ YES	☐ NO
Discussed Changing Problem Thoughts	☐ YES	☐ NO
Assigned Homework	☐ YES	☐ NO

Session 5

Reviewed Homework	☐ YES	☐ NO
Practiced Problem- Solving	☐ YES	☐ NO
Discussed Body Image	☐ YES	☐ NO
Discussed Body Checking	☐ YES	☐ NO
Assigned Homework	☐ YES	☐ NO

Session 6

Reviewed Homework	☐ YES	☐ NO
Considered and Discussed Long-Term Lifestyle Changes	☐ YES	☐ NO
Revisited Treatment Goals	☐ YES	☐ NO
Identified and Discussed Physical and Emotional Problems Post Surgery	☐ YES	☐ NO
Assigned Homework	☐ YES	☐ NO

Vita

Nina Marie DiTommaso is a graduate student at the University of Tennessee, Knoxville. She is a Licensed Professional Counselor, Mental Health Service Provider, and Approved Supervisor (LPC-MHSP-AS) in the state of Tennessee. She is also a National Certified Counselor and a Certified Clinical Mental Health Counselor (CCMHC). She earned her bachelor's degree in psychology in 2001, and her master's degree in mental health counseling in 2004, from the University of Tennessee, Knoxville. She is currently in the last semester of her Ph.D. program in the Counselor Education program at the University of Tennessee, Knoxville, with an expected graduation of May 2021. Nina has been conducting individual, couples, family, and group counseling for over sixteen years. Her primary theoretical framework is CBT, and she specializes in addiction counseling. While in the PhD program, she pursued a graduate certificate for a specialty area of practice: Grief, Loss, and Trauma. As a professional athlete and fitness coach, she has been very passionate about health and fitness for over 20 years. Nina is a firm believer in the total health and wellness of the individual, including physical, mental, emotional, and spiritual.