

2015

Why Some Women Eat Too Much: A Qualitative Study of Food-Dependent Women

GiGi Van Ostrand
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Psychology Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

Gigi Van Ostrand

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Silvia Bigatti, Committee Chairperson, Psychology Faculty
Dr. Leann Stadlander, Committee Member, Psychology Faculty
Dr. Abby Harris, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2015

Abstract

Why Some Women Eat Too Much: A Qualitative Study of Food-dependent Women

by

GiGi Van Ostrand

MSc, University of Calgary, 1993

DVM, University of Saskatchewan, 1977

BSc, University of Calgary, 1973

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

Walden University

February 2015

Abstract

Obesity has become a worldwide epidemic and limiting one's food intake, or dieting, is usually unsuccessful. The purpose of the study was to explore the effect of food addiction (FA) on the current clinical and behavioral epidemic of obesity. FA, synonymous with food-dependency, is tentatively defined as an eating disorder based on substance dependence, as defined by the Diagnostic and Statistical Manual of Mental Disorders. Measurement of FA has been operationalized by the Yale Food Addiction Scale (YFAS) by applying the diagnostic criteria of substance dependence to eating behaviors. This study was based on the biological theory of chemical addiction and the evidence that highly processed, high-fat, and high-sugar foods may be addictive and may contribute to unsuccessful dieting. To explore the difficulty of adhering to healthy food choices, 6 women were identified who satisfied the diagnostic criteria of FA using the YFAS. These women were invited to participate in a qualitative study. The full transcripts, which were coded via interpretative phenomenological analysis, revealed 6 major themes. The most salient master themes were the loss of control over food intake, the need for external control for successful weight loss, and the significant distress caused by food and eating. All the women interviewed agreed that FA is an eating disorder and that (a) best results were obtained from sugar and flour abstinence and (b) success was found in a 12 Step program for FA based on an addiction model. Once identified with the YFAS, FA has a large impact for social change. Those recognized as having a FA can be offered a specific treatment, based on an addiction model, which differs from the usual treatment for obesity and offers a solution for successful weight management.

Why Some Women Eat Too Much: A Qualitative Study of Food-dependent Women

by

GiGi Van Ostrand

MSc, University of Calgary, 1993

DVM, University of Saskatchewan, 1977

BSc, University of Calgary, 1973

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

Walden University

February 2015

Dedication

I would like to dedicate this research to all the men and women who have difficulty controlling their food intake and suffer from obesity. Food cravings can often lead to obesity and the resultant health problems. Obese individuals suffer from health problems and the psychological stress of discrimination. I have learned that food addiction, representing a significant portion of obese individuals, can be a devastating condition for many people. These individuals cannot control their eating and traditional methods of dieting are ineffective leaving them to suffer the consequences of obesity. It is the suffering of these individuals that has prompted me to do this research in a hope to find some solutions to addictive eating.

Acknowledgments

I would like to thank the Walden faculty and staff for their tremendous support in this very long endeavor. In particular my chair, Dr. Silvia Bigatti, and my committee member, Dr. Leann Stadlander, have been instrumental in this final effort. I would also like to thank the participants in this study as it took courage and commitment to give such honest interviews on a sensitive topic. I also have to give credit to my friends who have listened to me describe my research over the last eight years without judgment.

Table of Contents

Chapter 1: Introduction to the Study	1
Introduction.....	1
Background.....	6
Problem Statement.....	11
Purpose of the Study.....	12
Research Questions.....	14
Theoretical Framework.....	15
Conceptual Framework.....	15
Nature of the Study.....	16
Definition of Terms	17
Assumptions	21
Scope and Delimitations.....	21
Limitations.....	22
Significance	23
Summary.....	24
Chapter 2: Literature Review.....	27
Introduction.....	27
Literature Search Strategy	30
Literature Review	31
Theoretical Foundation.....	31
Overview of the Problem of Obesity	32

The power of food leading to FA	38
Evidence and Research: FA	42
Measurement of FA	44
Qualitative Research: Obesity and Dietary Adherence	47
Conclusion	50
Chapter 3: Research Method	52
Introduction.....	52
Research Design and Rationale	54
Role of the Researcher	57
Methodology.....	58
Participant Selection	58
Instrumentation: YFAS.....	60
Semistructured, Open-Ended Interview.....	62
Procedure	64
Data Analysis Plan.....	64
Issues of Trustworthiness	65
Credibility (Sensitivity to Context; Commitment and Rigor)	66
Data Interpretation	69
Ethical Procedures	71
Summary.....	72
Chapter 4: Results.....	74
Introduction.....	74

Setting	75
Demographics	75
Data Analysis	76
Results	77
Theme 1. Loss of Control over Food Intake	78
Theme 2. The Need for External Control for Successful Weight Loss	84
Theme 3. The Presence of Emotional Eating	87
Theme 4. Experience and Knowledge of FA and Advice to Others	88
Theme 5. Food and Eating Cause Significant Distress	92
Evidence of Trustworthiness	97
Credibility (Sensitivity to Context: Commitment and Rigor)	97
Summary	100
Chapter 5: Discussion, Conclusions, and Recommendations	102
Introduction	102
Interpretation of the Findings	103
I. Loss of Control over Food Intake	103
II. Emotional Eating	109
III. The Need for External Control for Successful Weight Loss	111
V. There is a Solution: Recommendation for Recovering from Food Dependency	114
Limitations of the Study	121
Recommendations	122

Implications	123
Implications for Further Research	124
Implications for Social Change	126
Conclusions.....	127
References.....	130
Appendix A: Consent Form – Survey	168
Appendix B: Consent Form - Interview	171
Appendix C: Self-Report Questionnaire.....	175
Appendix D: Poster Advertisement	178
Curriculum Vitae	179

List of Tables

Table 1. Physical Characteristics of the Participants.....	76
--	----

Chapter 1: Introduction to the Study

Introduction

The rates of obesity have increased dramatically in most industrialized nations over the last 2 decades (Deitel, 2006; Freedman, Khan, Serdula, Ogden, & Deitz, 2006; Fry & Finley, 2005; Ogden et al., 2006; Zellner, Ulbricht, & Kromeyer-Hauschild, 2007). The World Health Organization (WHO; 2011) defined *obesity* as having a body mass index (BMI) of 30 or more and *overweight* as having a BMI of 25 or more. BMI is a simple index of weight-for-height. The recent escalation in obesity rates may be contributing to major unmet public health problems worldwide, including type II diabetes cardiovascular disease, and some forms of cancer (Gold & Shriner, 2013; Mokdad et al., 2003; Peters, Wyatt, Donahoo, & Hill, 2002). Obesity is a growing concern in the United States where nearly 59 million adults (31%) are obese and the numbers continue to rise (Power, Miller, & Alpert, 2007). The numbers are similar in Canada where obese adults represent 23.1% of the population (Statistics Canada, 2008). Obesity seems to be resistant to control efforts, making this condition an *epidemic* and one of the most pressing contemporary public health problems in this century (Brown et al., 2009). Obesity is a serious problem and the American Medical Association (AMA) has declared it a disease (Healy & Gorman, 2013). Research efforts are needed to curb the crisis.

Obesity and overweight are greater problems than smoking, illegal drug use, or morbidity due to ailments unrelated to obesity (Lakdawalla & Philipson, 2009). Obesity is the second leading cause of death in the United States after tobacco use due

to risk factors that are under an individual's control (Mokdad, Marks, Stroup, & Gerberding, 2004) and has the potential to decrease the life expectancy in the United States in the 21st century (Olshansky et al., 2005). Not only adults, but also children and adolescents, are showing an increase in weight (American Academy of Child & Adolescent Psychiatry, 2011; Ebbeling, Pawlak, & Ludwig, 2002). It is estimated that the number of overweight children will increase worldwide, and North Americans may expect to have 50% of their children become overweight or obese in the next decade (Wang & Lobstein, 2006). The prevalence of obesity in children and adolescents is higher than it was 20 years ago in all ethnic, age, and gender groups, and among teens, the obesity rate has tripled (Hedley et al., 2004; Ogden, Flegal, Carroll, & Johnson, 2002). In the absence of successful treatment interventions, 80% of overweight 10-15-year-olds will become obese adults (Fowler-Brown & Kahwati, 2004; Troiano & Flegal, 1998). The AMA's recent designation of obesity as a disease (Healy & Gorman, 2013; Pollack, 2013) has drawn attention to this global epidemic. To address the problem, continued research and education efforts are needed, including educating the general population.

The scientific community has responded to this epidemic by investigating psychological, and neurobiological contributions to excessive food consumption. American research scientists have highlighted a recent interest in food addiction (FA), in an effort to explain the current obesity crisis (Alsio, Olszewski, Levine, & Schioth, 2012; Barry, Clarke, & Petry, 2009; Corwin & Grigson, 2009; Gearhardt, Grilo, DiLeone, Brownell, & Potenza, 2011). Overeating has been compared to drug and

alcohol addiction in the popular media (Holden, 2001); only recently has neuroanatomical, neuroimaging, neurochemical, and psychological evidence supported the theory that overeating can mimic addictive behavior in some individuals (Alsio et al., 2012; Barry et al., 2009; Gearhardt, Yokum, et al., 2011; Gold & Shriner, 2013; Smith & Robbins, 2012). FA or food-dependency are constructs and are currently not diagnostic categories for chronic overeating, as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association [APA], *DSM-IV-TR*; 2000). There are several similarities between the FA construct and binge eating disorder (BED). BED is classified as an *eating disorder not otherwise specified* (EDNOS) in the *DSM-IV-TR* (Gearhardt & Corbin, 2011). According to the diagnosis, BED, an individual consumes a large amount of food within a discrete period of time (APA, 2000), but does not include chronic overeating over longer periods of time. Currently there is no diagnosis or recognized disorder for those who consume large quantities of food on a continual basis.

Chronic overeating has been compared to the behavior of substance dependence (Davis & Carter, 2009; Gearhardt, Corbin, & Brownell, 2009b) and does not include specific time constraints as does BED. Recent research adds additional support through neurobiological findings comparing the construct of FA with substance dependence (Gearhardt et al., 2012; Gearhardt, Yokum, et al., 2011). One of the salient comparisons between FA and substance dependence is the similarity in the brain circuitry activity (Gold & Shriner, 2013; Volkow & Wise, 2005), which lead to

clinical and behavioral signs of addiction (Davis & Carter, 2009). I discuss these parallel patterns at length in Chapter 2.

The concepts of FA and addiction are complex (Sussman & Sussman, 2011). But despite a lack of consensus, most researchers agree that the process involves a compulsive pattern of use. The pattern includes tolerance; withdrawal; consuming excessive quantities; unsuccessful efforts to cut down on food consumption; effort expended to acquire the substance (food); giving up important social, recreational, and occupational activities in order to continue eating; and taking the substance despite knowledge that it is causing harm (Gearhardt et al., 2009b; Taylor, Curtis, & Davis, 2010). Although individuals suffering from symptoms of FA do not fit any existing categories of eating disorders, these individuals need to be identified. Through identification, individuals suffering from symptoms of FA may find a treatment for their uncontrolled overeating, resulting in serious health consequences.

Because the concept of FA is controversial and there are not existing diagnostic criteria, as there are for other eating disorders (APA, 2000), Gearhardt, Corbin, and Brownell (2009a) developed the Yale Food Addiction Scale (YFAS). The recent YFAS was developed to operationalize the concept of FA using the substance dependence diagnostic criteria of the *DSM-IV-TR* (APA, 2000). Scores on the YFAS can help researchers identify individuals suffering from an addictive relationship with food, (Gearhardt et al., 2009a; Gearhardt, Grilo, DiLeone, Brownell, & Potenza, 2011), and these individuals are referred to as having FA throughout this study. The YFAS allowed me to describe and provide a tentative diagnosis for a unique eating disorder

that is not categorized as an eating disorder in the *DSM-IV-TR* (APA, 2000); yet symptoms of FA represent a disturbing problem for many individuals (Gearhardt & Corbin, 2011; Spring et al., 2008) and they are in need of further consideration. The YFAS appears to capture a clinically significant pathology and it highlights enduring problematic behaviors, including withdrawal and a tolerance to highly palatable foods (Gearhardt & Corbin, 2011; Gearhardt et al., 2009a). Because the YFAS has only recently been developed, there are, as yet, no qualitative studies of individuals with this condition. An empathic understanding of those struggling to overcome an addictive response to food may help to understand the overconsumption of food and the difficulty with food control or dieting, and may expose avenues for treatment previously not considered (Gearhardt & Corbin, 2011). Also, the current study helped to validate the YFAS by examining the thoughts and life experiences of affected individuals. This study verified that the YFAS accurately measured a condition that seriously affected women's lives.

In the present study, I used the YFAS to identify individuals who satisfied the tentative *diagnosis* of FA and recruited them as participants. The YFAS provides two scoring options based on a continuous *symptom* count of FA symptoms (0 – 7), not including clinical impairment, and a diagnostic clinical FA, based on substance dependence (three symptoms or more, including clinical impairment). In previous studies, researchers have found that approximately 25% of obese participants showed clinical FA and satisfied the diagnosis of FA (Burnmeister, Hinman, Koball, Hoffman, & Carels, 2013; Davis et al., 2011; Jin, 2012) and considerably more had several FA

symptoms. The sufficient population of affected individuals deserved further study. In this study, I recruited overweight and obese women who took the YFAS to determine if they suffered from clinical FA as defined by the YFAS.

The current study was designed to understand a unique population of obese and overweight individuals to gain insight into the growing obese population and why this population is refractory to treatment (Barry et al., 2009; Gearhardt & Corbin, 2011). In particular, the study allowed for insight into the experiences of individuals with clinical FA, and why they continued to consume more food than they needed, and gain excess weight. Attempts to understand individuals experiencing behaviors of FA contribute to the existing knowledge and may help in understanding the ongoing obesity epidemic. Obesity is a complex phenomenon and FA represents only a portion of obese individuals (Burnmeister et al., 2012; Davis et al., 2011). Qualitative research has the ability to explore the experiences of individuals found to be addicted to food with the YFAS and confront the question as to why they consume so much food.

In this chapter, I discuss the problem of obesity in a context of FA and the need for further research. In particular, I show the need to explore and understand the experiences of clinically food-dependent women and their lack of control over their diet. This research is designed to provide direction for future treatment and further validate the YFAS.

Background

Adhering to a diet is very difficult, as evidenced by the low numbers of individuals losing weight and maintaining that weight loss (Alhassan, Kim, Bersamin,

King, & Gardner, 2008). Previous research has highlighted variables that promote successful weight loss, including social support, available time, knowledge, socioeconomic status, and motivation (Shay, 2008). However less attention has been directed to psychological and neurobiological variables, such as emotional eating and FA and their relationship to dietary behavior change (Burnmeister et al., 2013). In most dietary trials, adherence is very low and results become skewed by the large numbers of participants who drop out of the studies (Fabricatore et al., 2009). When studying obesity, most research has focused on hormonal and metabolic factors while paying less attention to eating behaviors and weight regulation (Burnmeister et al., 2013; Karelis, St-Pierre, Conus, Rabasa-Lhoret, & Poehlman, 2004; Toornvleit et al., 1997). The consumption of highly palatable foods has increased in proportion to the rise in obesity and the food industry is complicit in contributing to the obesity epidemic (Brownell & Battle Horgen, 2004; Gearhardt, Davis, Kuschner, & Brownell, 2011; Kessler, 2009; Moss, 2013). Little attention has been directed to the dieters' reasons for their overconsumption of high-caloric foods and the rich source of comfort and reward they seem to find with them. Many dieters report intense food cravings and the loss of control over food quantities and qualities, such as sugar, fat, and salt (Brzezinski, 2013). Craving accounts for the loss of control over substance use in the *DSM-IV-TR* (APA, 2000) and is subjectively described as an intense state of desire and wanting (Monti & Ray, 2012). These symptoms contribute to overweight and obesity and support the research, which suggests that some psychological and neurobiological mechanisms are contributing to these symptoms.

Some individuals are prone to overeat due to an addictive process that is similar to the neural mechanisms of drug addiction (Berridge, Ho, Richard, & DiFeliceantonio, 2010; Corcoran & Gold, 2009; Inland et al., 2009; von Deneen & Liu, 2011). FA can be defined as a chronic, relapsing condition, which is prompted by factors leading to a craving for food or food-substances that result in a state of heightened pleasure, energy, or excitement (von Deneen & Liu, 2011). FA results in a loss of control over food, preoccupation with food, and negative consequences (Sussman & Sussman, 2011) including excess weight gain and the severe health risks associated with obesity (Gold & Shriner, 2013; Smith & Robbins, 2012). High caloric and highly palatable foods are often used to deal with a variety of emotions. This is termed *stress-related* eating or *emotional* eating (Dallman, 2010). Emotions such as frustration, fatigue, aggravation, guilt, anger, and boredom may trigger and drive overeating in vulnerable individuals (Levitan & Davis, 2010). Dallman et al. (2003) proposed that *comfort food* reduces the activity in the stress-response network, which decreases negative affect with its attendant anxiety. If reduction of stress occurs, increased and repeated exposure to high-energy foods can lead to a dependence on these foods or FA (Alsio et al., 2012; Lutter & Nestler, 2009; Pandit et al., 2011). It is logical to assume that dependency on food or FA will impair any efforts at regulating food intake. Unfortunately for many, the environment readily provides a banquet of highly palatable food, specifically designed to stimulate the palate (Kessler, 2009). If one needs comfort, it is not far away, and dependency may evolve into FA and a habit of reaching for a *food drug* to provide comfort.

Addictive models of overeating have been proposed, whereby the hedonic qualities of many foods can stimulate the reward pathways of the brain similar to the addictive models of drugs of abuse (Davis & Carter, 2009; Meitus-Snyder & Lustig, 2008; Volkow & O'Brien, 2007). Stimulation of these pathways in certain individuals can lead to unrestricted overeating that may not be under the conscious control of the individual (Alsio et al., 2012; Neal, Wood, Wu, & Kurlander, 2011). Recent research has verified that similar patterns of neural activation occur in addictive-like eating behavior and substance dependence (Gearhardt, Yokum, et al., 2011). Understanding the presence of FA or FA symptoms can indeed go a long way toward explaining to individuals why they find it impossible to avoid certain foods. Not all obese and overweight women experience FA and many studies use the general population of obese and overweight participants. With the YFAS, accurate distinctions of the obese and overweight populations can be made.

One of the neurobiological studies with obese participants that may explain FA symptoms demonstrated a hyperactive reward system (Stoeckel et al., 2008). In a functional magnetic resonance imaging (fMRI) study, Stoeckel et al. (2008) were able to demonstrate that obese women exhibited greater activation in brain regions hypothesized to mediate motivational effects of food cues when presented with pictures of high-calorie foods. Nonobese controls did not show the same activation in brain regions known to mediate emotional and motivational responses to foods or regions of interest (ROI) when exposed to high-caloric foods, therefore supporting the case that obese women are more motivated to consume high-caloric foods. The ROIs

included the medial and lateral orbitofrontal cortices, amygdala, nucleus accumbens/ventral striatum, medial prefrontal cortex, insula, anterior cingulate cortex (ACC), ventral pallidum, caudate, putamen, and hippocampus. Low-calorie foods did not elicit similar motivational responses in the ROIs. The Stoekel et al. (2008) study represented obese women who were not screened for FA symptoms, but because many obese women have FA symptomology, it supports the case that women with FA will respond differently to cues in the environment. Environmental cues can be very difficult for overeaters as described by personal accounts provided by Brzezinski (2013).

The rise in obesity can partially be explained by the difficulty in achieving and maintaining weight loss (Greenberg, Stampfer, Schwarzfuchs, & Shai, 2009; Jeffery et al., 2000). Research has shown that FA contributes to obesity (Jin, 2012) and poor dietary adherence (Burnmeister et al., 2013), and because identification of FA with the YFAS (Gearhardt et al., 2009a) has been recent, very little research has been conducted with individuals suffering from FA. Recent research utilizing the YFAS has validated FA as a phenotype of obesity (Davis et al., 2011), and other studies have supported the need for further research into FA (Burnmeister et al., 2013). The few studies using the YFAS have identified that individuals with FA and symptoms of FA have a very difficult time losing weight, and may be prone to eating-related pathologies (Burnmeister et al., 2013). To date, no qualitative research studies have attempted to examine the inner world of women with a YFAS diagnosis of FA. The

current study was designed to examine the private inner world of FA, a world that had yet to be explored.

Problem Statement

Women with FA symptoms have difficulty managing their diets. Obese and overweight women, including those with FA symptoms, have traditionally been managed through private programs and community programs that are designed to encourage weight loss through cognitive and behavioral interventions (Brown et al., 2009; Cooper, Fairburn, & Hawker, 2003; Crowe, 2005; Hession, Rolland, Kulkarni, Wise, & Broom, 2008; Wu, Gao, Chen, & van Dam, 2009). An array of pharmacological (Rosen & Aronne, 2012) and surgical treatments (Vetter, Faulconbridge, Williams, & Wadden, 2012) has been developed, but they are poor at demonstrating long-term weight loss and have several unwanted side effects (Wolin & Petrelli, 2009). Dieting is the method of choice for the majority of people suffering from overweight and obesity (Thomas et al., 2008). Unfortunately, up to 95% of obese and overweight people fail to lose and maintain weight loss with dietary interventions (Ayyad & Anderson, 2000). The recent introduction of the YFAS has operationalized the concept of FA and has made it possible to identify those suffering from a relationship with food similar to those suffering from chemical dependence (Gearhardt, Corbin, & Brownell, 2009a). Those identified with the YFAS as FA have had difficulty with weight loss and are at risk of developing obesity (Burnmeister et al., 2013; Jin, 2012). Women with FA symptoms have unique problems when it comes

to dietary adherence and women diagnosed as FA, with the YFAS, may be a valuable source of information.

To capitalize on the ability to identify FA as quantified by the recently developed YFAS (Gearhardt et al., 2009a), it is important to study the experiences of the individual with FA in an effort to investigate solutions for the ongoing obesity epidemic. A thorough understanding of FA from a qualitative perspective is expected to add to the nascent body of literature describing FA and offer insights into its future management. A goal of this study was to investigate the dietary difficulties of individuals with FA problems, and hoped to provide valuable information leading to effective interventions of a difficult problem for many women.

Purpose of the Study

The purpose of the present study was to explore FA through the experience of individuals suffering from the phenomenon after they have been identified with the YFAS. I chose to use interpretative phenomenological analysis (IPA) for this qualitative study because it enabled an in-depth exploration of the meaning of FA (Reid, Flowers, & Larkin, 2005). IPA allowed for an understanding of the personal nature of individuals' relationships with food that mimicked the experience of substance dependence. IPA is particularly suitable to study the complex problem of FA when the issue is extremely personal and intimate (Smith, 1995) and gave me the ability to explore and analyze attitudes, behaviors, and feelings in detail (Kay & Kingston, 2002). I studied those experiencing FA symptoms and gained a better

understanding of this conceptual eating disorder. While interviewing women with a tentative diagnosis of FA, I was also in a position to validate the YFAS.

To explore the world of women with symptoms of FA, participants had to be diagnosed with FA utilizing the YFAS. The YFAS is partially based on the *DSM-IV-TR* criteria for addiction (APA, 2000) and is the only tool available for the methodological research of FA (Gearhardt et al., 2009a). The *DSM-IV-TR* classified addiction in terms of substance dependence or substance abuse, with substance dependence being the more severe form. The *DSM-IV-TR* defined this dependence as a “cluster of cognitive, behavioral, and physiological symptoms associated with the continued use of the substance despite significant substance-related problems” (APA, 2000, p. 192). A diagnosis of substance dependence is based on the individual reporting three or more of the following seven criteria within 1 year: (a) tolerance, (b) withdrawal symptoms, (c) attempts to cut down, (d) difficulty in controlling usage, (e) excessive time spent in obtaining or recovering from its effects, (f) neglecting or postponing activities, and (g) continued use with the knowledge that it is causing adverse consequences and results in significant impairment or distress (APA, 2000).

The research questions were based on exploring the phenomenon of FA through the experiences of women identified by the YFAS as clinically FA. The designation of clinical FA requires that an individual experience three or more criteria of substance dependence and suffer significant problems in routine functioning as well as significant distress due to food and eating (Gearhardt et al., 2009a). Because a diagnosis of clinical FA by the YFAS means that the individual has suffered

significant distress and significant problems in routine functioning, these issues were explored to highlight the pain experienced by the FA.

Guiding Questions

The guiding questions were designed to explore the lived experiences of women who meet the diagnostic criteria for FA with the YFAS. The interview questions addressed the phenomena of FA and followed a semistructured schedule in accordance with IPA (Smith, Flowers, & Larkin, 2009). According to the YFAS, only those women experiencing significant stress and significant problems in their ability to function effectively (daily routine, job, social activities, family activities, health difficulties) at least 2-3 times a week meet the criteria for a tentative diagnosis of FA. I was particularly interested in exploring the participants' perceptions of their stress and functioning; how their functioning related to their food intake and control and the effect it had on their daily life. During the interview, I confirmed the participants' answers on the YFAS to support the diagnostic criteria of FA. The interview questions, listed in Chapter 3, were designed to answer the following general research questions:

- What is the lived experience of women meeting the criteria for FA based on their answers on the YFAS?
- How are addiction-like symptoms experienced and how do they cause distress?
- What problems are experienced in daily living because of food and eating?

Theoretical Framework

FA is based on the biological theory of substance dependence supported by neurobiological studies that relate FA to substance dependence (Gearhardt, Yokum, et al., 2011; Trinko, Sears, Guarnieri, & DiLeone, 2007). Briefly, some food and some drugs of abuse stimulate dopamine release in the mesocorticolimbic dopamine system resulting in pleasurable and reinforcing effects (Alisio et al., 2012; Volkow, Wang, & Baler, 2011; Volkow, Wang, Fowler, & Telang, 2008). After repeated exposure, a reward deficiency syndrome develops, which is common to drug and food dependency. Chronic administration of the substance leads to a down regulation of dopamine receptors (Johnson & Kenny, 2010; Stice, Boor, Bohon, & Small, 2008) resulting in compulsive eating or drug use in an attempt to find reward. This theory is explored in detail in Chapter 2. The YFAS was designed by Gearhardt et al. (2009a) to operationalize FA and the many eating behaviors of FA by translating the substance dependence diagnostic criteria of the *DSM-IV-TR* (APA, 2000). FA, as defined by the YFAS, captures many behaviors that cause distress to the individual. In this study, I used the IPA methodology to investigate personal and intimate issues of eating behaviors in an effort to understand the struggles women have with FA symptoms.

Conceptual Framework

The construct of FA is based on the substance dependence criteria as laid out in the *DSM-IV-TR* (APA, 2000), and measured by the recently developed YFAS (Gearhardt et al., 2009a). Although the concept of FA is controversial (Gearhardt et al., 2012), FA is supported by recent research validating the YFAS with obese women,

aged 25-45 years (Davis et al., 2011). Burmeister et al. (2013) examined 57 women entering a weight loss program and found that FA interfered with weight loss in these women.

In this study, I examined the nature of FA, as assessed by the YFAS, in six obese and overweight adult women. YFAS affords two scoring options. One option measures FA *symptoms* and the other option gives a FA *diagnosis* based on the *DSM-IV-TR* substance dependence diagnosis. Several previous researchers (Davis et al., 2011; Jin, 2012) considered the number of symptoms of FA but the current study focused on women with clinical FA or the diagnosis of FA, as defined by three or more symptoms of FA, including clinical impairment as classified in the YFAS. Women with clinical FA suffered from distress with respect to food and eating at least 2-3 times a week; they also experienced problems in their ability to function effectively at least 2-3 times a week.

Nature of the Study

The study design was chosen so that a thorough exploration of the experiences of obese or overweight women, fitting the diagnostic category of FA on the YFAS, could be conducted. Because the YFAS (Gearhardt et al., 2009a) was developed only recently, there has been little opportunity to investigate the experiences of women diagnosed with FA. The qualitative methodology of IPA allows for the in-depth investigation of FA from the perspective of the affected individual. IPA supports the ability to develop in-depth knowledge of what it is like to suffer from FA through the experiences of the women themselves. IPA requires only that a few women be

interviewed, and it was fortunate that six overweight or obese women, between 35 and 65 years of age, who fit the criteria for clinical FA, were recruited to participate in the study. I interviewed these women and analyzed the data according to IPA (Smith et al., 2009).

Definition of Terms

Addiction: Addiction is a concept and difficult to define. This term is not used in the *DSM-IV-TR* (APA, 2000) rather the term substance dependence is utilized which is synonymous with the term addiction. The term addiction is used in many studies to signify (a) engagement in the behavior to achieve appetitive effects, (b) preoccupation with the behavior, (c) temporary satiation, (d) loss of control, and (e) suffering negative consequences (Sussman & Sussman, 2011). Siegel (2014) describes addiction as a hardwired impulse to seek pleasure and avoid pain.

Brain reward systems: Are technically separated by into two neural circuitries (Berridge, Robinson, & Aldridge, 2009). One circuit involves *liking* (Berridge, 2009; Berridge et al., 2010), which produces a pleasurable sensation and activates brain reward systems for sensory pleasure. The main neural structure involved in the *liking* response is the nucleus accumbens. The other neural circuit involves *wanting* which includes the incentive salience systems stimulating the motivation to procure food (Berridge, 2009). The mesolimbic pathway especially involving DA is a major pathway for the brain reward systems involving *wanting* common to palatable foods and substances of abuse. These pathways regulate the motivational aspects of feeding and substance- seeking behavior (Kenny, 2011). Hypersensitivity of reward circuitries

may predispose an individual to overconsumption (Stice, Yokum, Bohon, Marti, & Smolen, 2010).

Dopamine: One of the neurotransmitters alleged to be involved in eating behaviors and the predominant mediator of addiction (Blumenthal & Gold, 2010). DA modulates the hedonic and nonhedonic factors underlying motivation for food intake (Volkow et al., 2008). Obese individuals have impairments in dopaminergic pathways and the regulation of reward sensitivity (Volkow, Wang, & Baler, 2010).

Dopamine receptor: Availability in the striatum, particularly striatal D2 receptor availability, is reduced in obese women. Reduced receptor availability leads to less activity in frontal cortical regions which correlates with impaired inhibitory control over food intake (Stice, Spoor, Bohon, & Small, 2008).

Food: Is not easily defined due to the processing and combinations currently available in the Western markets. The current study was concerned with high-caloric processed foods which are easily available and consumed; quickly absorbed into the bloodstream; and can lead to abuse (Gearhardt, Davis, Kuschner, & Brownell, 2011).

Food addiction: Is defined as a chronic, relapsing problem caused by multiple factors encouraging craving for food substances resulting in a heightened pleasure, energy or excitement (von Deneen & Liu, 2011) despite negative consequences (Umberg, Shader, Ksu, & Greenblatt, 2012). Processed foods with elevated concentrations of processed sugars and fats have the potential to be addictive food substances (Ifland et al., 2009). Included in foods having potential addictive properties are sweet/fat combinations and possibly high salt foods (Corsica & Pelchat, 2010).

More complex definitions of FA are available including withdrawal and tolerance effects and the emotional reactivity when food is not available (Gold & Shriner, 2013).

Food reward: Involves a composite process of *liking* (hedonic impact), *wanting* (incentive motivation), and learning (positive reinforcement and prediction) (Berridge, 2009; Berridge et al., 2010; Volkow et al., 2011). Food reward also attenuates stress and can lead to habit formation and addiction (Dagher, 2009). Food reward refers to highly palatable processed foods which is on the rise in Western society and exploited by food industry (Davis & Carter, 2009).

Interpretative phenomenological analysis (IPA): Is a qualitative research paradigm developed within health psychology and based on the theoretical touchstones of phenomenology and symbolic interactionism (Smith, 1996). IPA is designed to examine a smaller number of participants in great detail through semi-structured interviews exploring how the participant experiences a particular phenomenon. IPA aims to explore the participant's view of the phenomenon while allowing for the researcher to interpret and make sense of the participant's world (Smith, 1996).

Obesity and overweight: Is defined as an excess of fat accumulation which may impair health. The World Health Organization ([WHO], 2011) defines obesity by a simple index of Body Mass Index (BMI) comparing weight-for-height. A person's weight in kilograms (kg) is divided by the square of his or her height in meters (kg/m^2). A BMI greater than or equal to 25 is considered overweight and a BMI greater than or equal to 30 is considered obese. Previous qualitative researchers found

that obese individuals *hated* or *disliked* the term obesity and prefer being called *fat* or *overweight* (Thomas, Hyde, Karunaratne, Herbert, & Komisaroff, 2008).

Reward deficit: Occurs when reward hyposensitivity in the striatum occurs due to overconsumption of palatable food promoting more overeating to overcome reward deficits (Stice, Boor, Bohon, & Small, 2008).

Striatum: Is part of the basal ganglia and in primates comprise the caudate nucleus and the putamen. The *Ventral striatum* is closely associated with the *Nucleus Accumbens* which forms an intricate portion of the *Mesolimbic* pathway, the dopaminergic pathway implicated in reward and feelings of desire.

Substance abuse: Is the method of classification of addiction by the *DSM-IV-TR* and is a less severe form of *substance dependence*, which requires 3 of 7 criteria to be fulfilled (APA, 2000; Umbridge et al., 2012).

Substance dependence: is defined by the *DSM-IV-TR* (APA, 2000) as a maladaptive pattern of substance use and is manifested by three or more of the following, occurring the previous 12-month period: (a) tolerance, (b) withdrawal, (c) substance taken in larger amounts or over a longer period of time than intended, (d) persistent desire or unsuccessful efforts to cut down, (e) a great deal of time spent in obtaining, using the substance or recovering from its effects, (f) loss of important social, occupational, or recreational activities due to the substance, and (g) continued use despite the presence of physical or psychological problems

Assumptions

The present study relied on the following assumptions:

1. The information provided by the participant on the personal history questionnaire was accurate.
2. The Yale Food Addiction Scale (YFAS) is an effective and reliable screening/diagnostic instrument. Because the instrument is relatively new, it continues to be validated in on-going research.
3. The women chosen to be interviewed were truthful and not constrained by the sensitive nature of the questioning.

The above assumptions were necessary to (a) identify women with clinical FA; (b) identify women who are not suffering from comorbidities, which would hamper the truthfulness of their accounts; and (c) allow the researcher to analyze the data.

Scope and Delimitations

The experience of clinical FA was explored in a small homogeneous group of obese and overweight adult women who fit the criteria for clinical FA according to the YFAS (three or more symptoms of FA and clinical impairment, that is, behaviors with respect to food and eating cause significant distress, and significant problems to function effectively are experienced). In the current study, I was interested in exploring the thoughts, feelings, and behaviors of obese women who fit the criteria for a diagnosis of FA according to the YFAS. FA does not affect all obese and overweight individuals (Davis et al., 2011); thus the current study explored the experiences of only obese or overweight women who had an addictive relationship with food.

Limitations

The present study was restricted to a relatively homogeneous sample of six obese or overweight women with apparent FA as measured by the YFAS. The study was designed to explore the experiences of women over 35 years of age living in western Canada. Two participants were recruited from flyers distributed throughout the community. Four others were found in a 12 Step recovery program located in the community. I selected women to participate based on the following criteria: (a) they qualified as obese or overweight with a BMI ≥ 30 at one time; (b) they were diagnosed with clinical FA by the criteria set out in the YFAS; and (c) they could not have prediagnosed alcoholism, drug dependency, or any major health concerns such as depression, kidney or heart disease, cancer, and genetic disorders. To ensure that the women represented a homogeneous group, they completed a demographic questionnaire and were selected for the study if they fulfilled the above criteria and were English speaking and of middle socio-economic status. All potential participants were given the YFAS at the outset of the study. Unfortunately, self-report measures may be limited to the participant's honesty (Dhaliwal, Howat, Bejoy, & Welborn, 2010; Kuczmarski, Kuczmarski, & Najjar, 2001). Women with eating disorders are not easy to recruit to participate in research, but I was able to find women with FA by attending local meetings for women with FA.

The study was restricted to findings of obese and overweight women living in a western Canadian community who met the diagnostic criteria of FA as measured by the YFAS. The findings may not be relative to other demographics as there was no

evidence provided to suggest that the results can generalize to other populations and age groups.

FA is not a clinically recognized eating disorder. It represents a controversial issue in light of the fact that food is necessary for survival and cannot be compared to other addictive substances, which are not necessary for survival. It is also hard to compare FA to other behavioral addictions like gambling, shopping, and Internet use because, again, most foodstuffs are necessary for survival. However, certain foodstuffs can be recognized as a substance of abuse or addictive, when compared to the criteria of substance dependence in the *DSM-IV-TR* (APA, 2000), and may become a real and palpable condition for many women.

Significance

Research using the YFAS to investigate the prevalence of FA is limited. The few studies that exist suggest that FA may interfere with weight control (Burmeister et al., 2013). Because the mechanisms surrounding FA are not clear to the general public, any research investigating the FA construct will bring attention to this phenomenon. Because FA is not recognized by the *DSM-IV-TR* (APA, 2000) or the new *DSM-5* (APA, 2013), treatment plans do not consider the uncontrollable cravings to eat specific *foods of choice* that individuals suffering from FA symptoms endure. It is important first, to recognize the construct of FA, and then to tailor diets to accommodate the addictive aspect of eating. Women who fulfilled the criteria for FA according to the YFAS were interviewed and asked to present their input for future interventions designed to help those with the symptoms of FA. Furthermore, the

present study validated the YFAS. A validated tool for identifying women with a significant problem with food and dieting will be invaluable in the ongoing battle against the obesity epidemic.

Summary

Very few studies have investigated FA as it occurs in the community, and no study to date had explored the experiences of women who fit the criteria for FA according to the YFAS. The YFAS is a recently developed scale to identify those suffering from an addictive relationship with food or FA. Obesity has become an epidemic and current research has shown that FA may account for up to 27.5% of obese and overweight women, though large-scale studies are lacking. The symptoms of FA include an uncontrollable urge to consume food in an environment that provides easily accessible and highly pleasurable foodstuffs. This study examined the thoughts, feelings, and behaviors of six women with FA in an effort to better understand those suffering from FA, resulting in excess weight gain and obesity. The study used a qualitative approach utilizing IPA to thoroughly study the experiences of these women. The experiences of the women's dieting behaviors were explored. To date, most diets do not take FA into account because FA is not recognized by the *DSM-IV-TR* (APA, 2000) and it is therefore difficult to study and treat. There is ample evidence that FA resembles substance dependence (Gearhardt, Yokum, et al., 2011; Ifland et al., 2009) with respect to neural mechanisms and behaviors. Using the lessons learned battling substance addictions could provide a valuable tool for combating FA. A thorough understanding of women experiencing FA symptoms is expected to add to the arsenal

of information aimed at curbing the obesity epidemic and possibly afford insights into future treatments. By exposing the problems experienced by obese and overweight women suffering from FA symptoms, there can be a unified movement towards understanding and counteracting the devastating consequences of this condition.

Chapter 2 provides a review of the literature and will include an overview of the obesity epidemic, the development of FA, and what is understood about the neurobiology of FA. The recent introduction of the YFAS for diagnosing women with FA will also be reviewed. The traditional treatments for obesity will be reviewed and the barriers to successful weight loss (factors completely out of the food addict's control) will be discussed.

Chapter 3 discusses the research design and the rationale for this study. This chapter details the use of IPA as well as the participant selection with the aid of the YFAS. This chapter details how participants will be interviewed, and how their interviews will be transcribed and coded according to IPA.

Chapter 4 is the results section of the study and introduces the characteristics of the participants and their answers to the interview questions. The emerging themes were developed into superordinate themes, which represented all, or most of the participants. The salient superordinate themes are discussed in Chapter 5.

Chapter 5 discusses the most salient themes of the study including the loss of control over food intake, the significant distress caused by the experience of FA and the need for external control of food intake in order to cut down on food intake.

Chapter 5 also discusses the benefits of the 12 Step programs as a solution for recovery.

Chapter 2: Literature Review

Introduction

The rising obesity rate has become a significant public health problem. Weight loss and weight maintenance are notoriously difficult to achieve and most weight loss interventions result in failure (Jeffery et al., 2000). Dietary relapse over time is the norm in most dietary interventions, precluding long-term success (Greenberg et al., 2009; Guy, Choi, & Pratt, 2011). There are many barriers to successful weight loss beyond individual control, for example, genetic predisposition (Erlanson-Albertson, 2005; Liu, von Deneen, Kobeissy, Firas, & Gold, 2010; Loos & Bouchard, 2003); the well-described *obesogenic* environment, which consists of calorie dense, highly palatable foods and a sedentary lifestyle (Giskes et al., 2007; Swinburn, Egger, & Raza, 1999); and one other barrier that is gaining renewed attention: addiction to hyperpalatable foods or FA (Ifland et al., 2009; Gearhardt, Davis, et al., 2011). FA is a valid concept for some individuals according to many researchers (Blumenthal & Gold, 2010; Burnmeister et al., 2012; Cocores & Gold, 2009; Corsica & Pelchat, 2010; Davis & Carter, 2009; Davis et al., 2011; Gold & Shriner, 2013; Ifland et al.; Parylak, Koob, & Zorrilla, 2011; Pelchat, 2009; Shriner & Gold, 2014; Umberg, Shader, Hsu, & Greenblatt, 2012). FA has been compared to substance dependence where hyperpalatable foods are known to have an abuse potential, similar to drugs of abuse (Fortuna, 2012; Kenny, 2011; Smith & Robbins, 2012). Although there is no diagnostic category for the conceptual category of FA in the *DSM-IV-TR* (APA, 2000), many people still suffer from a clinically significant pathology that is not classified as

an eating disorder (ED) or an EDNOS (APA, 2000). There is also no category for FA in the newly published *DSM-5* (APA, 2013) and although it could be considered in the category of Other Specified Feeding or Eating Disorders, the *DSM-5* specifically states that there is more research needed for a category of FA (APA, 2013).

FA has recently been operationalized with the YFAS (Gearhardt et al., 2009a, 2009b; Gearhardt, Davis, et al., 2011), yet little research has been conducted using the scale to identify women with FA, and little if any research has been done to describe the experiences of women identified as food addicts with the YFAS. FA is not a recognized medical condition and is not recognized as an eating disorder in the *DSM-IV-TR* (APA, 2000) or the *DSM-5* (APA, 2013). However, research in the last decade has highlighted the fact that some foods may possess addictive properties (Barry, Clarke, & Petry, 2009; Davis & Carter, 2009), and this research has now been combined with the ability to recognize those having an addictive-like relationship with food (Gearhardt et al., 2009a). It is now possible to further investigate this addictive relationship.

The present study was designed to investigate the experiences of clinically food-addicted obese and overweight women, identified with the YFAS, and their struggle with restricting food intake. For a participant to satisfy the diagnosis of clinical food-addiction with the YFAS they must experience three (or more) of seven diagnostic criteria within a 12-month period and clinically significant impairment or distress must be present (Gearhardt & Corbin, 2012). Approximately 25% of obese women are identified as clinical food-addicts with the YFAS (Davis et al., 2011; Jin,

2012), yet many more (Davis & Carter, 2009; Gearhardt et al., 2009a; Gold et al., 2009; Ifland et al., 2009) endorse the symptom of *loss of control* over food. Not all individuals with FA are obese; in fact a small percentage of normal-weight individuals (<5%) qualify as clinically food addicted with the YFAS (Pedram et al., 2013; Jin, 2012). The more that is learned about FA, the more information will be available to consider treatment plans that incorporate the addictive potential of many foods.

Success or failure of dietary adherence studies is usually based on the motivation and willingness of study participants to adhere to the prescribed diet (Moreira, Most, Howard, & Ravussin, 2011). Most studies have reviewed adherence to diet as predicted by factors such as self-efficacy, intention, planning, and willingness to engage in dieting as measured by the transtheoretical model (Mata, Todd, & Lippke, 2010; Prochaska, DiClemente, & Norcross, 1992), whereas few studies have evaluated the psychological and biological forces such as FA that may act as barriers to dietary adherence (Guy et al., 2011; Somerset, Graham, & Markwell, 2011). As yet, there are no studies describing the experiences of women with FA and their dietary journey. The present study evaluated the barriers to dietary adherence as experienced by those suffering from a diagnosis of FA with the use of the YFAS. Because obesity is a multifaceted condition and FA represents but one phenotype of the obesity problem (Davis et al., 2011), only the experiences of obese and overweight women qualifying as clinically food-dependent by the YFAS were considered in this study.

The following chapter will briefly address the theoretical framework for the present study followed by an overview of the obesity epidemic illustrating the very

obvious reasons why research relating to obesity is necessary. Some of these reasons include health consequences of obesity, weight stigma and discrimination, and health care costs. The traditional treatments for obesity will be acknowledged including the poor long-term outcomes of obesity management. Barriers to successful weight loss will be briefly addressed including genetic and environmental issues with a focus on the neurobiological mechanisms favoring weight gain in FA. Because consuming adequate energy is necessary for survival, humans have evolved potent and interrelated neuronal systems to ensure adequate intake of energy (Saper, Chou, & Elmquist, 2002). Indeed, homeostatic neuronal mechanisms to ensure adequate energy intake is a significant difference between FA and substance abuse (Barry et al., 2009).

Unfortunately, some individuals consume much more food than is directed by homeostatic mechanisms indicating that something else is involved (Shriver & Gold, 2014). The current food environment has manipulated and processed natural foods (Kessler, 2009; Moss, 2013), which act on the brain similarly to drugs of abuse (Gearhardt, Davis, et al., 2011). There is evidence that these foods may *hijack* the brain's reward systems creating biological demand (Blumenthal & Gold, 2010; Pandit et al., 2011) supporting uncontrollable food consumption and addiction.

Literature Search Strategy

The following databases were consulted for this literature review: PubMed, PsycINFO, MEDLINE, CINAHL, PsycTESTS, Google Scholar, and Dissertation Abstracts International. Many additional articles were obtained by citation tracking. The The following terms were used to conduct the search: food addiction, obesity,

weight loss, weight stigma, overweight, addiction, hedonic eating, reward, neurobiology, dopamine, hyperpalatable food, qualitative research, adherence, leptin, ghrelin, insulin, and obesity risk.

Literature Review

Theoretical Foundation

FA is based on the biological theory of substance dependence and the underlying neural mechanisms that are common to food and substances of abuse (Trinko et al., 2007). Substance *addiction* can be defined as a condition of craving, compulsive intake, lack of control, and continued seeking of the food or drugs of abuse despite the negative consequences of usage (Umberg et al., 2012). Research has uncovered similarities in brain structure and function among substance-dependent and obese individuals (Gearhardt, Yokum, et al., 2011; Smith & Robbins, 2012). The most commonly known neural pathways to underlie food and drug rewards are the mesolimbic dopaminergic and opioid neurotransmitter systems. Food and drugs activate the mesolimbic dopamine (DA) reward system in humans and animals (Avena, Rada, & Hoebel, 2008) effecting the release of DA (Blumenthal & Gold, 2010; Koob & Volkow, 2010, Pelchat, 2009), which in turn promotes the motivational aspects of feeding (Kenny, 2011; Salamone, Cousins, & Snyder, 1997; von Deneen & Liu, 2011) and a sensation of satisfaction in individuals with FA. With excessive consumption of palatable foods, the reward systems of the brain can be permanently altered (Kenny, 2011). Dysregulation of the reward circuitries in overweight

individuals effects uncontrolled overeating (Stice, Yokum, Blum, & Bohon, 2010; Stice et al., 2010).

Overview of the Problem of Obesity

The complexity of obesity precludes the ability to deliver one unifying theory or explanation (Karelis et al., 2004; McFadden, 2010). Obesity has been attributed to a variety of causes including genes, culture, physical activity, nutritional intake, and a variety of psychological factors (Wang, Volkow, & Fowler, 2012). Current research constitutes obesity as a worldwide epidemic (Dietel, 2006) inclusive of its harmful consequences of ever-increasing health risks, mounting health care costs, impaired psychosocial functioning, and decreased life expectancy (Flegal, Graubard, Williamson, & Gall, 2007; Spence-Jones, 2003). Obesity has been labeled as one of the most serious and escalating public health problems in the developed world (WHO, 2011) and possibly the most pressing contemporary public health problem in this century (Brown et al., 2009). Currently, 65% of the adults in the United States are classified as overweight or obese (Flegal, Carroll, Kit, & Ogden, 2012).

Definition and epidemiology of the obesity epidemic. Obesity is defined using a measure of body mass index (BMI), which is a measure of weight in kilograms (kg) to height measured in meters squared (m²). A BMI of 30 is considered obese whereas a BMI between 25 and 29.9 is considered overweight (WHO, 2011; Wolin & Petrelli, 2009). The most recent statistics reported by the Government of Canada show at least 23.1% of Canadians have a BMI of 30 or more (Statistics Canada, 2008). At least half of the US population is over-weight or obese making obesity and overweight

more prevalent than smoking, illegal drug use, or morbidity due to ailments unrelated to obesity (Lakdawalla & Philipson, 2009). Obesity is increasing in industrialized nations and developing countries alike (Frey & Finley, 2005; Ogden et al., 2006; Zellner, Ulbricht, & Kromeyer-Hauschild, 2007) causing many researchers to view the growth and spread of obesity as a worldwide epidemic.

Health consequences of obesity. The health risks of obesity and being overweight are due to the excess numbers and size of fat cells (Bray, 2004) resulting in excessive fat depositions. Adipose or fat tissue is associated with low-grade systematic inflammation, which leads to increased risk for coronary vascular disease (CVD) (Munro & Garg, 2011). Excess adipose tissue, particularly visceral adiposity, may lead to the development of other medical conditions including type 2 diabetes mellitus (T2DM), hypertension, gallbladder disease, osteoarthritis, coronary artery disease, and some forms of cancer (Barry, Pietrzak, & Petry, 2008; Bray, 2004; De Vriendt, Moreno, & Henauw, 2009). Not only does obesity place one at risk for several medical consequences; obesity has negative side effects on psychological health and well being (Petry, Barry, Pietrzak, & Wagner, 2008; Wolin & Petrelli, 2009). Epidemiological studies have demonstrated that there is an increased risk of mood disorders for increased BMI including major depression, dysthymia, manic, and hypomanic episodes (Barry et al., 2008; Chen, Jiang, & Mao, 2009; Zhao et al., 2009).

Weight stigma, discrimination, and stress. Qualitative research describes the experiences of obese individuals with discrimination and stigma (Barker & Cooke, 1992; Lewis et al., 2010; Thomas et al., 2008). Experiences of weight stigma may

affect eating behaviors; weight-based teasing resulted in binge eating at 5 years follow-up (Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006). Weight bias can be a source of stress among obese women, which may lead to stress eating (Dallman, 2010). Eating is a coping mechanism for stress in many individuals (Conner, Fitter, & Fletcher, 1999; Popkess, Vawter, Wendel, Schmoll, & O'Connell, 1998) and can be a pathway to loss of control over eating behaviors.

Health care costs. Obesity poses a serious threat to current and future economic viability in the Americas as well as many other countries. Obesity captures money for prevention programs, not to mention the treatment programs for all the health-related consequences (Wolin & Petrelli, 2009). It is projected that by 2030, obesity and overweight could cost America \$957 billion and represent as much as 18 percent of total health care costs (Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008).

Obesity and depression. There is significant evidence to suggest that there is a positive association between obesity and depression in adult women (Chen et al., 2009; Zhao et al., 2009). In fact, among middle-aged obese women, depression is consistently associated with obesity, lower physical activity and higher caloric intake (Simon et al., 2008). This same association is reversed in men (Vamosi, Heitmann, & Kyvik, 2009) leading to a significant difference in the impact of obesity for men and women (Carroll, Blanck, Serdula, & Brown, 2010). Overweight and obesity is a significant risk factor for the development of current depression, lifetime diagnosed depression, and anxiety among women (Zhao et al.). Many theories abound associating

eating behaviors of obese women with psychosocial and familial influences during childhood and adolescence (Brown, Schiraldi, & Wroblewski, 2009; Vamasi et al., 2009). There certainly is enough evidence to support the sad experiences of obese women regarding negative stereotypes, weight bias, and stigmatization of the obese population (Carr & Friedman, 2005; Crandall, 1994; Puhl, Andreyeva, & Brownell, 2008; Puhl & Brownell, 2001, 2003, 2006). As a result, women may suffer lower self-esteem; perceive others to dislike them, and have negative self-images, leading to higher levels of depression (Roberts, Strawbridge, Deleger, & Kaplan, 2002). The fitting norms of appearance perspective suggested by Ross (1994) argues that obese women are stressed when they cannot maintain a weight norm through dieting and failing to succeed is more stressful than obesity per se. The stress of not maintaining a weight norm can lead to chronically high levels of glucocorticoids (Shriner & Gold, 2014), which in turn will increase the salience of ingesting high caloric foods (Dallman et al., 2003).

Current treatments for obesity. Obesity has traditionally been managed through cognitive and behavioral interventions designed to educate changes in diet and exercise (Ayyad & Andersen, 2000; Wilson, 2010; Wu, Gao, & van Dam, 2009). Short-term weight loss is often achieved (Brown et al., 2009) but 3- and 5- year follow-up appointments reveal a dismal failure at weight loss maintenance (Jeffery et al., 2000); between 90% and 95% of obese people fail to lose and maintain weight loss with these interventions (Ayyad & Anderson, 2000). Adhering to a healthful diet is one of the most difficult lifestyle behaviors to acquire (Ary et al., 1986). In addition to

cognitive and behavioral interventions, weight loss surgery was once believed to be the best quick cure for obesity and its related co-morbidities (Spence-Jones, 2003).

However, side effects are common and those with preexisting eating disorders have a poor success rate (Devlin, Goldfein, Flancbaum, Bessler, & Eisenstadt, 2004; Kinzi et al., 2007; Schouten, Wiryasaputra, van Dielen, van Gemert, & Greve, 2010).

Pharmacological treatments have not provided a *magical cure* for excess weight (Byrne, Cooper, & Fairbairn, 2003). Dietary control is the most accessible tool for weight loss; it is cheaper than surgical intervention and drug therapies; and it will work if adherence can be obeyed. Any diet will be effective if the participant will stick to the guidelines (Thomas et al., 2008; Urbaszat, Herman, & Polivy, 2002). Because of the poor dietary success of many overweight individuals, the present study explored barriers, from the perspective of individuals suffering from the symptoms of FA, driving excessive food consumption and preventing successful weight loss.

Current treatments for FA. Because of the lack of recognition of FA in the *DSM-IV-TR* (APA, 2000), there is little experimental research data to guide clinicians. However, clinical and individual experiences have provided the best evidentiary treatment knowledge. Presently, multimodal treatments including individual psychotherapy, group fellowship interventions, strategic diet targeting, focused exercise, bariatric surgery, and a plethora of pharmaceutical reagents have been used in treatment clinics (Gold & Shriner, 2013). Research is lacking on the efficacy of these treatments.

Barriers to Dietary Success

One problem with data available on dietary interventions is the substantial dropout rate (Somerset et al., 2011) and lack of adherence to the prescribed diet (Moreira et al., 2011). Unfortunately, the causes of dropouts and the reasons why participants fail to adhere to their diets are poorly understood (Greenberg et al., 2009; Knauper, Cheema, Rabiau, & Borten, 2005). Many dietary trials find that many, if not most, of their participants fail to complete the study (Brinkworth, Buckley, Noakes, Clifton, & Wilson, 2009; Foster et al., 2010; Rushing, 2005; Stern et al., 2004; Tsiros et al., 2008) and adherence to self-set dieting rules is markedly low (Knauper et al., 2005). Dietary adherence is very good if the participants are highly motivated and confined to a clinic where all meals are provided (Moreira et al., 2011). Unfortunately this is not practical and investigation into reasons of dietary failures for the average citizen is most worthwhile. Dietary adherence literature reported an attrition rate of 30-60% in long-term weight loss studies in obese individuals (Douketis, Macie, Thabane, & Williamson, 2005). Predictors of dietary adherence (the ability of participants to complete the assigned diet) included smoking, being sedentary, greater expectations for program success, higher BMI, being a woman, younger age, and being divorced (Clark, Niaura, King, & Pera, 1996). Other studies reported several barriers to obesity treatment including lack of recognition that obesity is a chronic condition, time constraints, intimate saboteurs, socioeconomic status, endocrine disorders, sleep, and chronic pain (Mauro, Taylor, Wharton, & Sharma, 2008). These earlier studies focused primarily on social variables. Very few studies in the adherence literature and obesity

management literature recognize underlying psychological dysfunction and neurobiology including depression (Somerset et al, 2011), food addiction (Smith & Robbins, 2012), and emotional eating (Davis et al., 2011). The present study focused on the experience of FA symptomology and how this interferes with dietary adherence.

The Power of Food Leading to FA

Humans are innately attracted to certain foods and the food industry has met the challenge of the human palate by combining foods to make them highly palatable (Kessler, 2009).

We recognize pleasure as the first good innate in us, and from pleasure we begin every act of choice and avoidance, and to pleasure we return again, using the feeling as the standard by which we judge every good (Letter to Menoecus, between 306 and 270 BCE, as cited in McCord & Clemes, 1964, p.21).

The human genome has changed very little in the past 50,000 years (Eaton, 2006) yet in the past few hundred years, processed foods now contain up to 27 ingredients in one foodstuff (Gearhardt, Grilo, DiLeone, Brownell, & Potenza, 2011). The recent cultural evolution has provided an unlimited supply of fatty foods, processed carbohydrates, and designer foods providing a pleasure banquet for most civilized nations (Gearhardt, Davis, et al., 2011; Kessler, 2009). The consumption of highly palatable foods reflects the property that food is a natural reward, can be very pleasurable, and is reinforcing in a similar manner as drugs (Lutter & Nestler, 2009; Pandit et al., 2011). Evolution has made eating one of the most powerful urges in

human behavior by making it a rich source of reward and pleasure (Meitus-Snyder & Lustig, 2008). It has even been suggested that the powerful pull of the instinct to eat, particularly when faced with highly palatable food, is difficult to overcome by reason (Lewis, Amini, & Lannon, 2000; Peters, Wyatt, Donahoo, & Hill, 2002) and causes one to consume food beyond their nutritional needs. Industrially processed foods containing flour, fats, salt, and sugar-sweeteners are not found in nature and have prompted the refined food addiction theory where these foods can act similarly to drugs of abuse when consumed in high doses (Corsica & Pelchat, 2010; Ifland et al., 2009). Never before in human history have delicious combinations of foods containing sugar, fat, and salt been available in such excessive quantities (Gearhardt, Grilo, et al., 2011; Kessler, 2009). The availability of fast foods in America has escalated 18 fold in the last 30 years and combined with modern eating and exercise conditions, have been termed the *toxic environment* (Brownell & Battle Horgen, 2004).

Reward pathways. Reward refers to an object or action that will promote repeat behaviors to continue the consumption of the reward (positive reinforcement) and direct future behaviors based on subjective experience (Fulton, 2010). Values such as taste, smell, postingestive consequences, and food cues are stored in memory tracts to ensure repeat performance in a rewarding situation (Small, 2012). Most of the work on neural reward pathways in the brain focuses on the mesocorticolimbic dopamine pathway, and the endogenous opioid system (Davis et al., 2009; Fulton, 2010; Kenny, 2011). The structures of the reward (hedonic) pathway making food rewarding include the ventral tegmental area (VTA) and the nucleus accumbens (NA) which is referred to

as the pleasure center of the brain; the area that is associated with compulsive food intake (Meitus-Snyder & Lustig) and represents the key neural substrate for reinforcement (Shriner & Gold, 2014; Trinko et al., 2007). Presentation of highly palatable foods will cause a potent release of DA from the VTA into the NA, which mediates the reward properties of food (Lutter & Nestler, 2009; Smith & Robbins, 2012). The phenomenon of consuming food beyond one's nutritional need relates to food being a natural reward and may mimic the DA signaling consistent with substances of abuse (Berridge et al., 2010; Liu et al., 2010; Volkow et al., 2011). DA signaling in the mesolimbic and mesocortical systems occurs in response to food and drug cues including the caudate nucleus, hippocampus, orbitofrontal cortex (OFC), amygdale, striatum, and the insula; where a release of DA occurs, the neurotransmitter integral to the reward system (Dagher, 2009; Kenny, 2011; Wang et al., 2001).

When comparing substance abuse with the rewarding properties of food, it is important to define and differentiate the terms *liking* and *wanting* (Berridge, 2009; Berridge et al., 2010; Finlayson, Dalton, & Blundell, 2012). *Liking* or consummatory reward is the pleasurable feeling associated with the consumption of a reward (Davis et al., 2009) and associated with the opioid hotspots of the NA; *wanting*, represented by the mesolimbic DA system, is a subjective desire or an appetitive reward that will induce a goal-directed behavior or incentive motivation to obtain a reward (Corsica & Pelchat, 2010). The incentive salience theory suggests that the main function for DA is the *wanting* for hedonic rewards in addiction (Berridge, 2007; Volkow et al., 2011), similar to craving, stimulating food procurement. Incentive salience *wants* can occur

without conscious awareness (Berridge, 2009) and are often cue-dependent. While not all researchers would agree that food qualifies as an addictive substance (Albayrak, Wolfe, & Hebebrand, 2012; Pandit et al., 2011; Salamone & Correa, 2013) researchers will agree that FA involves a compulsive pattern of use in spite of negative social and health consequences (Taylor, Curtis, & Davis, 2010). Compulsive use involves the shift from liking to wanting and occurs after continuous exposure to highly palatable foods (Koob & Volkow, 2010).

In excessive overeating, the homeostatic controllers of eating are overridden by the powerful hedonic stimuli, which can include highly palatable foods, social gatherings, and cue-dependent reward (Cameron & Doucet, 2007). By constant exposure to stimuli in the environment, which signal reward availability, the best of dieting intentions can be overcome (Guy et al., 2011). Unfortunately for obese and individuals with FA, high fat and sugar foods are more reinforcing than vegetable snacks (Epstein, Smith, Vara, & Rodefer, 1991). Mood disorders will also affect hedonic and homeostatic aspects of food intake (Lutter & Nestler, 2009), often leading to weight gain. In the current food environment, it is not difficult to understand that dietary control remains elusive for many individuals.

Other neurobiological mechanisms possibly responsible for compulsive habitual behavior involve dysfunction of the orbitofrontal cortex (OFC; Everitt et al., 2008). The OFC plays an important role in appetite and eating (Davis & Carter, 2009). Reduced activity in the lateral OFC corresponds to reduced DA receptors in the striatum resulting in reduced inhibitory control (Gearhardt, Yokum, et al., 2011). The

OFC, a region of the prefrontal cortex (PFC) is noted for its contribution to self-control, goal representation, and inhibition; reduced activity in this area is associated with impulsive traits and compulsivity (Smith & Robbins, 2012). This may explain the poor decisions and lack of sensitivity to the consequences of poor decisions symbolizing addictive behaviors (Koob & Volkow, 2010). Progressive development of addiction has been described through a strengthening of the cortico-striatal habit circuitry and a decrease in executive control over behavior (Kalivas, 2008). It has been shown that lower executive function is associated with less control over emotional-based eating in the absence of hunger (Pieper & Laugero, 2013). Hedonic overeating has been associated with an uncontrollable urge to consume with devolution of goal-directed behavior to habitual behavior (Neal, Wood, Wu, & Kurlander, 2011). In summary, the behavioral evidence of FA has been attributed to neurobiological pathways shared with other substances of abuse.

Evidence and Research: FA

Food addiction can vary from the extreme salience of modern foods which key into brain *liking* and *wanting* mechanisms at intense levels (Davis & Carter, 2009) to the behavior of extreme overeating which borders on compulsion (Gearhardt et al., 2009b). Some try to equate FA with substance dependence as defined in the *DSM-IV-TR* (APA, 2000; Gearhardt et al., 2009a; Ifland et al., 2009). FA is defined by using the same criteria as substance dependence (APA, 2000), but chronic overeaters and those suffering from other eating disorders, including BED and bulimia nervosa (BN), also meet these criteria (Corsica & Pelchat, 2010; Davis & Carter, 2009; Gearhardt et al.,

2012). In fact, in a recent study, 47.1% of BED patients in a treatment center and 83.6% of BN patients in the same treatment center met the diagnostic criteria for FA (Gearhardt, Boswell, & White, 2014). Although criteria are met for dependence as set out in the *DSM-IV-TR* (APA, 2000), FA is not officially recognized as a diagnosis or eating disorder; it only fits the criteria for substance dependence.

Including clinical symptom similarity, there are also strong neurobiological parallels between FA and substance abuse. Drugs of abuse activate postsynaptic DA D1 and D2 receptors on target neurons due to increased DA in the nucleus accumbens (NA; Pandit et al., 2011). Elevated DA levels foster motivation to engage in rewarding behaviors or the *wanting* more than the *liking* of reward (Berridge, 2007). Sweet and high-fat foods will mobilize DA as well as endogenous opioids establishing hard-wired pathways for craving in the ventral tegmental area (VTA) and the NA, identified by functional magnetic resonance imaging (fMRI) (Gearhardt, Yokum, et al., 2011; Pelchat, Johnson, Chan, Valdez, & Ragland, 2004). Over-stimulation of reward circuitry due to the excessive consumption of highly palatable foods can induce a state of reward hyposensitivity and compulsive-like eating (Johnson & Kenny, 2010). This hyposensitivity is apparent in individuals with FA as they have a reduced DA D2 receptor availability (Stice et al., 2010; Wang et al., 2001). With the reduced ability to stimulate the reward pathway, it is suggested that those with FA will indulge in excessive food intake to stimulate depressed circuits (Kenny, 2011; Meitus-Snyder & Lustig, 2006). Variations in the DA D2 receptor gene have been implicated in the hedonic-enhanced reactivity of those suffering from BED (Davis et al., 2009). DA D2

receptors are also blocked by antipsychotic drugs, which may explain one risk factor for obesity (Volkow & Wise, 2005).

One problem with the FA involves the priming effect where a single dose of trigger food kicks off the overeating habit. Animal models have been used to study the neurobiology of reinstatement of drug-seeking behaviors following detoxification (Kumaresan et al., 2009; Soria, Barbano, Maldonado, & Valverde, 2008). The importance of this information gives credence to the necessity for avoiding foods and advertisements that may trigger the overeating habit through DA release; particularly if they are used to attenuate stress.

Measurement of FA

The YFAS (Gearhard et al, 2009a) was developed to operationalize FA by comparing eating behaviors to substance-dependence. The YFAS explores behavioral indicators of food dependence in humans and is derived from the rich biological support for food dependence in humans and animals (Avena, et al., 2008; Benton, 2010; Davis & Carter, 2009; Taylor, Curtis, & Davis, 2010; Trinko et al., 2007). The YFAS provides two scoring options: a symptom count version and a diagnostic version (Gearhardt, et al., 2012). The symptom count version evaluates the number of dependence symptoms experienced in the previous 12 months; whereas the diagnosis of a clinically significant threshold is met when three or more symptoms are present during the previous 12 months and significant impairment or distress is endorsed. The most frequently found symptom in the normative sample was the inability to cut down on food intake or worry over inability to cut down on food intake (Gearhardt et al.,

2009b). The YFAS is able to tentatively diagnose FA and enumerate up to seven symptoms of FA. Although there is an overlap of FA criteria with emotional eating symptomology, BED (Gearhardt et al., 2012), and BN (Gearhardt et al., 2014), FA measures a distinct and different phenotype of eating pathology (Davis et al., 2011).

Current studies utilizing the YFAS. Davis et al. (2011) measured FA in a sample of 71 obese adult women aged 25-45 years and assessed BED, depression, attention deficit hyperactivity (ADHD), impulsivity, addictive personality traits, hedonic eating, emotional eating, food cravings, and snacking on sweets using questionnaires and rating scales. Davis et al. found that 18 of the 71 adults qualified as food addicts using the diagnostic version of the YFAS. The sample of food addicts also had a greater co-morbidity of depression, BED and ADHD symptoms. Those with FA had greater emotional reactivity than nonfood addicts and tended to *self-soothe* with food.

Burnmeister et al. (2013) evaluated FA based on the YFAS in a seven-week weight loss trial. The researchers found that 19% of their 57 adult participants met the diagnostic criteria for clinical food dependence. Of the participants with FA, there was a higher self-report of binge eating behaviors, emotional eating, and difficulty controlling one's eating. Food-addicts were more likely to fear fat and discriminate against those who are obese. Participants who had higher symptoms of FA lost less weight following the 7-week behavioral weight loss treatment.

A recent study (Clark & Saules, 2013) aimed to validate the YFAS with weight loss surgery (WLS) patients. Convergent validity was found between emotional eating

and binge eating with YFAS measures. Discriminant validity was supported in that YFAS scores were not associated with substance abuse, behavioral activation, and behavioral inhibition. Incremental validation was supported by accounting for additional variance in binge eating scores beyond that predicted by emotional eating and disordered eating behaviors. Those meeting the FA criteria had poorer weight loss outcomes. The present study further validated the YFAS as a tool to predict poor dietary adherence.

Meule and Kubler (2012) used the YFAS in an online study to compare scale scores with food cravings. All participants identified with FA using the YFAS showed higher scores on all food craving subscales except for anticipation of positive reinforcement that occurs from eating. Food-addicted individuals do not expect positive reinforcement after food consumption, which is similar to the expectations of chronic drug abusers.

Gearhardt, Yokum, et al. (2011) conducted the first fMRI study of YFAS identified food addicts in an effort to determine if neural activation mirrored that of individuals with substance dependence (Volkow, Fowler, Wang, Swanson, & Telang, 2007). Individuals with high vs. low FA symptoms were compared as few subjects qualified for a diagnosis of clinical food dependence. Individual participants were evaluated on an anticipated food reward (Chocolate Milkshake) and the actual consumption of the food reward. The authors failed to find a difference in reward circuitry between high FA and low FA symptom count. On receipt of the food reward, those with high FA symptom counts showed a reduced activation in the lateral OFC

which could be interpreted to indicate less inhibitory control during food intake or a reduced satiety response during food intake. It is clear that neurobiological evidence of FA is in its infancy and future studies will add to the growing information of FA.

Eichen, Lent, Goldbacher, and Foster (2013), in a recent study, found that participants meeting the diagnostic criteria for FA had significantly higher Beck depression inventory (BDI-II; Beck, Steer, & Brown, 1996) scores than those not diagnosed with FA. All participants in the Eichen et al. (2013) study were adults seeking weight loss. Only 15.2% met the YFAS criteria for FA.

More research of FA is needed but what little research there is available is worthy of further study (Avena, Gearhardt, Gold, Wang, & Potenza, 2012). What is clear is that there is a unique population of individuals who consistently report symptoms from eating certain foodstuffs, which can be aligned with the *DSM-IV-TR* (APA, 2000) criteria for substance abuse. The present study was the first study to explore FA from a qualitative perspective of those suffering from this eating disorder.

Qualitative Research: Obesity and Dietary Adherence

This review would not be complete without mention of previous qualitative research with the obese population. Qualitative research has yet to reach the population suffering from FA. There have been several qualitative studies related to obesity and weight maintenance (Adolfsson, Carlson, Unden, & Rossner, 2002; Barker & Cooke, 1992; Byrne, Cooper, & Fairburn, 2003). Qualitative studies are particularly useful when trying to explore issues when the variables are unclear. Obesity and FA involves many complex phenomena and defies one unifying scientific explanation when so

many factors contribute to its etiology (McFadden, 2010; Wang et al., 2012). Behavioral, psychological, environmental, physiologic, metabolic, and genetic explanations have contributed to the causative factors associated with obesity (Byrne et al., 2003; Davin & Taylor, 2009); only recently have addiction theories captured the attention of researchers (Dagher, 2009; Davis & Carter, 2009; Gearhardt, Corbin, & Brownell, 2009a, 2009b; Ifland et al., 2009). Rarely has the information contributed by the neuroscience community been addressed when examining obesity issues and in particular issues relating to dietary control and distress experienced by the FA. Most qualitative studies relating to obesity and the loss of control over eating do not recognize the possibility of FA as contributing to the problem (Ogden, Clementi, & Aylwin, 2006; Zijlstra, Boeije, Larsen, van Ramshorst, & Geenen, 2009); yet one of the central themes in the personal histories of weight problems is the lack of control over food consumption.

Psychological factors in previous qualitative studies have been implicated in dietary relapse in obese individuals (Byrne et al., 2003). The weight regainers did not adhere to their diet and subsequently failed to maintain weight loss. Cognitive and affective factors found among the regainers included dissatisfaction with their lower weight, lack of vigilance regarding weight control, and the tendency to evaluate self-worth in terms of shape and weight. These individuals also responded to adverse life events by eating to regulate mood; they were emotional eaters. The Byrne et al. study gave little attention to the possibility of neurobiological reasons creating the *need* for the return to eating and weight regain. Barker and Cooke (1992) concluded that

successful slimmers needed to make long-term changes in their diet and health educators needed to develop new materials to encourage and support long-term adjustments to eating behavior. Psychological factors such as depression, emotional eating, and food addiction are never considered in these earlier studies. One participant in Barker and Cooke's study reported, "I am addicted to food. It must be like an alcoholic feels, he can't pass the pub or an off license, and I'm like that with a cake shop or a sweet shop" (p.118). Clearly this supports the neurobiological evidence of FA.

A recent qualitative study explored childhood obesity and sought to understand the reasons for weight loss failure (Pretlow, 2011). The researcher was able to communicate with the participants over the Internet and felt that sensitive information was collected that would not have occurred through face-to-face interviews. The researcher felt that the youth satisfied the criteria for substance dependence (APA, 2000) as they fulfilled at least three criteria. Most of the teens and preteens in the study were unable to control their food intake and reported a dependence on eating similar to that of the dependence on alcohol, tobacco, and other drugs. Pretlow documents addiction to '*comfort*' foods as described by the youth. He also summarized the study by pleading for additional research with FA in the belief that better treatment methods may be defined. He also expressed the desperate circumstances of these children with their food problems, a loss of control and helpless to overcome the cravings. Further research into the classification and diagnosis of FA can only help this vulnerable population.

Obese individuals have voiced their concerns with dietary interventions with respect to adherence (Thomas et al., 2008). Many dieters prefer support systems like group meetings and 80% of participants in Thomas et al.'s study felt that dieting was necessary to lose weight. Weekly meetings met with better success than bi-monthly meetings in previous research (Rushing, 2005) and often the expense of commercial diets are cited as problematic (Thomas et al., 2008). Many complained of the inability to take control of their personal weight loss; this supported the theory of addiction and compulsive uncontrolled emotional eating, interrupting their ability for dietary adherence.

Conclusion

This literature review introduced the concept of FA and how it resembles the criteria for substance dependence. Although FA is not a recognized eating disorder, it affects many individuals. The review discussed the problem of overweight and obesity worldwide. Obesity is a very complex problem and the epidemiology, health costs, physical and psychological consequences, and its relationship to depression and stress are discussed. The treatment of obesity is also reviewed. The factors causing overweight and obesity are complex and comprise an interaction between biological, genetic, environmental, and behavioral factors (Marti, Martinez-Gonzales, & Martinez, 2008; Wang et al., 2012). The heterogeneity of obesity alone is reflected in the difficulty in treatment and decreasing its prevalence (Karelis et al., 2004). The previous review has highlighted many of the biological factors, which may interfere with weight loss and maintenance. FA, although representing only a portion of the

obese and overweight population, may be one avenue leading to poor dietary adherence. Those experiencing addictive-like relationships with food are under the control of neurological mechanisms driving the compulsive habitual behaviors to obtain food (Johnson & Kenny, 2010). The diagnosis of FA has recently been made available with the YFAS and this tool has allowed for the identification of those suffering an addictive-like relationship with food (Gearhardt et al., 2009a). This review has summarized many of the studies utilizing the YFAS and it is clear that there are a number of individuals suffering the consequences of FA. The review also discussed the qualitative studies of obese and overweight women and the findings related to successful weight loss. Clearly more research is needed to understand FA and this study described the personal experiences of women who have an addictive relationship with food.

The next chapter will go into detail about the methodology used in this study to qualitatively investigate the personal experiences of women, who fit the criteria for clinical food addiction according to the YFAS.

Chapter 3: Research Method

Introduction

The concept of food addiction (FA) or food dependency (FD) has been developed to partially explain the exploding obesity crisis. The construct of FA is based on the *DSM-IV-TR*'s description of substance dependence (APA, 2000; Gearhardt et al., 2009b) and the recently developed YFAS. The YFAS was developed to operationalize FA and increase the methodological strength of FA research (Gearhardt et al., 2009a). The YFAS provides a potentially valid scale to identify individuals suffering from the symptoms of FA and those suffering from clinically significant impairment or distress as a result of their relationship with food (Davis et al., 2011). Several studies using the YFAS have identified characteristics of women with clinical FA and symptoms of FA (Burmeister et al., 2013; Davis et al., 2011). A significant finding in these studies provides evidence that FA undermines efforts to lose weight through dieting, and contributes to obesity (Eichen, Lent, Goldbacher, & Foster, 2013; Jin, 2012).

The purpose of the current study was to explore the personal experiences of obese and overweight women experiencing FA, as described in their own words. Although FA is not a recognized medical condition, nor is it recognized as an eating disorder in the current *DSM-IV-TR* (APA, 2000), current research supports the presence of FA and that it resembles other forms of addiction (Avena, Gold, Kroll, & Gold, 2013; Shriner & Gold, 2014). In order to understand factors contributing to the current obesity epidemic, it is worthwhile to explore the experiences of women scoring

as clinically food dependent on the YFAS. Results were consistent with the proposed model of FA, providing further validation to the nascent YFAS.

Previous research has highlighted the prevalence of FA in the community (Eichen et al., 2013; Gearhardt et al., 2014). For a diagnosis of FA, individuals experienced problems in their ability to function effectively and significant distress due to food and eating (Gearhardt et al., 2009a). This study utilized a qualitative approach to understand the phenomenon of FA. In particular, I explored the relationship between participants' FA and their experience with food and dieting from an idiographic, phenomenological perspective.

In Chapter 3, I describe the research design and methodology. Here is a summary of the inclusions.

1. The qualitative approach of IPA and why this tradition was chosen was discussed.
2. My role in this qualitative approach was explained, including my role in the interviewing process and any biases I may have.
3. The selection of participants with the use of the YFAS was described.
4. A thorough discussion of the YFAS.
5. Collection of data and analysis per the requirements of IPA (Smith, Flowers, & Larkin, 2009)
6. The trustworthiness of qualitative research was explained.

Research Design and Rationale

The purpose of the present study was to explore the dietary experiences of adult women scoring as clinically FD on the YFAS. In particular, their experiences with dieting and the barriers they confronted while trying to restrict their food intake were of interest. I was interested in listening to dieters' experiences in their own words and therefore chose a qualitative approach. Very little is understood about dietary adherence (Greenberg et al., 2009) and even less is known about the experience of women with FA and their battles to control food intake. Qualitative research has been conducted with eating disorders (Fox, Larkin, & Leung, 2011; Kally & Cumella, 2008; & Mulveen & Hepworth, 2006), and subjective accounts of these experiences have been revealing (Larkin & Griffiths, 2002). The studies focused on identity issues and the personal meaning of eating disorder symptoms in eating disordered individuals. Fox et al. (2011) found that personal accounts of eating disordered individuals revealed the eating difficulties were experienced as functional, there were negative effects of eating difficulties, and individuals felt ambivalence towards their eating difficulties.

Because FA is not a recognized eating disorder, and the means to identify those suffering with FA symptoms is very recent, the voices of individuals suffering from the symptoms of FA had yet to be heard. Interview questions explored the experiences of obese and overweight participants with food issues and provided insight into their understanding of their inability to control food intake, their food cravings, and the

distress experienced due to food and eating. In particular, I probed the distress caused by eating behaviors and problems in abilities to function effectively.

The research tradition chosen was IPA. IPA has been developed specifically within psychology (Smith, 1996, 2004) and focuses on understanding the *lived* experiences of the participants and how the participants make sense of their personal experience (Smith, 2004). IPA also provides for the researcher's perspective through a systematic approach to interpreting the participant's experience (Smith & Osborn, 2008). IPA is a relatively new qualitative research methodology and is still in the development phase (Clark, 2009). IPA was chosen for this study because it examines human lived experience by focusing on the individuals and their sense making of FA; it also allows for the interpretation of the experience by the researcher. This method was well described by Smith et al. (2009) and Finlay (2011), including the three underlying theoretical concepts. IPA is informed by phenomenology, hermeneutics, and idiography; in particular, it is strongly influenced by phenomenology and connects to the core ideas unifying the phenomenological philosophers (Husserl, Heidegger, Merleau-Ponty, & Sartre). From the outset, IPA concurs with Heidegger, in that it is an interpretative experience, rather than descriptive, and IPA attempts to further the intellectual current of phenomenology in the context of psychology. IPA explores in detail the processes through which participants are trying to make sense of their own experiences.

IPA is also strongly influenced by hermeneutic phenomenology due to the detective work required by the researcher to facilitate the coming forth of the

phenomenon of interest and then to make sense of it once it has happened. For example, the experience of FA involves the inability to stop eating once initiated. Most participants will not understand why these behaviors occur; yet the researcher has made sense of the experience with the information of the physiological processes involved in FA. Smith and Osborn (2008) suggested that IPA incorporates a *double hermeneutic* where the researcher is making sense of the participants, who are making sense of their experience. The researcher views the participant's experience through the researcher's experientially informed lens (Conroy, 2003). The researcher's own conceptions may complicate access to the participant (Brocki & Wearden, 2006) but are a requirement in order to make sense of the other personal world through a process of interpretative activity (Smith, 1996). IPA gets very close to the participant's personal experience by combining hermeneutics and phenomenology, becoming an interpretive endeavor for the participant and the researcher. Instead of describing the individual's experience, the IPA researcher understands the phenomenon through the lens of the individual in a specific context (Clarke, 2009).

The idiographic approach of IPA offered a detailed analysis of the lived experience of the individual identified by the YFAS as clinically food-dependent, the distress she experienced, and her inability to function effectively due to food and eating. The examination of the first single case was thorough and systematic, focusing on the particular before moving to another case analysis (Smith, 2004).

Following analysis, emerging themes were connected to existing psychological research theory relating to addiction, enabling readers to see how unique experiences

can enhance existing nomothetic research (Smith et al., 2009). In this research, food addicts, assessed by the YFAS, described their experiences with an addictive process with food. IPA gave the researcher the opportunity to examine the *lived experience* of the participant coupled with the researcher's reflective process of interpretation (Reid, Flowers, & Larkin, 2005). This unique methodology is ideally suited for exploring the experiences of a few individual voices to provide insight into the difficulties of FA. Obesity research has primarily been quantitative and although FA does not occur in all obese individuals, the qualitative approach allowed the researcher to view the inner experiences of participants with FA. IPA also allowed for the flexibility to explore beyond the addiction theories that drove the research and examine the possibility of new theories that may be relevant.

Role of the Researcher

As in any qualitative research effort, the role of the researcher must be clarified. The impact of the researcher on the research process is defined as reflexivity and refers to the influence the researcher may have in the collection and analysis of the data (Yardley, 2008). In the current study, I interviewed individuals who have been identified as clinically FA with the YFAS and I have clarified my role as the researcher.

I have always been interested in compulsive eating and as a teenager battled overweight and attempted many diets. Most of the members of my family are overweight or obese. I had a surgical procedure to restrict food intake many years ago when I was only 35 pounds overweight; however, I never managed to comfortably

control food intake. I am not overweight today and I do not qualify as a food addict on the YFAS although I do have three symptoms of FA. On the other hand, I understand addiction and the absolute loss of control over a pleasurable substance or activity. I understand the impulse to seek pleasure and avoid pain by medicating with a substance. I was a narcotics addict for many years and understand how a substance can steal an individual's life from him or her. I have watched how women with an addictive relationship with food have suffered from all the consequences of obesity; they are incapable of controlling their food intake. I would like to find a way to make a difference in the lives of women struggling with an unrecognized, yet disordered relationship with food.

Methodology

Participant Selection

Before any participants were recruited, I obtained Institutional Review Board (IRB) approval from Walden University and the IRB approval number was 02-05-14-0063984. Obese and overweight women (BMI >25) between the ages of 35 and 65 years were recruited in this investigation, as detailed below. I looked for a sample of obese or overweight women meeting the criteria for FA as determined by the YFAS. Not all obese women will meet the criteria for FA (Bumeister et al., 2013; Pedram et al., 2013) and several women were recruited to take the YFAS. Only women who met the criteria for clinical FA as determined by the YFAS were asked to participate in the interview portion of the study.

Participants were solicited from the city of Calgary, Alberta and the surrounding towns that I regularly visited. Flyers were placed in community food stores, community centers, gyms, local hospitals, public institutions, and pharmacies (see Appendix D). A contact e-mail and link to the survey in survey monkey was included in the flyers and advertisements. If the participants contacted the researcher, information was provided detailing the purpose of the study. By e-mail and through the consent form on Survey Monkey, I informed prospective participants that the YFAS measures food dependence and not addiction. FA, synonymous with food dependency, is not a recognized disorder; only recently have researchers discovered that there is a similarity of those suffering from food dependency and other dependencies on substances of abuse. Volunteers had two options: (a) be sent a package including the YFAS, a consent form, and a self-report questionnaire (see Appendix A & C), or (b) they completed the YFAS online through Survey Monkey. The participants who qualified as a clinically food-addicted according to the YFAS were recruited to participate in semistructured interviews, as required by IPA (Smith et al., 2009) providing they completed the consent form (Appendix B). Six women were recruited to complete the interview portion of the study.

Inclusion criteria required all participants to be fluent in English, as identified by the self-report questionnaire (see Appendix C). Exclusion criteria included a current diagnosis of any psychotic disorder, substance abuse, alcoholism, or a serious medical/physical illness such as heart disease, cancer, kidney failure or insufficiency, or paralysis. Individuals dealing with major mental and health issues were not

included, as their inclusion would interfere with the homogeneity of the small group of interviewees.

In the second informed consent, I requested that participants be willing to discuss their food experiences with me; the six participants selected for the interview portion of the study filled out the second consent form (Appendix B). Once participants were chosen for the interview portion of the study, I met with them at a mutually agreed location, which was my home, their home, or a nearby friend's home. All interviews were recorded for data analysis and took approximately 90 minutes. Participants were given a pseudonym and all their information was kept completely confidential and only I had access to the raw data.

Instrumentation: YFAS

The YFAS is a 25-item measure designed using the seven symptoms of substance dependence criteria in the *DSM-IV-TR* (APA, 2000) and other scales used to assess behavioral addictions including exercise, gambling, and sex (Gearhardt et al., 2009a). Substance dependence symptoms are revised to apply to eating behaviors: (a) tolerance, (b) withdrawal, (c) continued use despite problems, (d) involvement in important life activities reduced or stopped, (e) a great effort to obtain and recover from substance, (f) persistent desire for substance with repeated unsuccessful attempts to quit, and (g) substance taken in greater quantity and longer than intended. The YFAS has two scoring options including a continuous symptom count version and a dichotomous diagnostic version. Fifteen items are scored on a Likert scale scoring from 0 to 4, with 0 (*never*), 1 (*once a month*), 2 (*2-4 times a month*), 3 (*2-3 times a*

week), and 4 (*4 or more times daily*). Eight of the items are dichotomized, such that participants who have never experienced the symptom would assign a value of 0 and those reporting experiencing the symptom were assigned a value of 1. For a participant to qualify as clinically food-dependent or a diagnosis of FA, she must score three or more symptoms and significant impairment and/or distress.

Standardization. The original standardization of the YFAS incorporated a population of college students (Gearhardt et al. 2009a). It has not been validated in other populations and the response rate was <25%, opening the possibility that the sample was not representative of the original population; also, there were few obese members in the population.

Reliability. Internal analysis shows that the items not including the clinical significance items in the YFAS have a good internal reliability (Kuder-Richardson $\alpha = .86$) and all criteria including the dichotomous diagnostic criteria showed adequate internal reliability (Kuder-Richardson $\alpha = .75$; Gearhardt et al., 2009a). Davis et al. (2011) studied a population of obese adults and found good internal consistency (Cronbach's $\alpha = .92$). Cronbach's α was .90 in a recent study by Burmeister et al. (2013).

Validity. Convergent, discriminant, and incremental validity have been shown for the YFAS (Gearhardt et al., 2009) and recent studies have shown that FA is similar to but separate from other forms of eating pathology (Burmeister et al., 2013; Davis et al., 2011). Although this scale is in its infancy it had the ability to identify FA for the present study.

Semistructured, Open-Ended Interview

The interview schedule was developed according to the principles of IPA (Smith et al., 2009); the average duration was 90 minutes. All interviews were recorded and transcribed verbatim. I had the results of the YFAS and used them to guide the questions regarding FA symptoms. Although questions were modified according to the disposition of the participant, the following questions in the next section are examples of the question format. The nature of IPA allows for the researcher to adjust the questioning if important information applicable to the study presents itself during the interviews.

Interview questions. The research questions I was trying to answer included the following: What are the experiences of dealing with a food-dependency, and how do people identified as food-dependent or food-addicted with the YFAS make sense of their experiences with dieting? A series of questions are listed below and provide a rough guideline to the questions that were asked of the participants.

1. Tell me briefly about your experiences with overeating. What is your family history of overeating/overweight and are any addictions to drugs and alcohol present?
2. You have qualified to participate in this interview based on the scoring of the YFAS. The YFAS is a newly developed survey to measure your relationship with food and the possibility that you are dependent on food. What are your feelings about your relationship with food?

3. Based on the YFAS, you score as food dependent. Does this knowledge change your perception of your weight and/or weight loss problems?
4. What is your experience with dieting? What diets have you tried and how have they worked or not worked for you? What do you think is your worst obstacle when dieting? Are particular foods problematic and if so, which ones? What, if anything, influences your decision to seek dietary or other treatment for your problem with food and eating?
5. You have expressed some of these symptoms in your YFAS answers. Which of these is the most problematic for you and how does it affect you?
(a) loss of control; (b) persistent desire with unsuccessful efforts to cut down; (c) a great deal of time spent in activities related to obtaining, using, or recovering from overeating; (d) giving up important activities; (e) continued use despite physical/psychological problems; (f) tolerance; and (g) withdrawal.
6. How does your experience with food affect you emotionally?
7. How does food advertising affect you? If it does affect you, how do you cope with it?
8. According to Question 16 on the YFAS, you experience problems in your ability to function effectively. How would you describe them?
9. Does your relationship with food affect any other relationships in your life?

10. I would like your input regarding the current opinion that food creates a dependency. Do you have any suggestions for others as to conquering a food dependency, which you have not expressed before?

Procedure

The qualitative interviews with participants were in accordance with IPA methodological guidelines for data analysis (Smith et al., 2009). Six women who qualified with clinical FA participated in semistructured interviews. The interview took place at my home, the participant's home or a nearby friend's home. The interview began with an explanation of the study, the limits of confidentiality, and what may become of the research and whom it may benefit. Participants were given a pseudonym to protect their confidentiality. Each interview was recorded with a Sony digital recorder and a verbatim record of the interview was made. I made a transcript showing all the spoken words of the participant and myself.

Data Analysis Plan

Analysis of the interviews was an inductive and iterative cycle, not to mention complex, and is described by Smith et al. (2009). The process began with a line-by-line analysis of the participant's experience. This required total immersion in the interview transcripts and listening several times to the audiotapes to become completely familiar with the participant's experiences. After this intensive process, emergent patterns (i.e., themes) were identified and the convergence and divergence of developing patterns were written in the margins of the transcribed document. I developed dialogue with the participant's food experience. My knowledge about

addiction was incorporated into the coded data to interpret what the participants were experiencing and this comprised the interpretative part of IPA (Larkin, Watts, & Clifton, 2008).

The participants may not understand the phenomenon of FA and they will not understand the theory behind their motivation to overeat. IPA is particularly useful in clarifying what the participants may be experiencing. The identification of FA is relatively new but research confirms that FA contributes to poor dietary adherence and obesity (Burmeister et al., 2013; Davis et al., 2011; Eichen et al., 2014; Jin, 2012; von Deneen & Liu, 2011). As a result, individuals suffering from FA are aware of their behavior, but may not be aware of what motivates them to overeat (Gearhardt, Corbin, & Brownell, 2009a). In IPA, the interpretative role of the researcher is central to data analysis. Typically, research questions are guided by earlier theories; yet often in qualitative analysis, the researcher can be surprised by the emerging themes (Ogden et al., 2006).

Issues of Trustworthiness

The centrality of the researcher in IPA precludes the traditional evaluation criteria such as representative samples and statistical analyses (Yardley, 2000) that are the standards of quantitative research. As a result, qualitative researchers have designed their own methods of evaluating validity, reliability, and reproducibility or criteria recognized as appropriate to each qualitative tradition; possibly even these terms should be replaced (Fade, 2003; Mays & Pope, 2000). Several researchers have proposed strategies for assessing quality in qualitative research (Conroy, 2003; Fade,

2003; Guba & Lincoln, 2005; Mays & Pope, 2000; Patton, 1999, Smith et al., 2009; Whitemore, Chase, & Mandle, 2001; Yardley, 2008). Yardley (2000) proposed four broad principles used to assess the quality of qualitative research and these are the guidelines that seem appropriate for evaluating the quality of IPA studies (Smith et al., 2009).

Credibility (Sensitivity to Context; Commitment and Rigor)

Credibility was derived through Yardley's (2000) first two principles. Principal one involves sensitivity to context, sensitivity to the participant interviews, and sensitivity to the literature on the topic. A good interview is extremely important and requires skill, awareness, and dedication. A good interview develops rapport and places the participant at ease. IPA research shows sensitivity to the data and a good IPA study has a considerable number of verbatim extracts. A good interview allows the reader to follow the interpretations being made (Smith et al., 2009) and allows the reader to see how close the interpretation refers to what the participants are saying. Sensitivity to the extant literature allows the orientation of the study and assists in the interpretation of the phenomenon, in this case the food addiction. Credibility of this IPA research was also found through *member checking* (Mays & Pope, 2000) when the study participants were invited to review the initial analyses and give the researcher their opinion on the interpretation of their narratives. I believe the additional contact with the participants added to the truth-value of the research and was one of the most critical techniques for establishing credibility (Lincoln & Guba, 1985).

Yardley's (2000) second broad principle is commitment and rigor. Rigor is demonstrated when the collection of data is thorough and when the choice of participants, which are relatively homogeneous, are suited to answer the research question. Rigor is demonstrated in the interview process that is deemed to be a delicate balance between closeness and separateness (Smith et al., 2009). In IPA research, the researcher has an interactive and dynamic role; there are several interpretations and the themes examined may be a subset of total themes. The use of *interrater reliability* only serves as an agreement between two people (Brocki & Wearden, 2006) and validity checks in this manner will not prescribe the singular true account due to the presence of researcher subjectivity (Yardley, 2000). In fact, reliability may be inappropriate criteria for measuring qualitative research when the purpose of the research is to offer only one of many interpretations.

Transparency and coherence. The third principle of Yardley (2000) involves the presentation of the data and analysis in a way that details every step of the process. Reflexivity involves the sensitivity to the ways in which the research is shaped by the researcher (Mays & Pope, 2000) and will include a discussion of the experiences and motivations of the researcher to undertake this investigation – the study of food addiction among adult women. Personal and intellectual biases need to be made at the outset of any research as well as the characteristics of the researcher. Because IPA is based on the interpretation of study participants, it is important to discuss personal values at the outset of the study. I have a background in obesity research and drug addiction; I am motivated to study food addiction because of family history and a

belief that biological variables and emotional eating can interrupt the ability to restrict energy intake. I do not believe that overweight and obesity is entirely due to eating too much and exercising too little (Taubes, 2011). I have battled drug addiction in the past and although I am not clinically food dependent, I suffer from three FA symptoms including loss of control over certain food substances.

Smith et al. (2009) supported the use of an independent audit to provide powerful support for validity in IPA research. I was able to recruit the help of many food-addicted women attending a 12 Step meeting for FA, to validate the interpretations I made. All materials are available for an interested party to follow the chain of evidence from the initial documentation to the final report. In an IPA audit, the trail of evidence includes the initial research question, the research proposal, an interview schedule, original audio tapes, transcripts of the audio tapes, tables of themes and superordinate themes, any coded sheets, draft reports, and the final report. Lincoln and Guba (1985) referred to this audit as the documentation that allows authentication.

Impact and importance. A real test of validity is whether the research tells the reader something of importance. The reader can only assess this, but research with the lived experience of food addiction among obese and overweight women has not been reported in the literature. Listening to the voices of food-addicted women will definitely impact the community and have implications for social change. It is possible to begin research to describe existing problems with the end result of creating new solutions.

Transferability (external validity). IPA research is involved in an accurate ideographic representation of only a few cases. It is concerned with developing the *essence* of experience while describing that experience using the extant literature (Smith & Osburn, 2008). It is not concerned with making generalizations or transferring the results to larger populations. IPA research is what it is and that is a complete and thorough explanation of experiences. Ideally, the experience of one small group will be compared in another research project to another group with different demographics. This will lead to the accumulation of different groups of people with similar experiences. Qualitative interviews can provide rich insights into patients suffering from a variety of medical problems; in the present study, a small piece of information will be added to the growing libraries of individual experiences with health issues (Ziebland & McPherson, 2006).

Data Interpretation

The analysis of the results section of an IPA analysis is by far the most important section. It will begin with a list or table of themes clustered together forming superordinate themes. Usually the writing will involve taking the superordinate themes and one by one writing them up. IPA involves a two-part analysis. First I gave a detailed account of the transcript extracts and the subsequent interpretations from that text. The next step involved an interpretation of data and themes represented by the participants' accounts. Each new theme was grounded in the transcript or verbatim text of the participant. IPA allows the researcher to attribute meaning to the meaning the individual ascribes to the phenomenon (Biggerstaff & Thompson, 2008). In this

interpretative stance, it was possible to gain access to an individual's cognitive world. If these themes were supported by the literature and theory in the literature review, the participant's experience was interpreted through these theoretical models. For example, if the experiences of participants support the model of stereotype threat (Seacat & Mickelson, 2009), their experiences can then be interpreted using this theory. If emerging themes represent something different than represented in the earlier literature review, I interpreted these themes based on new literature and theory supporting these possibly unexpected themes (Ogden et al., 2006), which in turn informed interpretation.

The present study was designed to use IPA to explore the experiences of obese and overweight individuals' personal meanings and sense making of their present condition with a focus on their experiences with FA. The researcher plays an intricate role in interpretation of the participant's account in IPA; therefore, it is very important that the available studies that have employed similar methods and analyzed similar topics are thoroughly understood (Yardley, 2000). I have read several papers utilizing the IPA and phenomenology methodologies with obesity concerns (Adolfsson, Carlson, Unden, & Rossner, 2002; Barker & Cooke, 1992; Ogden et al., 2006; Ogden & Sidhu, 2006; Sabiston et al., 2009; Thomas et al., 2008; Wysoker, 2005; Zijlstra et al., 2009). Articles written by the founder of the IPA (Smith, 2004; Smith & Osborn, 2007) also helped in the analysis and interpretation of the raw data.

To ensure that the participants' perspectives are reflected in data interpretation, I invited all the participants to review the transcribed interviews and my interpretations

to allow their analysis and input. This ensured the truth value (Conroy, 2003) when participants were able at all times to review their narratives and to comment on the interpretation of themes.

Ethical Procedures

The present study required IRB approval. The ethical concerns were that women might not be familiar with food dependency and terms such as FA. This was explained in full to women selected to participate in the study, although as it turned out, many of them were familiarized with FA. The terms FA and food-dependency have appeared in the popular literature for many years (Sheppard, 1989). However, the terms were usually not understood by most women as was revealed by the participants in this study. A scale to identify women with a syndrome similar to chemical dependency has only recently been made available with the YFAS (Gearhardt et al., 2009a). Recent neurobiological research has demonstrated that those scoring high on the YFAS have similar brain MRIs to those suffering from chemical dependence (Gearhardt, Yokum et al., 2011). However, all women were made aware that FA is not a recognized medical disorder, nor is it a recognized eating disorder. Overeating can mimic a form of addictive behavior in some women and I have attempted to identify and evaluate these women to further understand their symptoms. Any women who were interested in more information about FA would have been directed to literature and professionals who could address these issues. However, as it turned out, all the women interviewed were comfortable with the FA terminology.

Other ethical concerns were also addressed.

1. All participants were given a pseudonym to protect their personal identities.
2. I was the only person having access to the audio recordings and the subsequent transcripts and analyses.
3. The data, including audiotapes and all transcripts, was secured in a locked fireproof cabinet and will be kept for 5 years. After 5 years the data will be destroyed.
4. Membership in a 12 Step program is developed around the principal of anonymity. The program itself is not anonymous and the members of the program that were interviewed were confident that their anonymity was preserved, due to the use of pseudonyms.

Summary

Obesity is an escalating public health problem and most treatment plans are ineffective. Recently the YFAS has been developed to identify individuals with a food dependency that resembles the biology and behavior of substance dependence. Although food dependency or FA is yet to be recognized as an eating disorder, investigation of this phenomenon is worthy of further study. Those rating high on the YFAS are prone to obesity and loss of control of their eating behaviors. Qualitative study of women rating high on the YFAS and rating as clinically food dependent, has never been done. The current study explored the experiences of six women experiencing FA as defined by the YFAS. The information learned in this study will be

used to inform future research and possible treatment plans for this condition. It will also contribute to validating the YFAS and the use of this scale in future research.

Chapter 4 will introduce the participants in this study. The results of the interviews with the six participants are listed according to the five major themes extracted from the interviews. The major themes were supported by the participants' direct quotes.

Chapter 4: Results

Introduction

The purpose of this study was to explore the phenomenon of FA as experienced by women identified as clinically food-dependent with the YFAS. The YFAS is a newly developed and validated tool to operationalize FA (Gearhardt et al., 2009a). Although FA is not recognized by the *DSM-IV-TR* (APA, 2000) or the *DSM-5* (APA, 2013), as a mental disorder, nonetheless, the phenomenon continues to generate interest in the medical community (Shriner & Gold, 2014). The YFAS is based on the diagnostic criteria for substance dependence in the *DSM-IV-TR* (APA, 2000) and compares food-dependence to alcohol and drug dependence. Six women who met the YFAS criteria of FA were interviewed about their experiences of overeating and their feelings about the diagnosis of FA, as provided by the YFAS. They were also asked about their experiences with dieting and FA symptoms, as expressed on the YFAS. In particular, how food affected their ability to function and the behaviors that caused significant distress due to FA were explored. The women were asked to provide their opinions on food-dependency and suggestions for other women suffering from similar problems.

This chapter presents the demographics of the six participants and briefly discusses the difficulty of gathering participants suffering from the phenomenon of FA, as defined by the YFAS. The process of the data analysis is discussed, including how the themes and superordinate themes were extracted from the interviews. The superordinate themes represent clustered themes and will be discussed in the following

section. Following that, the master themes, representing the most salient superordinate themes, are presented along with quotations that support them. The first two interviewees indicated that the questions were appropriate and afforded the information desired; therefore a pilot study was not necessary. The interview procedure was effective and as a result, the subsequent interviews were conducted in a like manner.

Setting

Because it was so difficult to recruit participants from posters placed throughout the city, it was necessary to explore other avenues. The city of Calgary has a fairly well attended program called Food Addicts in Recovery Anonymous (FARA). I discovered this program coincidentally while searching for Overeaters Anonymous (OA) meetings. FARA is a worldwide 12 Step program that follows the principles of Alcoholics Anonymous (AA). It requires the members to be abstinent from flour and sugar and practice controlled eating habits by weighing and measuring their foods. It is a relatively strict program, compared to AA, requiring the members to commit their daily menu plans to a food sponsor. By attending these meetings, I was able to recruit some participants and learn of others who had left the program. All participants were administered the YFAS and all satisfied the criteria for FA.

Demographics

The participants were between the ages of 35 and 65 and five of the six were White and one was Hispanic. All but one (Frannie) were married and all had been overweight or obese at one time and were at different stages of weight loss or weight

maintenance when interviewed. Table 1 gives the relevant demographics for the sample. All participants were given a pseudonym to protect their identity.

Table 1

Physical Characteristics of the Participants

Name	Age	Height	Top weight (lb.)	Goal weight (lb.)	Current weight (lb.)
Frannie	53	5'5"	250	135	160
Chris	60	5'3"	198	140	188
Amy	64	5'5"	285	135	135
Lynn	64	5'1"	195	139	185
Betty	42	5'7"	290	160	230
Emily	35	5'8"	330	160	330

Frannie and Chris were recruited from posters hung throughout the city and Amy was recruited from the FARA program where she has been almost 16 years. Lynn and Betty were once members of the FARA program, left the program, and regained most of the lost weight. At the time of writing, both participants had returned to the program and are having success at losing weight. Emily was a member of the FARA program, left the program, regained her weight, and returned to the program. At the time of writing, Emily has left the program again.

Data Analysis

Data analysis proceeded as required of IPA studies (Smith & Osborn, 2008). Each of the six interviews were transcribed word for word and placed in a table with room for exploratory comments in the right column and emergent themes in the left column. After rereading each transcript several times, emergent themes were placed in

a theme table with direct access to the exact words of the participant. Each participant was reviewed individually and each transcript was looked at in detail before moving to the next interview. The emergent themes of each participant were clustered together under superordinate themes and each was connected to the primary source material – the actual words of the participant. A final table of superordinate themes for the group was constructed where data was prioritized to focus on the salient themes, which all or most participants shared. Reduction occurred when some of the superordinate themes were not included in the final selection of master themes to be articulated. IPA was chosen because it focuses on *sense making* of the individual's own experience and how they find meaning in this experience whilst allowing the researcher to interpret the meanings the participants give to their experience (Smith & Osborn, 2003).

Results

IPA of the six semistructured interviews, explored the relationship clinically food-dependent women had with their food, and revealed five master or major themes. These themes were comprised of the most salient superordinate themes and form the remainder of this chapter. Each master theme was illustrated by verbatim extracts from the interviews. The master themes included (a) loss of control over food intake, (b) the need for external control to control food intake, (c), the presence of emotional eating, (d), experience and knowledge of FA and advice for others experiencing food dependency, and (e) problem behaviors creating stress.

Theme 1. Loss of Control over Food Intake

The interview questions that highlighted the loss of control phenomenon included questions involving experiences with eating, relationship with food, experiences with dieting, and probing the answers on the YFAS relating to loss of control with food and the unsuccessful efforts to cut down on their eating.

The *DSM-IV-TR* (APA, 2000) defines addiction or substance dependence as having 3 or more of the following 7 symptoms: (1) tolerance, (2) withdrawal, (3), using more than was intended, (4) persistent desire or unsuccessful efforts to control use, (5) a great deal of time spent obtaining, using, or recovering, (6) reduction in other important activities because of use, and (7) continued use despite knowledge of its causing a persistent or recurrent physical or psychological problem. Three of these diagnostic criteria relate to control: (3) using more than was intended, (4) persistent desire or unsuccessful efforts to control use, and (7) continued use despite knowledge of resulting persistent or recurrent physical or psychological problems. All participants expressed a difficulty of controlling their food intake, using more than was needed, and the inability to cut down their food intake represented by the many failed diet attempts. All of the participants had dieted many times only to be met with defeat, frustration, sadness, depression, and the state of helplessness they experienced. The extreme love of the food was one of the problems interfering with controlling their food intake.

Most participants experienced feelings of failure, anger, shame, hopelessness, and stress from not being able to control their food intake. They also reported that they

could not gain control of their food intake on their own. It seemed that food was the only thing they could not control.

- “I am a fighter and I hate to have something beating me, and food beat me...the food was beating me, the food was killing me. I couldn’t do nothing against it.”
(Lynn)
- “The pull to eat food is greater than the, the um desire to ah, ah be vigilant and it’s hard to be vigilant.” (Frannie)

“I can’t do this by myself. And I was *ashamed* [emphasis added] because I can’t do this by myself and I’m a really smart person.” (Chris)

The loss of control because, I resolved in the morning to start dieting and by the afternoon I’m not – you know, that’s the loss of control. I can control almost anything else but my food.... Food called to me, it’s like someone grabbed me and shoved it down my throat – that’s what it felt like sometimes, I just could not stop eating....Yah, I could never have one of something, it had to be all gone or if there was any left, I would find a way to empty it as long as it’s [food] there you have to have it. (Amy)

It [food] ruins me, it devastates me, I *hate* [emphasis added] that there’s something in my life that I can’t do, that I can’t control, it does make me *angry* [emphasis added], and it, it’s frustrating because, I can control everything else, I’m very good at everything else. (Emily)

“Yah, you just feel, well, you just feel *desperate* [emphasis added] because, well you feel, how you say, hopeless, and you cannot do anything about it, right? I feel disappointed of myself, right? I feel like, Oh, I did this to myself.” (Betty)

Subtheme A. Love of food. Some participants expressed a very deep relationship with food helping one understand why giving it up would be difficult. They each had different foods they particularly liked. Amy was particularly passionate about her relationship with food:

- “It’s my best friend, my lover, and my doctor” (Amy).
- “I’ve always known I was addicted to sugar. Keeping away from it, I would make cookies for the kids and we had 6 kids, and I would bake 2 dozen cookies and they would each get two and I’d eat the rest” (Chris).
- “I cannot eat one slice of bread, that’s one thing that I have to finish” (Lynn).

I love food and I still love it [giggles]I could have a cookie, and I couldn’t stop, I wanted another one, and another one, and another one, and I just remember...even my mom would look at me with horror. (Betty).

Emily would eat her favorite foods uncontrollably until she physically could not eat any more. When asked if she liked big portions, she replied: “Yes, until I can’t fit no more...um Mexican foods like tortillas with lots of cheese, and burritos, those kind of things...” (Emily).

Subtheme B. Ambivalence about food: It is good and it is bad. Although all participants expressed a great love of certain foods, they were also aware of the

damage overeating could cause, making the relationship with food rather ambivalent.

Frannie expressed the ambivalence quite well:

“And if it, things, external things make you feel bad, you know, a really good brownie will make you feel pretty good, but it doesn’t last, it’s not, you don’t feel good after you’ve eaten it, you don’t feel good.” (Frannie)

Chris said that she would not eat her favorite food because of the knowledge that it was not good for her, but she could not seem to control herself:

- “I know exactly how I’m going to feel when I eat that chocolate and I know that I should not do it and, in goes the hand and there goes, I walk back into the kitchen and I take it again.” (Chris)
- “Well, of course, it makes me feel better when I’m eating it, but then after, I feel like crap because of what I had done to myself, because I know.” (Betty)
- “Oh, it tastes good, that is nice but then I’m done and I’m tortured, I love food and I hate it.” (Emily)

Subtheme C. failed diets and other weight loss methods. The many failed diet attempts were representative of the persistent desire and unsuccessful efforts to control use. All the participants had tried to control their weight with various commercial weight loss methods such as Weight Watchers, Tops, Jenny Craig, NutriSystem, Herbal Magic, and Herbal Life. Some tried 12 Step programs, such as OA and FARA, and others sought the help of councilors and stomach restriction surgery. Amy had originally tried a gastroplasty, or stomach stapling, and regained all

her weight only to return to commercial diets. She had success for a while and put the weight back on again: “I only lost 55 lbs. with Jenny Craig and 100 lbs. with NutriSystem, I put it back on and more, I couldn’t eat a lot at once because I had, had my stomach stapled [previously].” (Amy)

Amy also tried a psychologist for her weight problems and self-esteem issues and celebrated the session by going out to eat. It appeared that Amy would be distressed from her visit to the psychologist and would resort to food to comfort her. “I would go for being overweight and low self-esteem and things like that, and I’d go there and after I’d finished being there, I’d go to McDonalds.” (Amy)

Emily successfully lost 134 lb in a year with FARA and left the program managing to regain all the lost weight and more within a year and a half. After her successful weight loss she had some cosmetic surgery but even that was not enough for her to win her battle with food:

I can’t maintain it. I’ve never been able to maintain (weight). I’m always working really hard to get it off or eating really hard putting it on. So it’s like one extreme or another and it’s all I think about, it’s the one part of my life I cannot control. (Emily)

- “I was again without power, cuz, I would start it [diet] for a day or two and I would eat twice as much...” (Lynn)

Betty was a lifelong dieter and started from the young age of seven. Her mother placed her on a metabolic ward in a hospital to control her weight.

I have been in many, many diets because I have been overweight since I am three, my parents, especially my mom was concerned about me being overweight, because that was not common in those days, I was really a fat kid.

(Betty)

For some, dieting was life warfare and it became a constant battle with the food. Frannie was particularly upset about her struggle using a word like *atone* for her overeating:

I'm not bulimic, but I can understand bulimics becoming that way because they, you know, they have to get rid of it, um, I'm more like I have to atone for it in some way either going to work out or drinking lemon water or you know, drinking lots of water to try and flush it out of my system. (Frannie)

Subtheme D. Continued use despite knowledge of resulting problems.

Despite having the knowledge that eating food addictively would damage their health, not to mention their psyche and self-esteem, many women continued to eat out of control.

“It became apparent when I was still gaining weight, um, where I had, where I had to go on medication [blood pressure]. I've had it lowered but I'll always be on it.”

(Frannie)

I'd never go and complain [to the doctor] about my fibro [fibromyalgia] because I ah, I ah, I thought it was my fault for being fat but I still couldn't stop [eating]. Like I wished that I was a diabetic that I'd have to eat properly but I don't think I ever would have... (Amy)

Lynne and her husband were suffering from chronic medical problems and could not control their eating habits:

We say no, we know in our heads, we are not stupid, we are not crazy, but the chocolate box is there and we eat it anyway, we just eat it, even if we promise ourselves that's it, we don't need, we won't, 5 minutes later, we just eat again.

(Lynn)

Amy was unable to stop eating addictively even though she was regaining all the previously lost weight, which she knew caused her serious medical problems.

And I just couldn't stop because I'd feel guilty and I knew it, I'm going to grow, I'm going to gain, but at the same time, you don't see in the mirror the gains...I gained 166 lbs. in a year and a half... (Emily)

Theme 2. The Need for External Control for Successful Weight Loss

Most of the interview questions that led to this theme centered on the experiences the participants had with dieting. Invariably all participants experienced successful weight loss when they had structured diets with supervision. They left the diets after they had achieved their goal weights, or after breaking a diet, they would start eating out-of-control again. Some participants expressed the need to have strict supervision because they just could not control their weight on their own. Weight loss programs with the strictest supervision seemed to work the best. Some thought of ways to control their food intake, which seemed rather drastic.

- “Well then, I lost this 35 pounds and everything was about the food, and the accountability of going to Weight Watchers every – every once a week and weighing in was very important for my weight loss.” (Chris)
- “If you leave me loose, my mind is sick and I cannot choose the food by myself, I need somebody to direct me.” (Lynn)
- “I joined the army to lose weight, and but, I joined the army only to have the strict physical regimen to lose weight...” (Emily)
- “In the long run diets are a control and the minute you take away the councilor or pee test or whatever it is that you know, keep you in check, you can, it’s easy to slide out again.” (Frannie)

The strict guidelines of the FARA program seemed to be very effective in helping the four participants who were members. All of the four participants were able to reach their goal weight with the help of this program. When three of the members left the program, they all regained most if not all of their weight. Amy remained in the program for 16 years and successfully maintained her weight. Before she started with the program, she needed to have a final binge.

I started and I found out they don’t eat flour or sugar [FARA program]. I had eaten that day and I called to the farmer’s market on purpose to find cookies and things like that, anyway, so I ate literally till midnight and I haven’t had flour or sugar since that day. (Amy)

Betty and Emily left the program but while in the program enjoyed successful weight loss.

But when I'm in program [FARA], and the addiction is under control, I'm alive again. Like, I don't want to, I can't wait to wake up in the morning. I get up and I clean and I do things and I go out, so I don't want to stay in bed all day.

(Emily)

- “I don't have to be thinking about food [in FARA program], because I know when I am going to eat it, what I am going to eat, and you know, it helps me a great deal. (Betty)

Subtheme A. External factors affecting weight loss. Many participants found that wishing to be in a relationship or the thoughts of others would favor their sticking with a diet. Several women ate in secret not wanting others to see them eat. They were embarrassed to be seen eating if they were overweight. Secretive eating, hiding food from others, and eating food when others cannot see you are some of the symptoms posted on the FARA website.

- “Part of the reason I lost all the weight was able to do it in 9 months because my overall desire to be in a relationship again meant that I had to present myself in a way that someone would want me.” (Frannie)
- “He's a good influence on me in that way in that, ah, that I won't, ah, I won't go to town on stuff in front of him or at his house.” (Frannie)
- “I'll hide it from my husband [Chocolate] so he doesn't see me having it. My own husband, I try to hide it from, so it's almost, I feel like the alcoholic that has the bottle of whiskey or vodka in the toilet tank.” (Chris)

- “We met him at McDonalds with friends, I had just started eating a Big Mac, and as soon as he walked in, I threw the Big Mac under the table.
(Emily)

Theme 3. The Presence of Emotional Eating

All the participants in this study endorsed that certain emotions encouraged them to eat. Some participants would eat whenever any emotions were felt, and some ate due to anger, shame and guilt. The interview questions that led to the representation of this theme centered on the general answers to history and how food affected the participants emotionally. Emotional eating is significantly greater among food-addicted women than non-food addicted women (Davis et al., 2011) as assessed by the YFAS. Food is used as a strategy to alleviate stress and initiate self-repair and becomes a dysfunctional coping strategy for many women. Most of the participants expressed some degree of emotional eating:

- “When everything is going wrong and everything goes to hell in a hand basket, I need to have something sweet to make it all better. When I’m bored out of my mind, I have to have something sweet.” (Chris)
- “I ate all the time: bored, stress, happy, sad, mad, glad, whatever...”
(Amy)
- “...the frustration every month of not getting pregnant made me overeat, when I got my period it was like a failure and it just became a cycle every month of gaining 10 more pounds while I medicated myself out of my sadness at failing.” (Frannie)

- “I am an emotional eater. I celebrate with food, I mourn with it, I, it’s my best friend! If it’s a celebration, the more food and alcohol, the better.”

(Emily)

When asked if she was a stress eater, Betty answered: “Yes, absolutely, I eat when I’m bored, lonely, unhappy, sad, depressed, happy...yes; of course, I love food [giggles]”

When asked how her experience with food affected her emotionally, Lynn replied:

I’m very sad...I’m very deeply depressed and my rage – rage, rage too because, because I ah, I hate the way I act, you know, I just can’t control the rage, that’s it, I blame, I try for an excuse, but I’m raging, because I know it’s me and I don’t want to be me and I don’t know why, I have a solution, and its hit me and I find myself so stupid to do it and I cannot do nothing against it...

(Lynn)

Substance abuse and other addictive behaviors are attempts at self-repair. The addict tries to acquire externally what cannot be provided internally due to defects in character structure (*Alcoholics Anonymous*, 2002; Flores, 2004), or underlying psychiatric conditions like depression and anxiety (Siegel, 2014).

Theme 4. Experience and Knowledge of FA and Advice to Others

It seems that because FA has yet to be recognized as a disease by the medical community, those suffering from symptoms of food-dependence do not know they have a disorder, which makes seeking help for uncontrolled eating difficult, if not impossible. When confronted with the fact that they were food-dependent, as measured by the YFAS, some found it comforting to know that there was a disorder and they

suffered from it. The guiding questions that led to these conclusions centered on what the participants understood about FA.

- “Well, it’s nice to know there is a name for what it is that you have...it’s not just um, your own weakness that there’s something out there that’s bigger than you, it’s comforting to know that.” (Frannie)
- “I found out that food was addictive by joining a group called Food Addicts in Recovery Anonymous [FARA] and how ...” (Amy)
- “I used to think I was crazy to destroy my body with food, but, now I know it is a sickness that I have and it’s good to know.” (Lynn)

At the outset of this research, it was decided to ask the participants what advice they would have for other women suffering from food addiction. The answers invariably involved abstinence from sugar and flour or the tempting foods that caused craving and uncontrollable eating. The participants also expressed the need for a structure and continued help with a support group or program. All participants said that FA is definitely something that cannot be controlled by the individual.

I think you definitely need to admit it, that you have a problem and um seek help for it, and um identify the things that trigger you and, you know, try to avoid those, and um you know, I guess it’s like finding ways to cope, ah with whatever is your weaknesses. (Frannie)

Chris, who loved her chocolate chips, was asked if she believed that she should try to avoid these things all together and when asked if she believed in abstinence, she replied: “Yes, absolutely and not buying the food of choice.”

Amy was fortunate to find a program called FARA just when she was considering giving up all forms of dieting. Amy had been with the program for 16 years and had maintained her weight and her abstinence from flour and sugar.

I found out that food was addictive by joining a group called Food Addicts in Recovery Anonymous and how I found the group was when I was at a religious retreat, and the gist that I got out of it was weighed and measured food and lots of salad and no flour and sugar and, and, and ah, cuz, they said it was like the Alcoholics Anonymous program. Now I knew AA was for alcoholics and I knew they could give up alcohol and be OK, so any program, if I could give up certain foods and be OK, then I'd be OK. (Amy)

Lynn had been a member of FARA but was only loosely connected to the program and tried to manage mostly on her own. When asked if abstinence from flour and sugar helped her, she replied:

Oh yes, well, that's the only savior I have, to have, to have somebody to tell me what to eat and when to stop and all that. I need some abstinence and somebody telling me what to eat and be able to follow it, but if it is too strict, like FARA was, I wasn't able to follow it. (Lynn)

When Betty, who admits she is addicted to bread, was asked what she thought of abstinence, she replied:

Bread, yes, bread, yes and just stay away from it, yes, why to risk it? Yes, it's like playing with fire, why to risk it, you could get burned. I mean, you may

not, but you could, and yah, it's easier not to take any [bread or cookies] than to have just one. Once you have a few [cookies] then you can't stop; you have the failure of control. (Betty)

Betty expressed a common problem with addiction. If you have one (of a trigger food, alcoholic drink, or drug), you cannot stop, and it is easier to completely avoid it.

Emily was a member of FARA and lost all her excess weight and left the program.

Within a year and a half, she had regained 166 lbs. She returned to the program to regain abstinence and hoped to start on the road to recovery, but recently left the program due to the difficulty of maintaining abstinence.

I definitely think food is addictive, um, as hard as it is, I do think you have to abstain from the flour and sugar, you have to completely abstain from the flour and sugar if you have any hope of conquering it: and you need support with it because, I tried to stick to the diet when I left program, I lost my support, I lost my meetings, um, and then I had room to convince myself to do whatever I want, I had too much room to play. (Emily)

Subtheme A. Acceptance of addiction. A subtheme not necessarily endorsed by all participants but touched on by two, is relevant and should be briefly addressed. Two participants expressed such frustration with the failed attempts of dieting that they were prepared to accept their condition (learned helplessness) and not ever diet again or even consider the myriad of plans available. In their own words:

- “At the end, some girls and I had a group going – and we vowed to never diet again, we had all had enough, I was just going to die.” (Amy)

- “ But even worse, I decided to accept it and buy the book, how to live overweight and how to dress overweight and I ah, I still have the book.”
(Lynn)

The reason this is so relevant is for the many women that do not seek further assistance with their obesity. This could also account for the poor response to the posters seeking participants for the study. Many women over 30 who have attempted diets and failed experience helplessness, which could block their attempts of further dieting. It is difficult to get the real statistics of dietary failures (Kayman, Bruvlold, & Stern, 1990) but if it were anything like the recidivism rates for alcoholics and drug use, it would be up to 90% (Marlat & Gordon, 1980). Food Addicts, as identified by the YFAS, have described how difficult it is to control their dietary intake leaving them at risk for learned helplessness and subsequent depression often experienced by obese women (Zhao et al., 2009).

Theme 5. Food and Eating Cause Significant Distress

The *DSM-IV-TR* (APA, 2000) defines substance dependence (synonymous with addiction) as having a maladaptive pattern of substance use, leading to clinically significant impairment or distress. The YFAS is based on these criteria and having the significant impairment or distress is necessary for a diagnosis of FA. Interview questions probing the distress participants experienced centered on questions 15 and 16 of the YFAS. These questions referred to the impairment experienced by the individual due to food and eating. The participants were asked the nature of their distress and the problems with their ability to function effectively because of food and

eating. It is important to hear in their own words exactly how a food dependency interfered with the ability for these participants to live a happy and fulfilling life. Many reported their unhappiness ranging from avoiding social situations and some experienced desperation and suicidal ideation.

- “I need to like order my life so that I can always have what I need, and if sometimes that means avoiding social situations because they are bad for me, I have to do that... (Frannie)
- “I think that I’m not performing as much as I used to because nobody wants to see a fat old lady [singing] on the stage.” (Chris)
- “And it is very stressful to go out, because No, I don’t want to go out, and you know, I don’t want to do this or, Yah, I don’t even want to get dressed because I look ugly anyways and I cannot find anything to wear...” (Betty)

Since I left the program [FARA], I never saw them [friends], I never saw my friends because I didn’t, I was too humiliated to um, for people to see me.... Didn’t go to my husband’s Christmas party, well, both I was embarrassed to go, and he didn’t want me to go, he was embarrassed for me to go as well... (Emily)

- “OK, that’s it, I’m close to 200 – 200 is, I’m going to kill myself – no I wouldn’t but, you know what I mean.” (Chris)

And I was coming home one night and sitting and waiting for this train to go past, and I thought to myself, what if I drive into the side of the train, it will all be over and the thing that kept me from doing that was my children (Amy)

One participant resorted to bulimia to control her weight:

I actually became bulimic after having my stomach stapled and I never knew I was bulimic because I never stuck my finger down my throat...I would just contract my stomach muscles and it [food] would come out. (Amy)

When questioned by her husband if she wanted to have sex, Chris responded:

And I said Nah, but I really kind of, but I do, I mean I'm a woman, you know but that – a lot was his...but quite frankly, No, because Ah, I'm too fat, I don't want to, you know, I don't feel pretty. (Chris)

Subtheme A. Time loss with food thoughts. Many participants expressed the problem of wasted time with food thoughts and eating; they were obsessed with food thoughts:

I feel like sometime a day would pass and, a lot of food would disappear in the fridge, we would buy, and I would have to go back to the store and all that too...but I spend a lot of time not accomplishing work, you know, just losing time eating... (Lynn)

- “That affected me all my life [thinking about food], you know, because I didn't...my productivity at work and um, I really, yah, I, my thinking, for thinking about food and not thinking of other things.” (Betty)

This addiction takes my freedom away and when I am concentrating to eat, I was not working and it's like people who smoke, they spend 50 minutes, they don't realize it, but I was doing the same thing when I'm sitting with my bowl

of cereal, or my bowl of fruit, or my bowl of this whatever, I was losing [time], you don't know... (Lynn)

- “The last couple of days of the retreat are spent thinking about what I'm going to have when I can have access to food again.” (Frannie)

Subtheme B. Obesity issues. Due to the excess weight, several problems were encountered that would be experienced by most obese women:

- “So I got this feeling in my head that she [daughter] was mad at me because I'm fat and I'm smoking again.” (Chris)

Yes the weight and joints, um, I can't move, I can't do daily chores, like I used...I can't walk around, I mean I go to the meeting and there was one Monday meeting where my knee popped out...Um, I can't fit in my seatbelt, in my car, so I have to drive without a seatbelt, so I'm risking tickets... (Emily)

I've never slept well, I used to sleep with Tums in my mouth from heartburn, I used to have to sleep with Tums in my cheek, right after I started the FARA program, I never had to use them again.... I couldn't play with the grandchildren and stuff... (Amy)

- “I used to fall and my knee would not support me and I walk with a walker from November to April, yes, it was a fact that I was 195 lbs.” (Lynn)
- “I don't want to get back where I was ever again because when you look at a set of stairs and dread and you know you're going to be winded when you get to the top of them...” (Frannie)

And I would be ashamed and maybe I would not have the clothes and I would be ashamed to go someplace or a friend that saw me when I was smaller, I would be ashamed to go back in front of them. (Lynn)

Subtheme C. Fear and insecurity. Some participants lived with the fear that they were going to regain their lost weight or lose the respect they had gained from weight loss:

It's like I can only be good [adhering to the diet] for so long and then I can't be good anymore, unfortunately you, you know, I ah, I ah, and I can have incredible um will power um but it just can't last 24/7, 365, it could be 2 months, it could last 9 months, but it's like there's ah... there's no out, sooner or later something's going to get you. (Frannie)

What happens when I'm not getting all these accolades anymore? This little voice and it wasn't a little voice, it was screaming in my ear and it said, yah, right, all these people are praising you now but what happens... (Chris)

Also, humiliation and embarrassment was felt when someone else saw them eat:

I won't binge in front of him, cuz, that's, that would be embarrassing, so it's [food] at his house, I don't keep it at my house and then I'll have a couple triangles of Toblerone after my dinner instead of eating the whole bar which if it were at my house I would eat. (Frannie)

Food is addictive, if you use the *DSM-IV-TR* (APA, 2000) definition of addiction or substance dependence. Not only is it experienced by these six participants, but also it is experienced everywhere where many suffer from an inability to control

their food intake. To complement these six interviews, I was also able to listen to many stories in the FARA tape library of the pain and suffering endured by those unable to control their food intake. Science has come a long way in showing the similarities of food and substance dependences; however, the reality of what the participants experience highlights the experience of food-dependence. Of course, food is in a separate category, as it must be eaten to survive. Complete abstinence is impossible, but abstinence from certain substances seems to be very helpful for chronic dieters and this is compatible with the neurologic studies supporting FA (Kenny, 2011; Spring et al., 2008; Werdell, 2012).

Incidental findings. When questioned about the family history of FA and other addictions, several participants had FA in the family, as determined by severe obesity, which is not uncommon when obesity is such a heritable condition (Martinez-Hernandez, Enriquez, Moreno-Moreno, & Marti, 2007). Several women reported alcoholism in their family history and researchers have found a link between uncontrolled eating and excessive alcohol consumption (Thiele et al., 2003). Many of the same risk factors account for excess alcohol and food consumption; individuals with poor behavioral control are at heightened risk for alcoholism and overeating (Gearhardt & Corbin, 2012).

Evidence of Trustworthiness

Credibility (Sensitivity to Context: Commitment and Rigor)

Credibility in this IPA study was obtained through informative interviews with the six participants. All participants were at ease throughout the interview and

willingly provided me with the information without any discomfort. It was not difficult to find the meaning in the exact words of the participants when restricting the questioning to their personal experiences with food and eating. Several of the participants were experienced with the FARA program which provided an opportunity for the members to share their stories of overeating, the lack of control over food, and the subsequent stress and difficult living situations they faced due to the food and eating. All participants were contacted after initial analysis of their interviews in an effort to *member check* (Mays & Pope, 2000). I was able to have several conversations with the participants after they gave the interviews to ensure the truth value of this research.

Transparency and coherence. Yardley's (2000) third principle involves the presentation of the data analysis, which details every step of the process. By maintaining a direct link to the interviews and all the steps of detailing how the themes emerged through the data, coherence and transparency were preserved. In the present study, the themes are relatively straightforward and clearly emerge from the data, which is available for any other researchers to observe. All materials are available for an interested party to follow the chain of evidence from the initial documentation to the final report. This documentation allows for authentication (Lincoln & Guba, 1985). Clearly, in a study as sensitive as this, *member checking* provided a better method of transparency than *interrater reliability* checks. Reflexivity involves the sensitivity to the ways in which the research is shaped by the researcher (Mays & Pope, 2000). I was very fortunate to be able to join and attend FARA meetings throughout the time that I

interviewed the six participants. It provided an excellent forum for me to recognize the *double hermeneutic* in IPA whereby the researcher makes sense of the participants trying to make sense of their experiences with food. I will describe the FARA experience in the discussion in Chapter 5.

Impact and importance. A true test of validity is whether the research reveals something of importance to the reader. It will be up to the reader to determine if FA is a valid eating disorder and if there can be a solution for this disorder, even though it has yet to be recognized by the majority of medical community.

Transferability (external validity). In this IPA study, I believe I have presented an accurate ideographic representation of six cases. While, IPA is not concerned with making generalizations or transferring the results to larger populations, it is clear that the information shared by these six participants provides concrete evidence of a food dependency that is very damaging. I have heard many stories of FARA members and while they have not been given the YFAS, they suffer from the same symptomology as the participants in the present study. The major symptoms of this disorder seem to be shared by all participants and members of the FARA membership. This eating pathology may not be recognized by the *DSM-IV-TR* (APA, 2000), but there are over 5000 members of FARA worldwide and other 12 Step programs for food addicts, and they believe themselves to be food addicts and have collectively found and practice a solution to the disorder they know and recognize.

The local area where the research was conducted has several FARA meetings. I attended all of these meetings for several months and heard many stories and listened

to the open sharing of many food-addicted individuals. I was also fortunate to join an AWOL (A way of life) telephone meeting, which includes men and women throughout North America, Europe, and Australia participating in FARA. The purpose of this telephone meeting is to thoroughly explore the 12 Steps but each of the 60 participants expressed their opinions on why they were food addicted. I was also able to listen to hundreds of tapes made by the New England 12 Step committee of FARA that gives a complete story of the speaker's FA and their recovery process. The common themes represented by my participants were replayed many times by several others while listening to the stories of FA from the men and women in the FARA meetings.

Summary

I believe these six participants are representative of true FA as defined by the YFAS. The suffering is evident by their experience of out-of-control eating with the inability to stop. They also consistently demonstrated the need for external control of their food intake and the greater structure provided by the diet program, the greater success. All the participants experienced numerous attempts at dieting and many failures with weight regain. As in all addictions, relapse seems to be common with all the participants during their life. Most experienced all symptoms of FA as set out in the YFAS and experienced their problems with food very similarly to any other substance abuser. The distress experienced by these women due to their inability to control their food intake and the subsequent weight gain should be recognized as an eating disorder.

The following chapter will discuss possible causes of their problems with control and the avenues that may lead to a solution to their eating disorder.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This study was conducted to explore the experiences of food-dependent women as diagnosed with the recently developed YFAS (Gearhardt et al., 2009a). FA is not recognized by the *DSM-IV-TR* (APA, 2000) but FA is a behavioral phenotype observed in a subset of people. It resembles drug addiction and parallels the *DSM-IV-TR* criteria for substance dependence (Davis et al., 2011; Ifland et al., 2009). There is a strong relationship between FA and obesity (Eichen, Lent, Goldbacher, & Foster, 2013; Jin, 2011) making a greater understanding of FA worthwhile in the battle against the obesity epidemic. Food-addicted women had not previously been interviewed: the present study undertook a qualitative approach using IPA to explore six participants' experiences with food-dependency or FA. The participants were given the YFAS and qualified as food-dependent using the YFAS criteria. IPA afforded an in-depth study and allowed me to interpret the meanings the six participants gave to their food-dependency (Smith et al., 2009). The participants expressed their frustration with weight gain, due to their inability to control their food intake, and provided me with a rich source of data. The major findings of this study was based on five major themes extracted from the data: (a) loss of control over food intake, (b) the need for external control for successful food management, (c) the presence of emotional eating, (d) problem food behaviors that create stress, and (e) experience and knowledge of FA and treatment advice for others experiencing food-dependency. The following chapter will

discuss the interpretation of the data, the limitations of the study, its implications, and the recommendations for future research.

Interpretation of the Findings

One of the most noteworthy master themes of the interviews was loss of control over food intake. This inability to stop eating occurred in spite of the knowledge that eating would lead to weight gain and various medical problems. Loss of control over the use of a substance is one of the cardinal features of substance dependence, according to the *DSM-IV-TR* (APA, 2000), and the six women I interviewed all experienced a loss of control over their food intake. There are several explanations why the participants could not stop eating, mostly coming from neurobiological research (Lutter & Nestler, 2009; Volkow et al., 2008; Ziauddeen, Farouqui, & Fletcher, 2012). The following chapter will discuss what drives the loss of control of food in a FA and will continue to discuss the next four salient themes extracted from the data.

Loss of Control over Food Intake

It is difficult to define the *loss of control* phenomenon. It has been described in literature relating the loss of control to alcoholism (Keller, 1972), but the best way to understand the phenomenon is not through theory, but through the observation and behavior of addicted individuals (Hyman, 2007). In accordance with the *DSM-IV-TR* (APA, 2000), three of the seven symptoms of substance dependence relate to a loss of control, making this a salient feature of addiction, and all participants demonstrated

these criteria. There are several possible explanations for the loss of control phenomenon observed in these six food dependent women.

The extensive work of neuroscience, although inexact, has come a long way to explain the diminished behavioral control over the substance of abuse (Ziauddeen et al., 2012), in this case food substance. The consumption of highly palatable foods has been shown to be rewarding and reinforcing similarly to drugs of abuse (Lutter & Nestler, 2009; Pandit et al., 2011). The evolution of the brain has incorporated several mechanisms to maximize rewards and their internal representations (Hyman, 2007). Drugs and food that are abused increase the dopamine (DA) in the reward circuit underlying the rewarding effects (Goldstein & Volkow, 2011; Hobel, Avena, Bocarsley, & Radar, 2009). The repeated stimulation of the DA reward pathways produces neurobiological adaptations in downstream circuits leading to compulsive behavior and the loss of control over food intake (Volkow et al, 2008). Over stimulation of the reward circuitry due to highly palatable food has been shown to produce a state of compulsive-like eating due to reward hyposensitivity (Johnson & Kenny, 2010). This hyposensitivity is due to reduced DAD2 receptor availability (Stice, Yokum, Blum, et al., 2010; Wang et al., 2001). It has been suggested that those with FA will indulge in excessive food intake to stimulate the depressed circuitry (Kenny, 2011; Meitus-Snyder & Lustig, 2006), and feel the pleasure of the food they desire. This becomes a plausible explanation of the loss of control phenomenon when one must continue consuming more food to feel the expected pleasure. It is possible

that simple control of food consumption is beyond the grasp of voluntary control when desire trumps the self-will.

Gearhardt et al. (2011) demonstrated, in a functional magnetic resonance imaging study, that those with higher number of FA symptoms on the YFAS, showed greater activation in the anterior cingulate cortex (ACC) and medial orbitofrontal cortex (OFC) and both these areas have been implicated in the motivation to feed. Reduced D2 receptor availability is associated with elevated ACC activation in alcoholism (Siessmeier et al., 2004). Activation in areas such as the ACC and OFC are correlated with craving in substance use disorders (Wang et al., 1999). When the participants I interviewed experienced cravings, they immediately went to the food they desired to eliminate the cravings. Unfortunately, this would often lead to shame and guilt.

Recent research highlights the OFC, an area of the prefrontal cortex (PFC), as one brain area that contributes to the loss of control phenomenon. The OFC is implicated in the impaired response inhibition and salience attribution syndrome (Goldstein & Volkow, 2011). Imaging studies have shown that DA signaling through D2 receptors may underlie deficits in prefrontal function seen in addiction and obesity (Volkow et al., 2008). Cognitive control is dependent on the OFC and its connections to the striatum and thalamus. Deficits in the functioning of the PFC can underlie compulsive drug taking and the erosion of free will (Goldstein & Volkow, 2011). With the free availability of highly palatable food, there is a frequent need to inhibit the desire to eat it (Volkow et al., 2008), and disruption of the inhibitory control/emotional

regulation circuit will place a food addict at a disadvantage when trying to control food intake. Other consequences of the impairment to the reward/salience circuitry provides evidence to support eating because other reinforcers are less exciting, and negative consequences such as weight gain and medical ailments associated with weight gain, are less salient than the pleasure of eating. These explanations can account for the behaviors of the six participants when they simply could not stop eating with the knowledge that overconsumption of food led to negative consequences.

Neuroscience research has given a much better understanding of the loss of control observed in FA. Some of the participants expressed a change from normal eating patterns to compulsive use. Long-term use can affect neural mechanisms and once these neural pathways are established, substance use becomes increasingly habitual; more wanted than liked when control devolves from the PFC to the striatum (Everitt et al., 2008). This explanation defines the loss of voluntary control over food and the switch from controlled to compulsive eating. At the neural level, the transition is represented as a change from PFC to striatal control over food seeking behaviors (Everitt et al., 2008). Women described this as a time when things seemed to be different and something happened, which rendered them dependent on food without the ability to control the intake.

Another explanation of the loss of control of food intake is the explanation provided by Muraven and Baumeister (2000). Since all these women are emotional eaters, the desire to eat will occur when certain emotions arise, and if they practice self-control once, they will be more at risk the second time emotions arise. According

to Muraven and Burmeister's theory, self-control is a limited resource and weakens over time if used. If a FA goes into a bakery or experiences emotions and exercises will to not eat the tempting foods, later, the will may be exhausted and there is no strength left to resist an urge to eat at a later time. This theory was confirmed by Vohs and Heatherton (2000) when the ability of participants to self-regulate their food intake was weakened after being exposed to situations requiring self-regulatory demand. This is a good reason why addicts are reminded to stay away from environments that provide cues that would deplete the available resource of willpower.

It is evident that these food dependent women were incapable of controlling what they ate, and they knew it, and they could not do anything about it on their own. Some expressed that they were very smart people and could not understand why they couldn't control their food intake. Peters et al. (2002) described the powerful pull of highly palatable foods and the difficulty of overcoming this pull with reason. Lewis, Amini, and Lannon (2000) interpret this difficulty as a disconnect from the limbic brain or emotional brain from the executive control in the frontal lobes. Reason alone is not enough to render control over the pleasure or love of food; emotion trumps logic. This is yet another possible explanation of the loss of control of food intake.

It is impossible to send all those suffering from FA for MRI or magnetic resonance imaging to determine if their brains are not responding in a normal fashion. Recent neurobiological research provides scientific evidence that FA is similar to chemical dependence (Gearhardt & Potenza, 2013) and is worthy of classification as an addictive eating disorder. According to the six participants, this disorder or disease

requires treatment of some description. Uncontrollable eating leads to severe obesity with all the medical problems associated with it. These women also expressed shame, guilt, anger and hopelessness at their inability to stop eating. This leads to stress that only leads to more eating as many of these women used food to cope with stress. This will be discussed further in the section on emotional eating.

Ambivalence and the love hate relationship with food. I would like to address the ambivalence surrounding food, as many women endorsed the love-hate relationship with food. When a food addict feels stress, they will be attracted to sweet foods because they want to *feel better*. When emotionally stressed, there is an increase of CRF, which is alleviated by eating something sweet (Dallman, 2010). CRF is also increased when the FA is going through withdrawal or *protracted abstinence* from desired foods (Shriner & Gold, 2014), often a cause of *breaking a diet*. The food addict will abuse food, even though they really know they should not, because it makes them feel better; hence the addiction has a hold over the FA. This explains why the food addict will often say, “It’s not that I *like* to eat to feel good (i.e. bloating pain after binge eating [guilt]) it’s just that I need to eat because I don’t *want* to feel bad” (Shriner & Gold, p. 5380). In this study, Emily said, “Oh it tastes good, that is nice but then I’m done and I’m tortured, I love food and I hate it.”

Loss of control over food substances was characteristic of all the women in the present study and led to negative emotions, often causing them to eat more. All of the women also experienced emotional eating and this theme will comprise the next section in this discussion.

Emotional Eating

All the women in this study endorsed the fact that they would eat when feeling some or all emotions. Emotions have long been recognized as one explanation for abnormal eating and fostering obesity (Geliebter & Aversa, 2003). Emotional eaters will increase food consumption due to stressful situations (Herman & Polivy, 1975), anger (Fassimo, Daga, Piero, Leombruni & Rovera, 2001) guilt, (Frank, 1991; Kuijter, Boyce, & Marshall, 2014) and shame (Kelly & Carter, 2014). Davis et al. (2011) found that women scoring higher with food symptoms on the YFAS scored higher on the Dutch Eating Behavior Questionnaire (Van Strien, Fritjers, Bergers, & Defares, 1986), which measures emotional eating. Many people use food as a celebration, but one suffering from FA has the problem of not controlling what, or how much they eat and it places them at risk of gaining weight and obesity.

Food was used as a drug by some of the participants to cope with various problems and whenever any emotional situation arose. Some women ate when they were frustrated, others when they were happy, sad, glad, depressed, or angry. Often overeating during emotional times is an attempt at self-repair (Flores, 2004), and food addicts will be left with feelings of guilt, frustration, and discouragement. This only fuels the desire to eat some more. Frannie, a participant in this study, used the expression of using food to *medicate* her sadness and frustration. Chris, another participant, needed to have something sweet when she was bored, or when situations were out of her control. Emotional eating is not an uncommon phenomenon, but if it is combined with FA, this habit of eating during any emotional times will create

problems and for the food addict, these eating occasions may become uncontrollable. Emotional eaters prefer high-energy foods to low-fat snacks (Nguyen-Michel, Unger, & Spruijt-Metx, 2007) that will affect weight gain. Addicts may over-consume substances due to possible underlying psychiatric conditions such as depression or anxiety (Siegel, 2014), which is often the reason they require long-term treatment, emotional support, and structuring of their diet. In other words, many food addicts will consume foods to escape their pain using food to medicate their situation.

One treatment, which gave most of the participants' relief from their FA symptoms was the 12 Step program designed primarily for food addicts, the Food Addicts in Recovery Anonymous (FARA) program. Many women in the FARA program report that they use food to stuff down their feelings or to numb their feelings. After consuming the food, the participants in this study reported guilt or shame. Feeling disgusted with one self after consuming too much food is also a diagnostic criterion for BED in the *DSM-V* (APA, 2013).

The lack of control of food and emotional eating left some of the participants with a feeling of helplessness undermining self-efficacy. There was a need to have external help for them to be able to follow any sort of a diet. Ogden et al. (2005) found that most morbidly obese patients receiving gastric bypass surgery were happy to turn their dietary concerns over to a surgeon. Once they were able to get their weight under control, some were empowered again and took control of their dietary concerns. Theoretical and therapeutic work with eating disordered patients found that when patients relinquished control of their food to health professionals or parents, they

developed an improved relationship with food (Dare & Eisler, 1995). The six participants in the present study endorsed the need for some form of external control of their diet in order to have successful weight loss. The next section of this discussion focuses on the theme of needing external control to help with dietary restriction.

The Need for External Control for Successful Weight Loss

It was very interesting to discover the importance of structured eating programs that all these women endorsed. Each woman acknowledged that she needed help with her diet and all endorsed a method to attempt to give the control of their diet to another party. Ogden et al. (2008) reported that morbidly obese women seeking gastric bypass and laparoscopic gastric banding wanted to give the control of their obesity to a surgeon. Many women are obsessed with entering diet programs, as demonstrated by many of the women in the present study. Combined with the inability to control their eating, and left without a structure, these women invariably failed any attempt to control their diets; however, the counting of points (Weight Watchers), or accountability to a diet councilor or taking urine tests (Dr. Bernstein) seemed to help these women produce results. As soon as the control was removed, they returned to uncontrolled eating. From the interviews with these six food dependent women, it became very apparent that these women needed a structure in their diet plan and the more rigidly it was monitored the better. None of the women acknowledged the ability to diet successfully on their own. This exact theme has been replayed many times at the FARA meetings I attended as part of this research. The members have success when they attend structured diet programs, but invariably regain all the weight when

they leave the programs that gave them success. Part of the success of the FARA program is the continued monitoring of the diet with a sponsor, and a food plan that can be adapted for life. Philip Werdell (2012) is a clinician running a treatment center for FA, and he endorses the need for food addicts to commit what they eat to recovering peers or professionals. Chris, a participant, complained that the diets she undertook were not sustainable and she confronted the fear of regaining the weight when she left the diet plan. Four of the participants were at one time members of the FARA program and all were able to reach their goal weights. The three of the participants that left the program regained their weight; only Amy was able to remain with the program and maintain weight loss for 16 years. Amy discussed the reasons for her success and I will refer to this in a later section. The next theme expressed by the participants in this study refers to the distress caused by the food and eating.

Food and Eating Cause Significant Distress

Before FA can be acknowledged as an eating disorder worthy of treatment, it must fulfill the criteria of causing significant impairment or distress (Gearhardt et al., 2009a). The *DSM-IV-TR* (APA, 2000) requires distress or impairment for addiction; it is only when a condition causes harm that it counts as an addiction (Sinnott-Armstrong & Pickard, 2013). The six participants expressed why food and eating caused the significant distress. Their stories are not dissimilar to the stories of many of the women in the FARA program in the local area and all across North America. The testimonials of the participants relay instances of missing social occasions, fear of being seen by others, suicidal ideations, resorting to bulimic behaviors, and generalized depression as

to their condition. Much of the distress was experienced due to the obesity: resorting to behaviors to control the weight (smoking), inability to move around effectively, musculo-skeletal problems due to the weight, and shame of not being able to buy clothes to fit properly. Most of these women were embarrassed of their eating behaviors and would not eat in front of others resulting in hiding food, sneaking food, and eating food behind closed doors. This behavior seems to be relatively common among all the FA testimonials I have heard and is one of the criteria on the FARA website to determine if an individual suffers from FA (foodaddicts.org). Eating alone due to embarrassment is also a symptom of BED in the *DSM-5* (APA, 2013).

Gearhardt et al. (2012) were able to demonstrate a strong relationship between BED and FA; where 57% of BED patients met the criteria for FA using the YFAS. They also showed that BED patients with FA also had a significantly higher level of depression, negative affect, emotion dysregulation, eating disorder psychopathology and lower self-esteem.

Many women lived with the fear of weight regain after they had lost some weight. Once they had regained lost weight, they were afraid of others seeing them at their regained weight. Addiction is known to be a disease of fear, doubt, and insecurity (*Alcoholics Anonymous*, 2002) and this theme is often expressed by many of the women in the FARA program.

Some of the participants in this study referred to the tremendous loss of time attributed to food thoughts and planning. Lynn and Betty reported that their addiction hijacked their concentration and they were unable to concentrate on their work.

Frannie, another participant, could think of nothing other than the planning of what she was going to eat when she came back from a retreat without food. Many women with FA are consumed with food thoughts and it sometimes occupies their entire day or at least the time between binges or meals. Most women express the desire to be free from the constant obsession with food. This is also a common theme heard in FARA meetings. The women speak of a desire to find and maintain neutrality around food. One way to find this freedom is provided with the FARA program. The next theme centers on an effective treatment of FA provided by the participants

There is a Solution: Recommendation for Recovering from Food Dependency

At the beginning of this research, I hoped to find six food dependent women by advertising (posters placed throughout the city). I planned to administer the YFAS to all the women responding to the posters and select those fulfilling the criteria for food dependence. I did not get any respondents other than two of the participants; I had to find another source of women with possible food-dependency. I searched the web and found that there were meetings of FARA in Calgary. I had never heard of this organization before this and I actually was looking for Overeaters Anonymous (OA) meetings as I had attended these many years ago. I attended my first FARA meeting in February 2014 to find some women willing to take the YFAS and participate in further interviews provided, they fulfilled the food-dependence criteria of the scale. I entered a world of food addiction and recovery which I had no idea existed during my 6 years of studying food addiction. I could only find one scientific article making any reference to FARA and it was only to refer to 12 Step programs.

Food Addicts in Recovery Anonymous (FARA). The FARA program is a 12 Step program that broke away from OA in 1998. This program is designed to treat FA and not compulsive overeating and overweight. The program originated in Massachusetts and has been growing throughout the United States and Canada with overseas groups in Australia and Europe. In addition to the meetings recently started in Alberta, the FARA program offers an AWOL (A Way of Life) that is designed to guide women through the study of the 12 Steps of AA. There are face-to-face meetings if members can access the meetings and there are telephone meetings for those who are not able to attend the face-to-face meetings. AWOL is designed to study the 12 Steps in a thorough fashion and requires the members to be abstinent and not miss two meetings in a row. There are no exceptions to this rule and as a result many members fail to complete a full AWOL that takes up to 2 years to complete; however, it offers ongoing support for the recovery process.

FARA is a very intensive program, which provided successful weight loss to the four participants recruited from association with the program. It requires the member to have a sponsor who will be a member with 6 or more months of continuous abstinence in the program. Abstinence is defined as no sugar and flour; three meals a day that are weighed and measured; and no eating in between meals. Members are required to have at least 90 days of continuous abstinence before they are allowed to share their thoughts and feelings in the meetings (very different from other 12 Step meetings). Members of the program are required to phone their sponsor each day and commit exactly what they are going to eat that day; this is a requirement for

abstinence. The 12 Step program of FARA is not only a physical program designed to reduce weight in members; it is also a spiritual and emotional program. The continued support offered by the meetings and the instructions of the 12 Steps are a vital part of any 12 Step program and seems to work very well for food-addicted women. FARA is not only for women who experience food-dependence but also those suffering from, BED, bulimia and anorexia Normal weight women who are obsessed with food or exercise compulsively to maintain their body weight are also welcome to attend the meetings. The only requirement for membership is a desire to stop eating addictively.

Why it works. Abstinence of foodstuffs is not an easy task, but it is a requirement for food addicts if they want to recover (Werdell, 2012). It is a much more complicated task to become abstinent from some foods than total abstinence from addictive substances like alcohol or drugs (Ronel & Libman, 2003). Through following the guidelines of the FARA program, abstinence from flour and sugar invariably makes the member feel much better, and Emily, a participant, even admitted that staying off the flour and sugar managed to stabilize her mood swings. FARA requires more from the food addict than just to give up the flour and sugar. FARA, like AA, requires the addict to relinquish old attitudes and behaviors and through working the 12 Step programs, old attitudes around food can be changed. Many addicts have defenses designed to protect their attachment to substances (Flores, 2004) and like many addicts, food addicts share the disease of denial (Werdell, 2012). The 12 Step programs are designed to counteract this. As a new addict comes to the program, they may be overwhelmed when first faced with the fact that they have to part with all

foods with sugar and flour. Amy, a participant, was able to maintain her abstinence for 16 years with the help of the FARA program. She admits that her success is due to following all the guidelines of the program and her constant contact with her sponsor. She is a very active member of FARA and sponsors several members; service work is one of the tools of the program.

The FARA program is very structured defining exactly what the member is to eat and requiring him or her to present the menu plan to a sponsor each day. As previously seen, there is a need for structure for the food addict and external control of what they eat. The participants all agreed to abstinence as a necessity for weight loss to occur. The FARA program is very sustainable. It is made up of only natural foods; no processed foods are allowed and all proteins, vegetables, fruits, and grains must be weighed and measured. Abstinence from flour and sugar seems to be necessary for successful weight loss, but it is sustainable and according to testimonials, it is much easier to stay abstinent than to get abstinent. This would ring true for any addiction treatment for substance and alcohol abuse. However, it is extremely difficult for the food addict. They must visit their addiction each day at least three times. But abstaining from certain foods is possible and apparently necessary for success in the food addict. Staying away from trigger foods always removes the craving (Werdell, 2012).

The 12 Step program is a self-help group and does not cost any money, unlike many of the commercial diet plans. It is centered on working through the 12 Steps of recovery and based on a model of addiction as a physical, mental, and spiritual disease

(*Alcoholics Anonymous*, 2002). The main tenets of the 12 Step groups are acceptance and surrender where the participants are encouraged to accept they suffer from a chronic progressive disease of addiction for which there is no cure. The only way to arrest the addiction is complete abstinence of sugar and flour in the case of FA. The FARA program emphasizes the spiritual and mental aspects of addictive eating and provides the participant with a fellowship of fellow sufferers. Rollnick, Mason, and Butler (1999) suggested that spiritual and emotional help were useful factors in controlling pathological eating behaviors. The fellow members will help guide the newcomers to self-acceptance, recognition of the limits of will power, and surrendering to a higher power. Continuing to work the 12 Steps, the participants take *moral inventory* of themselves in an effort to examine the character defects that led to and contributed to the loss of control over eating. Unfortunately, there is little published research examining the efficacy of FARA or any of the 12 Step programs.

Other Programs for Food Addicts. Food Addicts Anonymous (FAA) is also a 12 Step program that originated in Florida in 1987. It is similar to the FARA program but is less stringent about sponsorship. The FAA program defines abstinence differently than the FARA program but the recovery portion of the program is very similar as they practice the 12 Steps of AA. They do not have an AWOL program, which is a program that supports recovery. They do not have any meetings in Canada, although there is access to telephone meetings. I have spoken to the director of this organization she supports the notion that certain foods (wheat and sugar) are addicting

and act like drugs to the body. FAA has modified the 12 Steps of AA and they only subscribe to FAA literature. They do not use the *Alcoholics Anonymous* book of AA.

Problems with Commercial Diets. It has become clear that those suffering from a food-dependency have a difficult time with any commercial diets. All of the participants used commercial diets with little success. It is also known that the success rate for most dieters is not good for long-term maintenance of weight loss (Ayad & Anderson, 2000). However, the FA presents with a special case of sensitivity to certain foodstuffs, and usually it is flour and sugar. Unless abstinence is obtained from trigger foods, there is little success. Unfortunately, commercial diets and most cognitive behavioral programs (CBT) do not allow for this phenomenon. The plan with these diets and CBT is to moderate certain food substances, and abstinence is not practiced. The present study has provided evidence that total abstinence is the most desirable practice for food dependency and most efforts with moderation will not be successful.

Is Food Addictive? According to the *DSM-IV-TR* (APA, 2000), the seven symptoms of substance dependence including (a) substance taken in larger amount and for longer period than intended, (b) persistent desire or repeated unsuccessful attempts to quit, (c) much time spent in obtaining, using or recovery from the substance, (d), important social, or recreational activities given up or reduced, (e) use continues despite knowledge of adverse consequences, (f) tolerance, and (g) withdrawal were all experienced by the participants. The YFAS is created around these symptoms and includes the questions to determine if the respondent experiences significant impairment due to their food problems. The participants all qualified as being

clinically food dependent or *addicted* to food. From the evidence provided by the participants, commercial diets never helped them with weight loss. The participants in this study also endorsed abstinence from certain foods in order to achieve weight loss. The method of choice for addiction treatment is abstinence. There are many women who have called themselves food addicts and attend abstinence programs.

Gold et al. (2009) defined addiction as an

acquired, chronic relapsing disorder that begins with some experimentation and pleasurable responses and for subgroups of individuals is followed by preoccupation, escalation, tolerance, denial, a series of medical, psychologic, and social consequences that relate directly to the continued use, and what has been referred to as a 'fatal attraction' between the substance (or activity, e.g., gambling) and the patient. (p. 42)

This definition is designed to incorporate other addictions including behavioral addictions (gambling and sex) as well as drugs and alcohol. However, drugs and alcohol have earned the acceptance that they lead to physical and psychiatric disease states from many hours of clinical and laboratory research efforts. Now, those with other addictions such as gambling, sex, and food want the same acceptance. Indeed, Frances (2013) believes that behavioral addictions can include many behaviors since the *DSM-5* (APA, 2013) has recognized pathological gambling as a mental disorder. The *DSM-5* does not recognize food addiction as a mental disorder citing more research is needed. Unfortunately without a classification, food addiction will not be given the necessary acceptance as a disease to warrant a specific treatment.

Recognition of food addiction would help the professional associations differentiate food addiction from other eating disorders and certainly from behavioral disorders so that patients can seek the treatment for their specific disorder. Many of the women I interviewed were happy that a disease of food addiction was accepted by some of the scientific community. However, the 12 Step programs have accepted food addiction for many years and many women have found recovery accepting that they are food addicts.

Limitations of the Study

IPA's methodology is based on the subjectively reported experiences of a small group regarding their understanding of food dependency and the subsequent sense making of that experience by the researcher (Smith & Osborn, 2008). Although it would be tempting to generalize the results of the present study to all food dependent women, this IPA study was conducted by interviewing only six food dependent women. Their stories were very similar and indeed, many food addicts in recovery programs have given similar stories. Although the results of the findings cannot be generalized to larger populations, the story of the food addicts and their symptoms around food consumption are very consistent. I was also able to follow these women for six months and see their progress in their recovery. I believed the stories represented truthful accounts of their struggles with FA. The YFAS seemed to be a successful tool to identify FA in a small group of women.

Recommendations

I think that the most useful recommendation that comes out of the present study is the usefulness of the YFAS for identifying a disorder or disease that is experienced by many women trying to correct their eating disorder. It is able to identify an eating disorder that requires treatment for an addiction that is an acquired, chronic relapsing disorder followed by preoccupation and social consequences. This has been referred to as a fatal attraction between the substance and the patient (Gold et al., 2009). It is a disorder that cannot be cured and the sufferer will have to deal with it for a lifetime. FA exists in a population of people, as the participants expressed, and further research is required to consider this an addiction as problematic as substance dependence.

The YFAS should be an important tool for differentiating different populations of obese patients. Not only obese adults, but also obese children and adolescents require a means to identify FA (Merlo, Klingman, Malassanos, & Silverste, 2009). If FA is diagnosed with the YFAS, treatment options should be considered which might improve obesity treatment efforts for this subset of the population. Many obese individuals seek the help of external control in the form of gastric bypass and laparoscopic gastric banding (Ogden et al, 2004). If these individuals are food addicts, they will likely not have positive results from the surgery. They will at least need to seek help for their addiction, which has been shown to need more than a simple surgery. It is important to identify those suffering from FA before they are channeled to treatments that are not based on the addiction model. Through this research I was able to follow the eating patterns of six food-dependent women identified by the

YFAS. The treatment for addiction as defined by the 12 Step programs seemed to be the most successful for the women in this study.

Another important recommendation from this study is the need for abstinence of certain foods and what seems to work best is abstinence from flour and sugar. External control of the diet is another necessity for those suffering from FA and the more rigid and defined the diet program, the better the results. Because addiction is an incurable condition, the 12 Step programs seem to be the best resort for addictions of any substance (Barry et al., 2009) and appeared to be effective for participants. One woman in this study was able to maintain her abstinence for 16 years. Others were unable to maintain abstinence and left the program. By their own admission they failed to go to meetings and work the *tools* of the FARA program.

The present study has identified that there is a subset of women suffering from a food-dependency as identified by the YFAS. Many studies have used a comparison of obese women with substance dependence (Ziauddeen et al., 2012), but women who are obese are not necessarily food addicts and therefore, the YFAS should be used in studies where addictive behaviors are being evaluated to differentiate the differing phenotypes of obesity (Davis et al., 2011).

Implications

Obesity is becoming a serious threat to the health of the North American people. Recently it has been shown that certain subtypes of obesity resemble an addictive disorder (Avena et al., 2012; Davis et al., 2011; Shriner & Gold, 2014). With the introduction of the YFAS, it is now possible to identify those suffering from a food

addiction, which has not been treated with success with commercial diets. Even if the *DSM-5* (APA, 2013) does not recognize that food-dependency exists, it exists for the thousands of women who have found help in the addiction-based treatment programs. The YFAS is a very useful tool and should be distributed to treatment centers where weight loss is sought. Treating an addiction requires a very different approach than commercial diets and behavioral therapies such as CBT which will not help an addict. Commercial diets and behavioral therapies will not recognize addiction and the participant is asked to control the quantities of their foods while taking only small amounts of the addictive substances (flour and sugar products). If one is truly addicted to these substances, small amounts will only trigger the desire to eat more. It would not be much different than asking an alcoholic to drink small quantities of alcohol each day. Addiction requires a different approach to treatment and the present study shows how important identifying food addicts can be with respect to the types of treatments they will seek. There is a solution as has been identified by the participants which works well if they have the willingness to follow the program as it is offered. There are several 12 Step programs available for those suffering from a food-dependency, which is experienced as uncontrolled eating.

Implications for Further Research

This present study has uncovered voices of food dependent women suffering from an eating disorder that is not recognized by the *DSM-5* (APA, 2013). Further research is needed to contribute a body of knowledge to support this separate and distinct eating pathology. In particular, research needs to be directed at differentiating

different eating pathologies and recognize that obesity has several phenotypes and is represented by several eating disorders and pathologies. The YFAS has been an effective tool to highlight food-dependency and in particular clinical food addiction. This tool can be an effective screening tool and more research is needed to differentiate obese patients at clinics to direct them to better treatment options. Clinically food-dependent women may need more than just a non-supervised diet to effectively lose and maintain weight loss. Research would be better served to differentiate food-addicted women from other phenotypes of obesity.

The present study only focused on mature women, but something like the YFAS would be useful to identify children with an addictive eating pattern (Merlo et al., 2009). Men also suffer from food addiction (Jin, 2011). Obesity in males presents a greater health risk due to increased visceral fat placing them at risk for vascular disease, diabetes, and hypertension (Paeratakul, White, Williamson, Ryan, & Bray, 2002). However, men would also require screening to direct them to successful treatment options. Research could be directed to determine the percentage of obese men suffering from FA. The FARA meetings have many male members comfortable with the knowledge that they are food addicts and they too have found success with the 12 Step program.

The YFAS could also be used to further understand the rates of food dependency in ethnic groups. Prevalence of obesity in ethnic groups has been cited in several studies (Clarke, O'Malley, Johnston, & Schulenberg, 2009; Sivalingam et al.,

2011) but as previously discussed, it would be of interest to investigate the food dependency prevalence in these ethnic populations.

Implications for Social Change

Obesity continues to plague the nation and the efforts designed to produce weight loss and maintenance are mostly unsuccessful (Jeffery et al., 2000; Wing & Hill, 2001). The present study has highlighted a reason why many women cannot find successful weight loss with commercial dieting. The presence of a food-dependency is not easily combatted and requires continued emotional, physical, and possibly spiritual support (Shriner, 2013; Werdell, 2012). The presence of a newly developed 12 Step program for food-addicted men and women seems to support recovery from this eating disorder. Whereas many eating disorders find successful treatment with CBT, this may not be the best route for the food addict. CBT recommends moderation and this is not an option for a food addict. Diets prescribing food restriction (particularly carbohydrates) result in rebound bingeing negating any effect the diet may have (Shriner, 2013). Previous clinics treating food addiction have described effective treatment including (a) trigger foods cannot be eaten successfully and abstinence must be advised to eliminate craving, (b) food addicts need support with withdrawal from sugar and flour and food addicts need help in addressing the loss of control over their food, (c) progressive levels of intervention are needed for late-stage food addict including hospitalization, and (d) because food addiction is a disease of denial, help is needed to break the *addictive denial* which results as an interaction of the substance with the brain (Werdell, 2012) . Clearly food addiction is only one phenotype of

obesity and is distinct from other eating disorders and needs a separate approach to treatment.

From the small group of food addicts comprising the present study as well as the many testimonials I have heard, food-dependency can only be arrested by complete abstinence of particular food substances (usually flour and sugar). Food-dependency is a serious eating disorder and requires long-term support and treatment; it affects the lives of many people. The current study provides the information necessary for public health care providers to consider screening their obese patients and other patients having difficulty losing and maintaining weight loss, that there might be another solution. For those suffering from obesity, yo-yo dieting, and the frustration that dieting just never works; there is hope when it can be confirmed that they have a chemical dependency on food. It can be a great accomplishment if there is more education in the health care professions so that obesity, eating disorders, and food addiction can be distinguished and appropriate treatments can be advised.

Conclusions

This IPA study has described the personal experiences of women recognized as food dependent or addicted with the YFAS. The YFAS clearly identified women with a disordered eating pathology, which is likened to substance abuse. Although FA is not recognized by the *DSM-IV-TR* (APA, 2000); nor is it recognized by the newly published *DSM-5* (APA, 2013), it is recognized by the many women seeking treatment and recovery. With the growing concerns of the rising obesity rates and the poor success of weight loss programs, a greater understanding of different patterns of eating

pathologies will help to curb the current obesity epidemic. In the present study I was able to listen to the voices of six food-dependent women. The women in this study consistently expressed four major themes representative of FA: the complete loss of control over food intake, the need for external control over their dieting for successful weight loss, the presence of emotional eating, and the presence of significant distress caused by food. The loss of control over the food intake is explained by the neuroscience of addiction and has been a primary incentive to recognize FA as a separate disorder. The importance of a formal recognition of this eating disorder will better serve clinicians offering treatment and better serve those with this disorder. It is also important for women who suffer from this eating disorder understand that they are not alone, they have a real illness, and they can seek treatment for it. Unfortunately, FA is a disorder, recognized or not, that needs treatment and like other addictions, treatment is long-term to life. The recommended treatment for addictions is the 12 Step programs that help the members abstain from the substance (particular foods) and also supports the recovery with a study of the 12 Steps. The 12 Step programs provide support where validation through others suffering the same FA can assist in achieving food sobriety. This recovery program can be used throughout life, as food-dependency is a life-long illness, and it is recommended that it can serve the member well throughout life, one day at a time.

Although food-dependency represents only a portion of the obese population, it is also observed in normal weight women, bulimics, and underweight women suffering from anorexia. All these people have difficulty with control of their food intake and

need external help with the structuring of their treatment. Pioneering women have had the foresight to create recovery programs based on the very successful program of AA, for FA in particular. All these programs have members with many years of abstinence due to practicing the principles of the 12 Step programs.

References

- Adolfsson, B., Carlson, A., Uden, A.-L., & Rossner, S. (2002). Treating obesity: A qualitative evaluation of a lifestyle intervention for weight reduction. *Health Education Journal, 61*(3), 244-258. doi:10.1177/001789690206100306
- Albayrak, O., Wolfle, S. M., & Hebebrand, J. (2012). Does food addiction exist? A phenomenological discussion based on the psychiatric classification of substance-related disorders and addiction. *Obesity Facts, 5*, 165-179. doi:10.1159/000338310
- Alcoholics Anonymous (2001). (4th ed.) New York: Alcoholics Anonymous World Services.
- Alhassan, S., Kim, S., Bersamin, A., King, A. C., & Gardner, C. D. (2008). Dietary adherence and weight loss success among overweight women: Results from the A to Z weight loss study. *International Journal of Obesity, 32*(8), 985-991. doi:10.1038/ijo.2008.8
- Alsio, J., Olszewski, P. K., Levine, A. S., & Schioth, H. B. (2012). Feed-forward mechanisms: Addiction-like behavioral and molecular adaptations in overeating. *Frontiers in Neuroendocrinology, 33*(2), 127-139. doi:10.1016/j.yfme.2012.01.002
- American Academy of Child & Adolescent Psychiatry. (2011, March). Obesity in children and teens. *Facts for Families, 79* [Fact sheet]. Retrieved from http://www.aacp.org/cs/root/facts_for_families/obesity_in_children_and_teens

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., Text Revision). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Ary, D. V., Toobert, D., Wilson, W., & Glasgow, R. E. (1986). Patient perspectives on factors contributing to nonadherence to diabetes regimen. *Diabetes Care*, *9*(2), 168-172. doi:10.2337/diacare.9.2.168
- Avena, N. M., Gearhardt, A. N., Gold, M. S., Wang, G-J., & Potenza, M. N. (2012). Tossing the baby out with the bathwater after a brief rinse? The potential downside of dismissing food addiction based on limited data. *Nature Reviews Neuroscience*, *13*(8), 514. doi:10.1038/nrn3212-c1
- Avena, N. M., Gold, J., Kroll, C., & Gold, M. S. (2012). Further developments in the neurobiology of food addiction: Update on the state of the science. *Nutrition*, *28*(4), 341-343. doi:10.1016/j.nut.2011.11.002
- Avena, N. M., Rada, P., & Hoebel, G. (2009). Sugar and fat bingeing have notable differences in addictive-like behavior. *Journal of Nutrition*, *139*, 623-628. doi:10.3945/jn.108.097584
- Avena, N. M., Rada, P., & Hoebel, B. G. (2008). Evidence for sugar addiction: Behavioral and neurochemical effects of intermittent, excessive sugar intake. *Neuroscience and Biobehavioral Reviews*, *32*, 20-39. doi:10.1016/j.neubiorev.2007.04.019

- Ayyad, C., & Anderson, T. (2000). Long-term efficacy of dietary treatment of obesity: A systematic review of studies published between 1931 and 1999. *Obesity Reviews, 1*(2), 113-119. doi:10.1046/j.1467-789x.2000.00019.x
- Barker, R., & Cooke, M. B. (1992). Diet, obesity and being overweight: A qualitative research study. *Health Education Journal, 51*(3), 117-121.
doi:10.1177/001789699205100304
- Barry, D., Clarke, M., & Petry, N. M. (2009). Obesity and its relationship to addictions: Is overeating a form of addictive behavior? *The American Journal on Addictions, 18*(6), 439-451. doi:10.3109/10550490903205579
- Barry, D., Pietrzak, R. H., & Petry, N. M. (2008). Gender differences in associations between body mass index and DSM-IV mood and anxiety disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Annals of Epidemiology, 18*, 458-466. doi:10.1016/j.annepidem.2007.12.009
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck depression inventory (BDI-II)* (2nd. Ed.) San Antonio, TX: The Psychological Association.
- Benton, D. (2010). The plausibility of sugar addiction and its role in obesity and eating disorders. *Clinical Nutrition, 29*(3), 288-303. doi:10.1016/j.clnu.2009.12.001
- Berridge, K. C. (2007). The debate over dopamine's role in reward: the case for incentive salience. *Psychopharmacology, 191*(3), 391-431.
doi:10.1007/s00213-006-0578-x

- Berridge, K. C. (2009). 'Liking' and 'wanting' foods: Brain substrates and roles in eating disorders. *Physiology & Behavior*, *97*, 537-550.
doi:10.1016/j.physbeh.2009.02.044
- Berridge, K. C., Roginson, T. E., & Aldridge, J. W. (2009). Dissecting components of reward: 'liking', 'wanting', and learning. *Current Opinion in Pharmacology*, *9*(1), 65-73. doi:10.1016/j.coph.2008.12.014
- Berridge, K. C., Ho, C-Y., Richard, J. M., & DiFeliceantonio. (2010). The tempted brain eats: Pleasure and desire circuits in obesity and eating disorders. *Brain Research*, *1350*, 43-64. doi:10.1016/j.brainres.2010.04.003
- Blumenthal, D. M., & Gold, M. S. (2010). Neurobiology of food addiction. *Current Opinion in Clinical Nutrition and Metabolic Care*, *13*, 359-365.
doi:10.1097/MCO.ob013e32833ad4d4
- Bray, G. A. (2004). Medical consequences of obesity. *The Journal of Clinical Endocrinology & Metabolism*, *89*(6), 2583-2589. doi:10.11210/jc.2004.0535
- Brinkworth, G. D., Buckley, J. D., Noakes, M., Clifton, P. M., & Wilson, C. J. (2009). Long-term effects of a very low-carbohydrate diet and a low-fat diet on mood and cognitive function. *Archives of Internal Medicine*, *169*(20), 1873-1880.
- Brocki, J. M., & Wearden, A. J. (2006). A critical evaluation of the use of interpretative phenomenological analysis (IPA) in health psychology. *Psychology & Health*, *21*(1), 87-108. doi:10/1080/14768320500230185

- Brown, S. L., Schiraldi, G. R., & Wroblewski, P. P. (2009). Association of eating behaviors and obesity with psychosocial and familial influences. *American Journal of Health Education, 40*(2), 80-89.
- Brown, T., Avenell, A., Edmunds, L. D., Moore, H., Whittaker, V., Avery, L., & Summerbell, C. (2009). Systematic review of long-term lifestyle interventions to prevent weight gain and morbidity in adults. *Obesity Reviews, 10*(6), 627-638. doi:10.1111/j.1467-789x.2009.00641.x
- Brownell, K. D., & Battle Horgen, K. (2004). *Food Fight: The inside story of the food industry, America's obesity crisis, and what we can do about it*. New York: McGraw Hill.
- Brzezinski, M. (2013). *Obsessed: America's food addiction – and my own*. New York: Weinstein Books.
- Burmeister, J. M., Hinman, N., Koball, A., Hoffmann, & Carels, R. A. (2013). Food addiction in adults seeking weight loss treatment. Implications for psychosocial health and weight loss. *Appetite, 60*, 103-110. doi:10.1016/j.appet.2012.09.013
- Cameron, J., & Doucet, E. (2007). Getting to the bottom of feeding behavior: Who's on top? *Applied Physiology Nutrition and Metabolism, 32*(2), 177-189.
Retrieved from <http://www.highbeam.com/doc/1G1-176778474.html>
- Carr, D., & Friedman, M. A. (2005). Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *Journal of Health and Social Behavior, 46*, 244-259. doi:10.1177/002214650504600303

- Carroll, D. D., Blanck, H. M., Serdula, M. K., & Brown, D. R. (2010). Obesity, physical activity, and depressive symptoms in a cohort of adults aged 51 to 61. *Journal of Aging and Health, 22*(3), 384-398. doi:10.1177/0898264309359421
- Centers for Disease Control and Prevention. (2008). *National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2007*. Atlanta, GA: Author.
- Chen, Y., Jiang, Y., & Mao, Y. (2009). Association between obesity and depression in Canadians. *Journal of Women's Health, 18*(10), 1687-1692. doi:10.1089/jwh.2008.1175
- Clark, M. C., & Saules, K. K. (2013). Validation of the Yale Food Addiction Scale among a weight-loss surgery population. *Eating Behaviors, 14*, 216-219. doi:10.1016/j.eatbeh.2013.01.002
- Clarke, P., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2008). Social disparities in BMI trajectories across adulthood by gender, race/ethnicity and lifetime socio-economic position: 1986-2004. *International Journal of Epidemiology, 38*(2), 499-509. doi:10.1093/ije/dyn214
- Clark, M. M., Niaura, R., King, T. K., & Pera, V. (1996). Depression, smoking, activity level, and health status: Pretreatment predictors of attrition in obesity treatment. *Addictive Behaviors, 21*(4), 509-513. doi:10.1016/0306-4603(95)00081.X

- Clarke, C. (2009). An introduction to interpretative phenomenological analysis: A useful approach for occupational therapy research. *British Journal of Occupational Therapy*, 72(1), 37-39.
- Conner, M., Fitter, M., & Fletcher, W. (1999). Stress and snacking: A diary study of daily hassles and between-meal snacking. *Psychology & Health*, 14(1), 51-63.
- Conroy, S. A. (2003). A pathway for interpretative phenomenology. *International Journal of Qualitative Methods*, 2(3). Article 4. Retrieved from http://www.ualberta.ca/~iiqm/backissues/2_3final/pdf/confoy.pdf
- Cooper, Z., Fairburn, C. G., & Hawker, D. M. (2003). *Cognitive-behavioral treatment of obesity: A clinician's guide*. The Guilford Press, New York, NY.
- Corcores, J. A., & Gold, M. (2009). The salted food addiction hypothesis may explain overeating and the obesity epidemic. *Medical Hypotheses*, 73(6), 892-899. doi:10.1016/j.mehy.2009.06.049
- Corsica, J. A., & Pelchat, M. L. (2010). Food addiction: True or false? *Current Opinion in Gastroenterology*, 26, 165-169. doi:10.1097.MOG.0b013e328336528d
- Corwin, R. L., & Grigson, P. S. (2009). Symposium overview-food addiction: fact or fiction? *The Journal of Nutrition*, 139(3), 617-619. doi:10.3945/jn.108.097691
- Crow, T. C. (2005). Safety of low-carbohydrate diets. *Obesity Reviews*, 6(3), 235-245. doi:10.1111/j.1467-789X.2005.00196.x
- Dagher, A. (2009). The neurobiology of appetite: Hunger as addiction. *International Journal of Obesity*, 33(Supplement2), S30-S33. doi:10.1039/ifo.2009.69

- Dallman, M. F. (2010). Stress-induced obesity and the emotional nervous system. *Trends in Endocrinology and Metabolism*, 21(3), 159-165.
doi:10.1016/j.tem.2009.10.004
- Dallman, M. F., Pecoraro, N. C., Akana, S. F., La Fleur, S. E., Gomez, F., Houshyar, H., . . . Manalo, S. (2003). Chronic stress and obesity: A new view of “comfort food.” *Proceedings of the National Academy of Sciences of the United States of America*, 100(20), 11696-11701. doi:10.1073/pnas.1934666100
- Davis, C., & Carter, J. C. (2009). Compulsive overeating as an addiction disorder. A review of theory and evidence. *Appetite*, 53(1), 1-8.
doi:10.1016/j.appet.2009.05.018
- Davis, C., Curtis, C., Levitan, R. D., Carter, J. C., Kaplan, A. S., & Kennedy, J. L. (2011). Evidence that ‘food addiction’ is a valid phenotype of obesity. *Appetite*, 57(4), 711-717. doi:10.1016/j.appet.2011.08.017
- Davis, C. A., Levitan, R. D., Reid, C., Carter, J. C., Kaplan, A. S., Patte, K. A., Kennedy, J. L. (2009). Dopamine for “wanting” and opioids for “liking”: A comparison of obese adults with and without binge eating. *Obesity*, 17, 1220-1225. doi:10.1028/oby.2009.52
- Davis, C., Zai, C., Levitan, R. D., Kaplan, A. S., Carter, J. C., Reid-Westoby, C., . . . Kennedy, J. L. (2011). Opiates, overeating and obesity: A psychogenetic analysis. *International Journal of Obesity*, 35(10), 1347-1354.
doi:10.1038.ijo.2010.276
- Deitel, M. (2006). The obesity epidemic. *Obesity Surgery*, 17(4), 377-378.

- Deitel, M., Gawdat, K., & Melissas, J. (2007). Reporting weight loss 2007. *Obesity Surgery, 17*(5), 565-568.
- Devlin, J. D., Goldfein, J. A., Flancbaum, L., Bessler, M., & Eisenstadt, R. (2004). Surgical management of obese patients with eating disorders: A survey of current practice. *Obesity Surgery, 14*(9), 1252-1257.
- De Vriendt, T., Moreno, L. A., & De Henauw, S. (2009). Chronic stress and obesity in adolescents: Scientific evidence and methodological issues for epidemiological research. *Nutrition, Metabolism & Cardiovascular Diseases, 19*, 511-519.
doi:10.1016/j.numecd.2009.02.009
- Dhaliwal, S. S., Howat, P., Bejoy, T., & Welborn, T. A. (2010). Self-reported weight and height for evaluating obesity control programs. *American Journal of Health Behavior, 34*(4), 489-499.
- Douketis, J. D., Macie, C., Thabane, L., & Williamson, D. F. (2005). Systemic review of long-term weight loss studies in obese adults: Clinical significance and applicability to clinical practice. *International Journal of Obesity, 29*, 1153-1167. doi:10.1038/sj.ijo.0802982
- Duhigg, C. (2012). *The power of habit: Why we do what we do in life and business*. Doubleday: Canada.
- Eaton, S. B. (2004). The ancestral human diet: What was it and should it be a paradigm for contemporary nutrition? *Proceedings of the Nutrition Society, 65*(1), 1-6.
doi:10.1079/PNS2005471

- Ebbeling, C. B., Pawlak, D. B., & Ludwig, D. S. (2002). Childhood obesity: Public-health crisis, common sense cure. *The Lancet*, *36*(9331), 473-482.
doi:10.1016/S0140-6736(02)09678-2
- Eichen, D. W., Lent, M. R., Goldbacher, E., & Foster, G. D. (2013). Exploration of “food addiction” in overweight and obese treatment-seeking adults. *Appetite*, *67*, 22-24. doi:10.1016.j.appet.2013.03.008
- Epstein, L. H., Smith, J. A., Vara, L. S., & Rodefer, J. S. (1991). Behavioral economic analysis of activity choice in obese children. *Health Psychology*, *10*(5), 311-316. doi:10.1037/0278-6133.10.5.311
- Erlanson-Albertsson, C. (2005). How palatable food disrupts appetite regulation. *Basic & Clinical Pharmacology & Toxicology*, *97*, 61-73. doi:10.1111/j.1742-7843.2005.pto_179.x
- Everitt, B. J., Belin, D., Economidou, D., Pelloux, Y., Dalley, J. W., & Robbins, T. W. (2008). Neural mechanisms underlying the vulnerability to develop compulsive drug-seeking habits and addiction. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *363*(1507), 3125-3135.
doi:10.1098/rstb.2008.0089
- Fade, S. A. (2003). Communicating and judging the quality of qualitative research: The need for a new language. *Journal of Human Nutrition and Dietetics*, *16*(3), 139-149.
- Fabricatore, A. N., Wadden, T. A., Moore, R. H., Butryn, M. L., Gravallesse, E. A., Erondou, N. E., . . . Nguyen, A. M. (2009). Attrition from randomized controlled

trials of pharmacological weight loss agents: A systematic review and analysis.

Obesity Reviews, 10(3), 333-341. doi:10.1111/j.1467-789X-2009.00567.x

Fassimo, S., Daga, G., Piero, A., Leombruni, P., & Rovera, G. (2001). Anger and personality in eating disorders. *Journal of Psychosomatic Research*, 51(6), 757-764. doi:10.1016/S0022-3999(01)002.80-X

Finlay, L. (2011). Interpretative phenomenological analysis. In *Phenomenology for therapists: Researching the lived world* (pp. 139-147). Chichester, UK: John Wiley & Sons, Ltd.

Finlayson, G., Dalton, M., & Blundell, J. E. (2012). Liking versus wanting food in human appetite: Relation to craving, overconsumption, and “food addiction”. In K. D. Brownell & M. S. Gold (Eds.), *Food and addiction: A comprehensive handbook* (pp. 220-225). New York: Oxford University Press.

Flegal, K. M., Graubard, B. I., Williamson, D. F., & Gail, M. H. (2007). Cause-specific excess deaths associated with underweight, overweight, and obesity. *Journal of the American Medical Association*, 298(17), 2028-2038. doi:10.1001/jama.298.17.2028

Flegal, K. M., Carrol, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends of body mass index among US adults, 1999-2010. *Journal of the American Medical Association*, 307(5), 491-497. doi:10.1001/jama.2012.40

Flores, P. J. (2004). *Addiction as an attachment disorder*. Plymouth, MA: Jason Aronson.

- Fortuna, J. L. (2012). The obesity epidemic and food addiction: Clinical similarities to drug dependence. *Journal of Psychoactive Drugs, 44*(1), 56-63.
doi:10.1080/02791072.2012.662092
- Foster, G. D., Wyatt, H. R., Hill, J. O., Makris, A. P., Rosenbaum, D. L., Brill, C., . . . Klein, S. (2010). Weight and metabolic outcomes after 2 years on a low-carbohydrate versus low-fat diet. *Annals of Internal Medicine, 153*(3), 147-157.
- Fowler-Brown, A., & Kahwati, L. (2004). Prevention and treatment of overweight in children and adolescents. *American Family Physician, 69*(11), 2591-2598.
- Fox, A. P., Larkin, M., & Leung, N. (2011). The personal meaning of eating disorder symptoms: An interpretative phenomenological analysis. *Journal of Health Psychology, 16*(1), 116-125. doi:1177/1359105310368449
- Frances, A. (2013). *Saving normal: An insider's revolt against out-of-control psychiatric diagnosis, DSM-5, Big Pharma, and the medicalization of ordinary life*. New York: Harper Collins
- Frank, E. (1991). Shame and guilt in eating disorders. *American Journal of Orthopsychiatry, 61*(2), 303-306. doi:10.1037/h0079241
- Freedman, D. S., Khan, L. K., Serdula, J. K., Ogden, C. L., & Deitz, W. H. (2006). Racial and ethnic differences in secular trends for childhood BMI, weight, and height. *Obesity, 14*(2), 301-308.
- Fry, J., & Finley, W. (2005). The prevalence and costs of obesity in the EU. *Proceedings of the Nutrition Society, 64*(3), 359-362.
doi:10.1079/PNS2005443

- Gearhardt, A. N., Boswell, R. G., & White, M. A. (2014). The association of “food addiction” with disordered eating and body mass index. *Eating Behaviors, 15*, 427-433. doi:10.1016/j.eatbeh.2014.05.001
- Gearhardt, A. N., & Corbin, W. R. (2011). The role of food addiction in clinical research. *Current Pharmaceutical Design, 17*, 1140-1142.
- Gearhardt, A. N., & Corbin, W. R. (2012). Interactions between alcohol consumption, eating, and weight. In K. D. Brownell, & M. S. Gold (Eds.), *Food and addiction: A comprehensive handbook* (pp. 249-253). New York: Oxford University Press.
- Gearhardt, A. N., Corbin, W. R., & Brownell, K. D. (2009a). Preliminary validation of the Yale Food Addiction Scale. *Appetite, 52*, 430-436.
doi:10.1016/j.appet.2008.12.003
- Gearhardt, A. N., Corbin, W. R., & Brownell, K. D. (2009b). Food addiction: An examination of the diagnostic criteria for dependence. *Journal of Addiction Medicine, 3*(1), 1-7. doi:10.1097/ADM.0b013e318193c993
- Gearhardt, A. N., Davis, C., Kushner, R., & Brownell, K. D. (2011). The addiction potential of hyperpalatable foods. *Current Drug Abuse Reviews, 4*(1), 140-145.
- Gearhardt, A. N., Grilo, C. M., DiLeone, R. J., Brownell, K. D., & Potenza, M. N. (2011). Can food be addictive? Public health and policy implications. *Addiction, 106*, 1208-1212. doi:10.1111/j.1360-0443.2010.03301.x
- Gearhardt, A. N., Phil, M., & Corbin, W. R. (2011). The role of food addiction in clinical research. *Current Pharmaceutical Design, 17*, 1140-1142.

- Gearhardt, A. N., White, M. A., Masheb, R. M., Morgan, P. T., Crosby, R. D., & Grilo, C. M. (2012). An examination of the food addiction construct in obese patients with binge eating disorder. *International Journal of Eating Disorders*, 45(5), 657-663. doi:10.1002/eat.20957
- Gearhardt, A. N., Yokum, S., Orr, P. T., Stice, E., Corbin, W. R., & Brownell, K. D. (2011). Neural correlates of food addiction. *Archives of General Psychiatry*, 68(8), 808-816. doi:10.1001/archgenpsychiatry.2011.32
- Geliebter, A., & Aversa, A. (2003). Emotional eating in overweight, normal weight, and underweight individuals. *Eating Behaviors*, 3(4), 341-347. doi:10.1016/S1471-0153(02)
- Giskes, K., Kamphuis, C. B. M., Van Lenthe, F. J., Kremers, S., Droomers, M., & Brug, J. (2007). A systematic review of associations between environmental factors, energy and fat intakes among adults. Is there evidence for environments that encourage obesogenic dietary intakes? *Public Health Nutrition*, 10(10), 1005-1017. doi:10.1017/S1368980007665525
- Gold, M. S., Graham, N. A., Cocores, J. A., & Nixon, S. J. (2009). Food addiction? *Journal of Addiction Medicine*, 3(1), 42-45. doi:10.1097/ADM.0b013e318199cd20
- Gold, M. S., & Shriner, R. L. (2013). Food addictions. In P. M. Miller (Ed.), *Principles of addictions: Comprehensive addictive behaviors and disorders, volume 1* (pp. 787-795). doi:10.1016/B978-0-12-398336-7.00079-6

- Goldstein, R. Z., & Volkow, N. D. (2011). Dysfunction of the prefrontal cortex in addiction: neuroimaging findings and clinical implications. *Nature Reviews Neuroscience, 12*, 652-669. doi:10.1038/nrn3119.
- Greenberg, I., Stampfer, M. J., Schwarzfuchs, D., & Shai, I. (2009). Adherence and success in long-term weight loss diets: The dietary intervention randomized controlled trial (DIRECT). *Journal of the American College of Nutrition, 28*(2), 159-168.
- Guy, E. G., Choi, E., & Pratt, W. E. (2011). Nucleus accumbens dopamine and mu-opioid receptors modulate the reinstatement of food-seeking behavior by food-associated cues. *Behavioural Brain Research, 219*, 265-272.
doi:10.1016/j.bbr.2011.01.024
- Haines, J., Neumark-Sztainer, D., Eisenberg, M. E., & Hannan, P. J. (2006). Weight-teasing and disordered eating behaviors in adolescents: Longitudinal findings from project EAT (Eating Among Teens). *Pediatrics, 117*(2), 209-215.
doi:10.1542/peds.2005-1242
- Hedley, A. A., Ogden, C. L., Carroll, M. D., Curtin, L. R., Flegal, K. M., (2004). Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. *Journal of the American Medical Association, 291*(23), 2847-2850. doi:10.1001/jama.291.23.2847
- Heinz, A., Siessmeier, T., Wrase, J., Hermann, D., Klein, S., Grusser-Sinopoli, S.,... Bartenstein, P. (2004). Correlation between dopamine D2 receptors in the ventral striatum and central processing of alcohol cues and craving. *The*

American Journal of Psychiatry, 161(10), 1783-1789.

doi:10.1176/appi.ajp.161.10.1783

Herman, C. P. & Polivy, J. (1975). Anxiety, restraint, and eating behavior. *The Journal of Abnormal Psychology*, 84(6), 666-672. doi:10.1037/0021-843X.84.6.666

Hession, M., Rolland, C., Kulkarni, U., Wise, A., & Broom, J. (2008). Management of obesity: Systemic review of randomized controlled trials of low-carbohydrate vs. low-fat/low-calorie diets in the management of obesity and its comorbidities. *Obesity Reviews*, 10(1), 36-50. doi:10.1111/j.1467-789X.2008.00528.x

Hobel, B., Avena, M., Bocarsley, M., & Radar, P. (2009). Natural addiction: A behavioral and circuit model based on sugar addiction in rats. *Journal of Addiction Medicine*, 3(1), 35-45. doi:10.1097/ADM.0b013e31819aa621

Holden, C. (2001). 'Behavioral' addictions: do they exist? *Science*, 294, 980-982. doi:10.1126/science.294.5544.980

Hymen, S. E. (2007). The neurobiology of addiction: Implications for voluntary control of behavior. *The American Journal of Bioethics*, 7(1), 8-11.

doi:10.1080/152651606001063969

Ifland, J. R., Preuss, H. G., Marcus, M. T., Rourke, K. M., Taylor, W. C., Burau, K., . . . Manso, G. (2009). Refined food addiction: A classic substance use disorder. *Medical Hypotheses*, 72(5), 518-526. doi:10.1016/j.mehy.2008.11.035

- Jeffery, R. W., Epstein, L. H., Wilson, G., Drewnowski, A., Stunkard, A. J., & Wing, R. R. (2000). Long-term maintenance of weight loss: Current status. *Health Psychology, 19*(Suppl 1), 5-16. doi:10.1037/0278-6133.19.Suppl1.5
- Jin, X. (2012). *The relationship between food addiction and obesity*. Unpublished doctoral dissertation. Walden University.
- Johnson, M., & Kenny, P. J. (2010). Dopamine D2 receptors in addiction-like reward dysfunction and compulsive eating in obese rats. *Nature Neuroscience, 13*(5), 635-641. doi:10.1038/nn.2519
- Kalivas, P. W. (2008). Addiction as a pathology in prefrontal cortical regulation of corticostriatal habit circuitry. *Neurotoxicity Research, 14*(2,3), 185-189.
- Kally, Z., & Cumella, J. (2008). 100 midlife women with eating disorders: A phenomenological analysis of etiology. *The Journal of General Psychology, 135*(4), 359-378. doi:10.3200/GENP.135.4.359-378
- Karelis, A. D., St-Pierre, D. H., Conus, F., Rabasa-Lhoret, R., & Poehlman, E. T. (2004). Metabolic and body composition factors in subgroups of obesity: What do we know? *The Journal of Clinical Endocrinology & Metabolism, 89*(6), 2569-2575. doi: 10.1210/jc.2004-0165
- Kay, E., & Kingston, H. (2002). Feelings associated with being a carrier and characteristics of reproductive decision making in women known to be carriers of X-linked conditions. *Journal of Health Psychology, 7*(2), 169-181. doi:10.1177/1359105302007002456

- Kayman, S., Bruvold, W., & Stern, J. S. (1990). Maintenance and relapse after weight loss in women: Behavioral aspects. *The American Journal of Clinical Nutrition*, 52(5), 800-897.
- Keller, M. (1972). On the loss-of-control phenomenon in alcoholism. *British Journal of Addiction to Alcohol & Other Drugs*, 67(3), 153-166. doi:10.1111/j.1360-0443.1972.tb01188.x
- Kelly, A., & Carter, J. (2013). Why self-critical patients present with more severe eating disorder pathology: The mediating role of shame. *British Journal of Clinical Psychology*, 52(2), 148-161. doi:10.1111/bjc.12006.PMD:24215145
- Kenny, P. J. (2011). Reward mechanisms in obesity: New insights and future directions. *Neuron*, 69, 664-679. doi:10.1016/j.neuron.2011.02.016
- Kessler, D. A. (2009). *The end of overeating: Taking control of the insatiable North American appetite*. Toronto, ON: McClelland & Stewart Ltd.
- Kinzi, J. F., Schrattanecker, M., Traweger, C., Aigner, F., Fiala, M., & Biebl, W. (2007). Quality of life in morbidly obese patients after surgical weight loss. *Obesity Surgery*, 17(2), 229-235.
- Koob, G. G., & Volkow, N. D. (2010). Neurocircuitry of addiction. *Neuropsychopharmacology*, 35(1), 217-238. doi:10.1038/npp.2009.110
- Knauper, B., Cheema, S., Rabiau, M., & Borten, O. (2005). Self set dieting roles: Adherence and production of weight loss success. *Appetite*(3), 283-288. doi:10.1016/j.appet.2005.01.008

- Kuczmarski, M. F., Kuczmarski, R. J., & Najjar, M. (2001). Effects of age on validity of self-reported height, weight, and body mass index: Findings from the third National Health and Nutrition Examination Survey, 1988-1994. *Journal of the American Dietetic Association, 101*(1), 28-34.
- Kuijer, R., Boyce, J., & Marshall, E. (2015). Associating a prototypical forbidden food item with guilt or celebration: Relationship with indicators of (un)healthy eating and the moderating role of stress and depressive symptoms. *Psychology & Health, 30*(2), 203-217. doi:10.1080/08870446.2014.960414
- Kumaresan, V., Yuan, M., Yee, J., Famous, K. R., Anderson, S. M., Schmidt, H. D., & Pierce, R. C. (2009). Metabotropic glutamate receptor 5 (mGluR5) antagonists attenuate cocaine priming and cue-induced reinstatement of cocaine seeking. *Behavioral Brain Research, 202*(2), 238-244. doi:10.1016/j.bbr.2009.02.039
- Lakdawalla, D., & Philipson, T. (2009). The growth of obesity and technological change. *Economics and Human Biology, 7*(3), 283-293. doi:10.1016/j.ehb.2009.08.001
- Larkin, M., & Griffiths, M. D. (2002). Experiences of addiction and recovery: The case for subjective accounts. *Addiction Research & Theory, 10*(3), 281-311. doi:10.1080/16066350211966x
- Larkin, M., Watts, S., & Clifton, E. (2006). Giving voice and making sense in interpretative phenomenological analysis. *Qualitative Research in Psychology, 3*(2), 102-120. doi:10.1191/1478088706qp062oa

- Levitan, R. D., & Davis, C. (2010). Emotions and eating behavior: Implications for the current obesity epidemic. *University of Toronto Quarterly*, 79(2), 783-799.
- Lewis, S., Thomas, S. L., Hyde, J., Castle, D., Blood, R. W., & Komeraroff, P. A. (2010). "I don't eat a hamburger and large chips every day!" A qualitative study of the impact of public health messages about obesity on obese adults. *BMC Public Health*, 10, 309-408. doi:11.1186/1471.2458.10.309
- Lewis, T., Amini, F., & Lannon, R. (2000). *A general theory of love*. New York: Vintage Books
- Lincoln, Y. S., & Guba, E. C. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lindvall, K., Larsson, C., Weinehall, L., & Emmelin, M. (2010). Weight maintenance as a tight rope walk – a Grounded Theory study. *BMC Public Health*, 10 (51). Retrieved from <http://www.biomedcentral.com/1471-2458/10/51>
- Liu, Y., von Deneen, K. M., Kobeissy, F. H., Firas, H., & Gold, M. S. (2010). Food addiction and obesity: Evidence from bench to bedside. *Journal of Psychoactive Drugs*, 42(2), 133-145.
- Loos, R. J. F., & Bouchard, C. (2003). Obesity – is it a genetic disorder? *Journal of Internal Medicine*, 254(5), 401-425. doi:10.1046/j.1365-2796.2003.01242.x
- Luter, M., & Nestler, E. J. (2009). Homeostatic and hedonic signals interact in the regulation of food intake. *Journal of Nutrition*, 139(3), 629-632. doi:10.3945/jn.108.097618
- Marlatt, G. A., & Gordon, J. R. (1980). Determinants of relapse: Implications for the maintenance of behavior change. In P.O. Davidson & S. M. Davidson (Eds.),

Behavioral medicine: Changing health life-styles (pp. 410-452). Elmsford, NY: Pergamon.

Martinez-Hernandez, A., Enriquez, L., Moreno-Moreno, M. J., & Marti, A. (2007).

Genetics of obesity. *Public Health Nutrition*, *10*(10A), 1138-1144.

doi:10.1017/S1368980007000626

Marti, A., Martinez-Gonzalez, A., & Martinez, J. A. (2008). Interaction between genes and lifestyle factors on obesity. *Proceedings of the Nutrition Society*, *67*, 1-8.

doi:10.1017/S002966510800596X

Mata, J., Todd, P. M., & Lippke, S. (2010). When weight management lasts. Lower perceived rule complexity increases adherence. *Appetite*, *54*(1), 37-43.

doi:10.1016/j.appet.2009.09.004

Mauraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*,

126(2), 247-259. Doi:10.1037//0033-2909.126.247

Mauro, M., Taylor, V., Wharton, S., & Sharma, A. M. (2008). Barriers to obesity treatment. *European Journal of Internal Medicine*, *19*, 173-180.

doi:10.1016/j.ejim.2007.09.011

Mays, N., & Pope, C. (2000). Qualitative research in health care: Assessing quality in qualitative research. *British Medical Journal*, *320*(1), 50-52.

McCord, J., & Slemes, S. (1964). Conscience orientation and dimensions of

personality. *Behavioral Science*, *9*(1), 18-29. doi:10.1002/bs.3830090104

- McFadden, K. M. (2010). Cross-addiction: From morbid obesity to substance abuse. *Bariatric Nursing and Surgical Patient Care*, 5(2), 145-178.
doi:10.1089/bar.2010.9922
- Meitus-Snyder, M. L., & Lustig, R. H. (2008). 'Childhood obesity: Adrift in the "limbic triangle.'" *Annual Review of Medicine*, 59, 147-162.
doi:10.1146/annurev.med59.103106.105628
- Merlo, L. J., Klingman, C., Malasanos, T. H., & Silverstein, J. H. (2009). Exploration of food addiction in pediatric patients: A preliminary investigation. *Journal of Addiction Medicine*, 3(1), 26-32. doi:10.1097//ADM.0b013e31819638b0
- Meule, A., & Kubler, A. (2012). Food cravings in addiction: The distinct role of positive reinforcement. *Eating Behaviors*, 13, 252-255.
doi:10.1016/j.eatbeh.2012.02.001
- Miller, W. R. (1990). Spirituality: The silent dimension in addiction research. The 1990 Leonard Ball oration. *Drug and Alcohol Review*, 9(3), 259-266.
- Mokdad, A. H., Ford, E. S., Bowman, B. A., Dietz, W. H., Vinicor, F., Bales, V. S., & Marks, J. S. (2003). Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *Journal of the American Medical Association*, 28(1), 76-79.
Doi:10.1001/jama289.1.76
- Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *Journal of the American Medical Association*, 291(10), 1238-1245. doi:10.1001/jama291.10.1238

- Monti, P. M., & Ray, L. A. (2012). The study of craving and its role in addiction. In K. D. Brownell, & M. S. Gold (Eds.), *Food and addiction: A comprehensive handbook* (pp. 53-58). New York: Oxford University Press.
- Moreira, E. A. M., Most, M., Howard, J., & Ravussin, E. (2011). Dietary adherence to long-term controlled feeding in a calorie-restriction study in overweight men and women. *Nutrition in Clinical Practice, 20*(1), 309-315.
doi:10.1177/0884533611405992
- Moss, M. (2013). *Salt Sugar Fat: How the Food Giants Hooked Us*. ON: McClelland & Stewart.
- Mulveen, R., & Hepworth, J. (2006). An interpretative phenomenological analysis of participation in a pro-anorexia internet site and its relationship with disordered eating. *Journal of Health Psychology, 11*(2), 283-296.
doi:10.1177/1359105306061187
- Munro, I., & Garg, M. L. (2011). Dietary supplementation with long chain omega-3 polyunsaturated fatty acids and weight loss in obese adults. *Obesity Research & Clinical Practice* (in press). doi:10.1016/j.orcp.2011.11.001
- Neal, D. T., Wood, W., Wu, M., & Kurlander, D. (2011). The pull of the past: When do habits persist despite conflict with motives? *Personality and Social Psychology Bulletin, 37*(11), 1428-1437. doi:10.1177/0146167211419863
- Nguyen-Michel, S. T., Unger, J. B., & Spruijt-Metz, D. (2007). Dietary correlates of emotional eating in adolescence. *Appetite, 49*(2), 494-469.
doi:10.1016/j.appet.2007.03.005

- Nunn, A. L. (2009). *Eating disorder and the experience of self: An interpretative phenomenological analysis* (Doctoral dissertation, University of Hertfordshire). Retrieved from <http://www.core.kmi.open.ac.uk/download/pdf/164032.pdf>
- Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States 1999-2004. *Journal of the American Medical Association, 295*(13), 1549-1555. doi:10.1001/jama295.13.1549
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of obesity in the United States, 2009-2010. *NCHS Data Brief, no 82*. National Center for Health Statistics, Hyattsville, MD.
- Ogden, C. L., Flegal, K. M., Carroll, M. D., & Johnson, C. L. (2002). Prevalence and trends in overweight among US children and adolescents 1999-2000. *Journal of the American Medical Association, 288*(14), 1728. doi:10.1001/jama.288.14.1728
- Ogden, J., Clementi, C., & Aylwin, S. (2006). The impact of obesity surgery and the paradox of control: A qualitative study. *Psychology & Health, 21*(2), 273-293. doi:10.1080/1476320500129064
- Ogden, J., & Sidhu, S. (2006). Adherence, behavior change, and visualization: A qualitative study of the experiences of taking an obesity medication. *Journal of Psychosomatic Research, 61*, 545-552. doi:10.1016/j.jpsychores.2006.04.017
- Olshansky, S. J., Passaro, D. J., Hershow, R. C., Layden, J., Carnes, B. A., Brody, J., . . . Ludwig, D. S. (2005). A potential decline in life expectancy in the United

States in the 21st century. *New England Journal of Medicine*, 352(11), 1138-1145.

Pandit, R., deJong, J. W., Vanderschuren, L. J. M. J., & Adan, R. A. H. (2011).

Neurobiology of overeating and obesity: The role of melanocortins and beyond. *European Journal of Pharmacology*, 660(1), 28-42.

doi:10.1016/j.ejphar.2011.01.034

Parylak, S. L., Koob, G. F., & Zorrilla, E. P. (2011). The dark side of food addiction.

Physiology and Behavior, 104, 149-156. doi:10.1016/j.physbeh.2011.04.063

Pedram, P., Wadden, D., Amini, P., Gulliver, W., Randell, E., Cahill, F., . . . Sun, G.

(2013). Food addiction: Its prevalence and significant association with obesity in the general population. *PLoS ONE*, 8(9):e74832

doi:10.1371/journal.pone.0074832

Pelchat, M. L. (2009). Food addiction in humans. *The Journal of Nutrition*, 139(3),

620-622. doi:10.3945/jn.108.097816

Pelchat, M. L., Johnson, A., Chan, R., Valdez, J., & Ragland, J. D. (2004). Images of

desire: Food-craving activation during fMRI. *Neuroimage*, 23, 1486-1493.

doi:10.1016/j.neuroimage.2004.08.023

Peters, J. C., Wyatt, H. R., Donahoo, W. T., and Hill, J. O. (2002). From instinct to

intellect: The challenge of maintaining healthy weight in the modern world.

Obesity Reviews, 3(2), 69-74. doi:10.1016/j.1467-789X.2002.00059.x

Petry, N. M., Barry, D., Pietrzak, R. H., & Wagner, J. A. (2008). Overweight and

obesity are associated with psychiatric disorders: Results from the National

- Epidemiologic Survey on Alcohol and Related Conditions. *Psychosomatic Medicine*, 70, 288-297. doi:10.1097/PSY.0b013e3181651651
- Pieper, J. R., & Laugero, K. D. (2013). Preschool children with lower executive function may be more vulnerable to emotional-based eating in the absence of hunger. *Appetite*, 62, 103-109. doi:10.1016/j.appet.2012.11.020
- Pollack, A. (2013, June 18). A.M.A. recognizes obesity as a disease. *The New York Times*. Retrieved from <http://www.nytimes.com>
- Popkess-Vawter, S., Wendel, S., Schmoll, S., & O'Connell, K. (1998). Overeating reversal theory, and weight cycling. *Western Journal of Nursing Research*, 20(1), 67-83.
- Power, C., Miller, S. K., & Alpert, P. T. (2007). Promising new causal explanations for obesity and obesity-related diseases. *Biological Research for Nursing*, 8(3), 223-233. doi:10.1177/1099800406292674
- Paeratakul, S., White, M. A., Williamson, D. A., Ryan, D. H., & Bray, G. A. (2002). Sex, race/ethnicity, socioeconomic status, and BMI in relation to self-perception of overweight. *Obesity Research*, 10(5), 345-350. doi:10.1002/oby.2002.10.issue-5/issuetoc
- Pretlow, R. A. (2011). Addiction to highly pleasurable food as a cause of the childhood obesity epidemic: A qualitative internet study. *Eating Disorders: The Journal of Treatment & Prevention*, 19(4), 295-307. doi:10.1080/10640266.2011.584803

- Prezioso, F. A. (1987). Spirituality in the recovery process. *Journal of Substance Abuse Treatment*, 4(3-4), 233-238. doi:10.1016/507-40-5472(87)80017-X
- Prochaska, J. O., DeClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist*, 47(9), 1102-1114.
- Puhl, R. M., Andreyeva, T., & Brownell, K. D. (2008). Perceptions of weight discrimination: Prevalence and comparison to race and gender discrimination in America. *International Journal of Obesity*, 32(6), 992-1000. doi:10.1038/ijo.2008.12
- Puhl, R. M., & Brownell, K. D. (2001). Bias, discrimination, and obesity. *Obesity Research*, 9(12), 788-805. doi:10.1038/oby.2001.109
- Puhl, R. M., & Brownell, K. D. (2003). Ways of coping with obesity stigma: Review and conceptual analysis. *Eating Behaviors*, 4(1), 53-78.
- Puhl, R. M., & Brownell, K. D. (2006). Confronting and coping with weight stigma: An investigation of overweight and obese adults. *Obesity*, 14(10), 1802-1810.
- Reid, K., Flowers, P., & Larkin, M. (2005). Exploring lived experience. *Psychologist*, 18(1), 20-25.
- Roberts, R. E., Strawbridge, W. J., Deleger, S., & Kaplan, G. A. (2002). Are the fat more jolly? *Annals of Behavioral Medicine*, 24(3), 169-180.
- Rollnick, S., Mason, P., & Butler, C. C. (1999). *Health Behavior Change: A Guide for Practitioners*. Philadelphia, PA: Churchill Livingstone.

- Ronel, N., & Libman, G. (2003). Eating disorders and recovery: Lessons from overeaters anonymous. *Clinical Social Work Journal*, *31*(2), 155-171.
doi:10.1023/A:1022962311073
- Rosen, O., & Aronne, L. J. (2012). Pharmacotherapy for obesity: Current and future treatments, In K.D. Brownell & M. S. Gold (Eds.) *Food and addiction: A comprehensive handbook*, (pp. 303-309). New York: Oxford University Press
- Ross, C. E. (1994). Overweight and depression. *Journal of Health and Social Behavior*, *35*(1), 63-80.
- Rushing, K. T. (2005). *Low carbohydrate diet: Treating obesity related disorders in adults* (Doctoral dissertation) Retrieved from
http://etd.lib.ttu.edu/theses/available/etd-06302005-130127/unrestricted/Rushing_Keith_T_Diss.pdf
- Saini, D. S. (2012). Locus of control and alcoholism. *Indian Journal of Health and Wellbeing*, *3*(3), 731-734.
- Salamone, J. D., & Correa, M. (2013). Dopamine and food addiction; Lexicon badly needed. *Biological Psychiatry*, *73*(9), e15-e24.
doi:10.1016/j.biopsych.2012.09.027
- Salamone, J. D., Cousins, M. S., & Snyder, B. J. (1997). Behavioral functions of nucleus accumbens dopamine: Empirical and conceptual problems with the anhedonia hypothesis. *Neuroscience and Biobehavioral Reviews*, *21*(3), 341-359.

- Schouten, R., Wiryasaputra, D. C., van Dielen, F. M. H., van Gemert, W. G., & Greve, J. W. M. (2010). Long-term results of bariatric restrictive procedures: A prospective study. *Obesity Surgery, 20*, 1617-1626. doi:10.1007/s11695-010-0211-2
- Schmidt, H. D., & Pierce, R. C. (2006). Systemic administration of dopamine, but not a serotonin or norepinephrine, transporter inhibitor reinstates cocaine seeking in the rat. *Behavioral Brain Research, 175*(1), 189-194.
doi:10.1016/j.bbr.2006.08.009
- Seacat, J. D., & Mickelson, K. D. (2009). Stereotype threat and the exercise/dietary health intentions of overweight women. *Journal of Health Psychology, 14*(4), 556-567. doi:10.1177/1359105309103575
- Shay, L. E. (2008). A concept analysis: Adherence and weight loss. *Nursing Forum, 43*(1), 42-52.
- Shriner, R. L. (2013). Food addiction: Detox and abstinence reinterpreted? *Experimental Gerontology, 48*, 1068-1074. doi:10.1016/j.exger.2012.12.005
- Shriner, R. L., & Gold, M. S. (2014). Food addiction: An evolving nonlinear science. *Nutrients, 6*(11), 5370-5391. doi:10.3390/nu6115370
- Siegel, R. D. (2014). *The science of mindfulness: A research-based path to well-being*. Chantilly, VA: The Great Courses.
- Simon, G. E., Ludman, E. J., Linde, J. A., Operskalski, B. H., Ichikawa, L., Rohde, P., . . . Jeffery, R. W. (2008). Association between obesity and depression in

middle-aged women. *General Hospital Psychiatry*, 30(1), 32-39.

doi:10.1016/j.genhosppsych.2007.09.001

Sinnot-Armstrong, W., & Pickard, H. (2013). What is addiction? In K. W. B. Fulford,

M. Davies, R. G. T. Gipps, G. Graham, J. Z. Sadler, G. Stanghellini, & T.

Thornton (Eds.), *The Oxford handbook of philosophy and psychiatry* (pp. 851-

864). Oxford, U.K.: Oxford University Press.

Silvalingam, S. K., Ashraf, J., Vallurupalli, N., Friderici, J., Cook, J., & Rothberg, M.

B. (2011). Ethnic differences in the self-recognition of obesity and obesity-

related comorbidities: A cross-sectional analysis. *Journal of General Internal*

Medicine, 26(6), 616-620. doi:10.1007/s11606-010-1623-3

Small, D. M. (2012). Food reward. In K. D. Brownell, & M. S. Gold (Eds.), *Food and*

addiction: A comprehensive handbook (pp. 178-184). New York: Oxford

University Press.

Smith, D. G., & Robbins, T. W. (2012). The neurobiological underpinnings of obesity

and binge eating: A rationale for adopting the food addiction model. *Biological*

Psychiatry. Advance online publication. doi:10.1016/j.biopsych.2012.08.026

Smith, J. A. (1996). Beyond the divide between cognition and discourse: Using

interpretative phenomenological analysis in health psychology. *Psychology and*

Health, 11(2), 261-271. doi:10.1080/08870449608400256

Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological

analysis and its contribution to qualitative research in psychology. *Qualitative*

Research in Psychology, 1, 39-54. doi:10.1191/1478088704qp004oa

- Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research*. Los Angeles, CA: Sage.
- Smith, J. A., & Osborn, M. (2008). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (2nd ed.; pp. 53-80). Washington, DC: Sage.
- Somerset, S. M., Graham, L., & Markwell, K. (2011). Depression scores predict adherence in a dietary weight loss intervention trial. *Clinical Nutrition*, article in press. doi:10.1016/j.clnu.2011.04.004
- Soria, G., Barbano, M. F., Maldonado, R., & Valverde, O. (2008). A reliable method to study cue-priming and stress-induced reinstatement of cocaine self-administration in mice. *Psychopharmacology*, 199, 593-603.
doi:10.1007/s00213-008-1189-x
- Spence-Jones, G. (2003). Overview of obesity. *Critical Care Nursing Quarterly*, 26(2), 83-88.
- Spring, B., Schneider, K., Smith, M., Kendzor, D., Appelhans, B., Hedker, D., & Pagoto, S. (2008). Abuse potential of carbohydrates for overweight carbohydrate cravers. *Psychopharmacology*, 197, 637-647.
doi:10.1007/s00213-008-1085-z
- Stern, L., Iqbal, N., Seshadri, P., Chicano, K. L., Daily, D. A., McGrory, J., . . . Samaha, F. F. (2004). The effects of low-carbohydrate versus conventional weight loss diets in severely obese adults: One-year follow-up of a randomized trial. *Annals of Internal Medicine*, 140(10), 778-786.

- Stice, E., Spoor, S., Bohon, C., & Small, D. M. (2008). Relation between obesity and blunted striatal response to food is moderated by TaqA A1 allele. *Science*, *322*, 449-452. doi:10.1126/science.1161550
- Stice, E. Spoor, S., Bohon, C., Veldhuizen, M. G., & Small, D. M. (2008). Relation of reward from food intake and anticipated food intake to obesity: A functional magnetic resonance imaging study. *Journal of Abnormal Psychology*, *117*(4), 924-935. doi:10.1037/a001.3600
- Stice, E., Yokum, S., Blum, K., & Bohon, C. (2010). Weight gain is associated with reduced striatal response to palatable food. *Journal of Neuroscience*, *30*(39), 13105-13109. doi:10.1523/JNEUROSCI.2105-10.2010
- Stice, E., Yokum, S., Bohon, C., Marti, N., & Smolen, A. (2010). Reward circuitry responsivity to food predicts future increases in body mass: Moderating effects of DRD2 and DRD4. *Neuroimage*, *50*, 1618-1625.
doi:10.1016/n.neuroimage.2010.01.081
- Stoeckel, L. E., Weller, R. E., Cook III, E. W., Twieg, D. B., Knowlton, R. C., & Cox, J. E. (2008). Widespread reward-system activation in obese women in response to pictures of high-calorie foods. *Neuroimage*, *41*(2), 636-647.
doi:10.1016/j.neuroimage.2008.02.031
- Sussman, S., & Sussman, A. N. (2011). Considering the definition of addiction. *International Journal of Environmental Research and Public Health*, *8*, 4025-4038. doi:10.3390/ijerph8104025

- Swinburn, B., Egger, G., & Raza, F. (1999). Dissecting obesogenic environments. The development and application of a framework for identifying and prioritizing environmental interventions for obesity. *Preventive Medicine, 29*(6), 563-570. doi:10.1006/pmed.1999.0585
- Taylor, V. H., Curtis, C. M., & Davis, C. (2010). The obesity epidemic: The role of addiction. *Canadian Medical Association Journal, 182*(4), 327-328. doi:10.1503/cmaj.091142
- Thiele, T. E., Navarro, M., Sparta, D. R., Fee, J. R., Knapp, D. J., & Cubero, I. (2003). Alcoholism and obesity: Overlapping neuropeptide pathways? *Neuropeptides, 37*(6), 321-337. doi:10.1016/j.npep.2003.10.002
- Thomas, S. L., Hyde, J., Karunaratne, A., Kausman, R., & Komesaroff, P. A. (2008). "They all work . . . when you stick to them": A qualitative investigation of dieting, weight loss, and physical exercise in obese individuals. *Nutrition Journal, 7*(34), 1-7. doi:10.1186/1475-2891-7-34
- Tpprnvliet, A. C., Tuinenburg, J. C., Elte-de Wever, B. M., Peters, M. S. M., Frolich, M., onkenhout, W., & Meinders, A. E. (1997). Psychological and metabolic responses of carbohydrate craving obese patients to carbohydrate, fat, and protein-rich meals. *International Journal of Obesity, 21*, 860-864.
- Trinko, R., Sears, R. M., Guarnieri, D. J., & DiLeone, R. J. (2007). Neural mechanisms underlying obesity and drug addiction. *Physiology & Behavior, 91*, 499-505. doi:10.1016/j.physbeh.2007.01.001

- Troiano, R. P., & Flegal, K. M. (1998). Overweight children and adolescents: description, epidemiology, and demographics. *Pediatrics, 101*(3), 497-504.
- Tsiros, M. D., Sinn, N., Brennan, L., Coates, A. M., Walkley, J. W., Petkov, J., . . . Buckley, J. D. (2008). Cognitive behavioral therapy improves diet and body composition in overweight and obese adolescents. *American Journal of Clinical Nutrition, 87*(5), 1134-1140.
- Umberg, E. N., Shader, R. I., Hsu, G., & Greenblatt, D. J. (2012). From disordered eating to addiction. The “Food Drug” in bulimia nervosa. *Journal of Clinical Psychopharmacology, 32*(3), 376-387. doi:10.1097/JCP.0b013e318252464f
- Urbszat, D., Herman, C. P., & Polivy, J. (2002). Eat, drink, and be merry, for tomorrow we diet: Effects of anticipated deprivation on food intake in restrained and unrestrained eaters. *Journal of Abnormal Psychology, 111*(2), 396-401. doi:10.1037//0021-843X.111.2.396
- Vamosi, M., Heitmann, B. L., & Kyvik, K. O. (2009). The relation between an adverse psychological and social environment in childhood and the development of adult obesity: A systematic literature review. *Obesity Reviews, 11*, 177-184. doi:10.1111/j.1467-789X.2009.00645.x
- Van Strien, T., Frijters, J. E. R., Bergers, G. P. A., & Defares, P. B. (1986). The Dutch eating behavior questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International Journal of Eating Disorders, 5*(2), 295-315. doi:10.1002/1098-108X(19860)5:2<>1.0.CO;2-J/issuetoc

- Vetter, M. L., Faulconbridge, L. F., Williams, N. N., & Wadden, T. A. (2012). Surgical treatments for obesity. In K. D. Brownell & M. S. Gold (Eds.), *Food and addiction: A comprehensive handbook* (pp. 310-317). New York: Oxford University Press.
- Vohs, K. D., & Heatherton, T. F. (2000). Self-regulatory failure: A resource-depletion approach. *Psychological Science, 11*(3), 249-254. doi:10.1111/1467-9280-00250
- Volkow, N., & O'Brien, C. (2007). Issues for DSM-V: Should obesity be included as a brain disorder? *American Journal of Psychiatry, 164*(5), 708-710.
- Volkow, N. D., Wang, G-J., & Baler, R. D. (2011). Reward, dopamine and the control of food intake: Implications for obesity. *Trends in Cognitive Sciences, 15*(1), 37-46. doi:10.1016/j.tics.2010.11.001
- Volkow, N. D., Wang, G-J., Fowler, J. S., & Telang, F. (2008). Overlapping neuronal circuits in addiction and obesity: Evidence of systems pathology. *Philosophical Transactions of the Royal SocietyB: Biological Sciences, 363*(1507), 3191-3200. doi:10.1098/rstb.2008.0107
- Volkow, N. D., & Wise, R. A. (2005). How can drug addiction help us understand obesity? *Nature Neuroscience, 8*(5), 555-559. doi:10.1038/nn1452
- von Deenen, K. M., & Liu, Y. (2011). Obesity as an addiction: Why do the obese eat more? *Maturitas, 68*, 342-345. doi:10.1016/j.maturitas.2011.01.018

- Wang, G. J., Volkow, N. D., & Fowler, J. S. (2012). Dopamine deficiency, eating, and body-weight. In K. D. Brownell, & M. S. Gold (Eds.), *Food and addiction: A comprehensive handbook* (pp.185-193). New York: Oxford University Press
- Wang, G. J., Volkow, N., Fowler, J. S., Cervany, P., Hitzemann, R. J., Pappas, N. R., Wong, C. T., & Felder, C. (1999). Regional brain metabolic activation during craving elicited by recall of previous drug experiences. *Life Sciences*, *64*(9), 775-784. doi:10.1016/S0024-3205(98)006-19-5
- Wang, G. J., Volkow, N. D., Logan, J., Pappas, N. R., Wong, C. T., Zhu, W., . . . Fowler, J. S. (2001). Brain dopamine and obesity. *The Lancet*, *357*, 354-357.
- Wang, Y., Beydoun, M. A., Liang, L., Caballero, B., & Kumanyika, S. K. (2008). Will all Americans become overweight or obese? Estimating the progression and cost of the US obesity epidemic. *Obesity*, *16*(10), pp. 2323-2330
- Wang, Y., & Lobstein, T. (2006). Worldwide trends in childhood overweight and obesity. *International Journal of Pediatric Obesity*, *1*(1), 11-25.
doi:10.1080/17477160600586747
- Werdell, P. (2012). From the front lines: A clinical approach to food addiction. In K. D. Brownell, & M. S. Gold (Eds.), *Food and addiction: A comprehensive handbook* (pp. 354-360). New York: Oxford University Press.
- Whittemore, R., Chase, S. K., & Mandle, C. L. (2001). Validity in qualitative research. *Qualitative Health Research*, *11*(4), 521-537.
doi:10.1177/10493201129119299

- Wilson, G. T. (2010). Cognitive behavioral therapy for eating disorders. In W. S. Agras (Ed.), *The Oxford handbook of eating disorders*. New York: Oxford University Press.
- Wing, R. R., & Hill, J. O. (2001). Successful weight loss maintenance. *Annual Review of Nutrition, 21*, 323-341. doi:10.1146/annurevu.nutr.21.1.323
- Wolin, K. Y., & Petrelli, J. M. (2009). *Obesity*. Santa Barbara, CA: Greenwood Press.
- World Health Organization. (2011). *Obesity and overweight fact sheet*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>
- Wu, T., Gao, X., Chen, M., & van Dam, R. M. (2009). Long-term effectiveness of diet-plus-exercise interventions vs. diet-only interventions for weight loss: A meta-analysis. *Obesity Reviews, 10*(3), 313-323. doi:10.1111/j.1467-789X.2008.00547.x
- Wysoker, A. (2005). The lived experience of choosing bariatric surgery to lose weight. *Journal of the American Psychiatric Nurses Association, 11*(1), 26-34. doi:10.1177/1078390305275005
- Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology & Health, 15*(2), 215-228.
- Yardley, L. (2008). Demonstrating validity in qualitative psychology. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (2nd ed.; pp. 235-251) Thousand Oaks, Ca: Sage.

- Zellner, K., Ubricht, G., & Kromeier-Hauschild, K. (2007). Long-term trends in body mass index of children in Jena, Eastern Germany. *Economics and Human Biology, 5*, 426-434. doi:10.1016/j.ehb.2007.07.002
- Zhao, G., Ford, E. S., Dhingra, S., Li, C., Strine, T. W., & Mokdad, A. H. (2009). Depression and anxiety among US adults: associations with body mass index. *International Journal of Obesity, 33*(2), 257-266. doi:10.1038/ijo.2008.268
- Ziauddeen, H., Farooqi, I. S., & Fletcher, P. C. (2012). Obesity and the brain: How convincing is the addiction model? *Nature Reviews Neuroscience, 13*(4), 279-286. doi:10.1038.nrn3212
- Ziebland, S., & McPherson, A. (2006). Making sense of qualitative data analysis: An introduction with illustrations from DIPEX (personal experiences of health and illness). *Medical Education, 40*(5), 405-414. doi:10.1111/j.1365-2929.2006.02442.x
- Zijlstra, H., Boeije, H. R., Larsen, J. K., van Ramshorst, V., & Geenen, R. (2009). Patients' explanations for unsuccessful weight loss after laparoscopic adjustable gastric banding (LAGB). *Patient Education & Counseling, 75*(1), 108-113. doi:10.1016/j.pec.2008.09.023

Appendix A: Consent Form – Survey

You are invited to take part in a research study investigating how overweight women experience food-dependency as defined by the Yale Food Addiction Scale (YFAS). Food dependency is not a recognized eating disorder, but research has shown that some women experience a relationship with food similar to substance dependency. I would like you to take part in this study by completing the YFAS. This form is part of a process called “informed consent” to allow you to understand this study before deciding to participate.

Background Information:

One purpose of this study is to identify women who have an addictive relationship with food. Accumulating research has documented neurobiological and behavioral similarities between compulsive drug use and overeating, leading researchers to utilize the term “food addiction”. To measure the phenomenon of food addiction or food dependence, the YFAS was developed.

Procedures

If you agree to participate in this part of the study you will be asked to:

Complete the YFAS online with survey monkey or you may have the material delivered to you for you to complete.

The YFAS questionnaire takes approximately 15 minutes to complete.

I may contact you again if you have an addictive relationship with food according to the YFAS.

Here are some sample questions:

I find myself consuming certain foods even though I am no longer hungry.

I have spent time dealing with negative feelings from overeating certain foods.

My behavior with respect to food and eating causes me significant distress,

Voluntary Nature of the Study

This study is voluntary. You do not need to proceed with the study if you choose not to and no one will treat you differently if your choice is to discontinue the study. If you are contacted by the researcher to continue with the next phase of the study, you are not obligated to do so.

Risks and Benefits of being in the Study:

There are no risks associated with taking the YFAS and your results will be completely confidential.

Payment:

There is no compensation for this part of the study.

Privacy:

Any information you provide will be kept confidential. I will not use your personal information for any purpose other than this research project.

Contacts and Questions:

The Walden approval number for this study is: 02-05-14-0063984

The expiry for this is February 05, 2015.

Statement of Consent

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I am agreeing to the terms described above.

Printed Name of Participant _____

Date of consent _____

Participant's signature _____

Researcher's signature _____

Appendix B: Consent Form - Interview

You are invited to take part in a research study investigating how overweight women experience food dependency as defined by the Yale Food Addiction Scale (YFAS). Food dependency is not a recognized eating disorder, but research has shown that some women experience a relationship with food similar to substance dependency. You have been chosen to participate in this qualitative study based on your score on the YFAS, which indicates that you have several symptoms of food dependency. This form is part of a process called “informed consent” to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named GiGi Van Ostrand, who is a doctoral student at Walden University.

Background Information:

The purpose of this study is to explore your experience with food in general and determine whether your relationship with food is similar to substance dependency. Your symptoms of food dependency are measured by the YFAS, which is only a newly developed scale and in its early developmental stages. I am looking to see if food dependency or food addiction interferes with dietary control and whether the symptoms experienced are parallel to those experiencing substance dependence.

Procedures:

If you agree to be in this study you will be asked to:

- Sit down with the researcher in a quiet place to share your experience of food dependency and how your relationship with food affects your daily life and eating behaviors.
- The interview will consist of several open ended questions which will last approximately 90 minutes
- The entire interview will be taped with an audio cassette player
- Following analysis of the transcripts of the audio recordings, the researcher will discuss her findings with you via email and/or telephone and ask for your opinion of the interpretations of your narrative. Excerpts of your original narrative may appear in the final research report.

Here are some sample questions:

- Briefly describe your problems with dieting in the past.
- How do you understand the term “Food Addiction”?
- How does your experience with food affect your daily life?

Voluntary Nature of the Study

This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later.

You may stop at any time

Risks and Benefits of being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as the personal nature of some questions, and setting

aside the time for the interview. Being in this study would not pose risk to your safety or wellbeing. FA is not a recognized eating disorder and is only a tentative category based on recent research.

The study is designed to help discover if women experiencing symptoms of FA or FD may be helped by different treatment methods, treatment methods that do not consider the possibility that food may be a substance promoting dependence.

Payment

There is no compensation for being in this study.

Privacy

Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in any study reports. Excerpts from your original narrative may be used in the final research report, but you cannot be identified because of the pseudonym used for your narrative extracts. Research data will always be kept in a locked file and the researcher is the only person to have access to them. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

You may ask any questions you have now. Or if you have questions later, you may contact the researcher via email or by phone. If you want to talk privately about your rights as a participant, you can call the Walden University representative. Walden

University's approval number for this study is: _02-05-14-0063984 and it expires on:
_February 05,2015.

Statement of Consent

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I am agreeing to the terms described above.

Printed Name of Participant _____

Date of consent _____

Participant's signature _____

Researcher's signature _____

Appendix C: Self-Report Questionnaire

Completion of all the information on this questionnaire is important for determining the influence of a variety of factors on the results of this study. All of these records will remain confidential. Any reports that may be published will not include any identifying information of the participants in this study. Please answer the following questions:

Birth Date _____

Age _____

Height _____

Weight _____

Are you fluent in English? _____

Family Income: What range best describes your family income last year before taxes?

_____ Less than \$10,000 _____ \$10,000-\$19,999

_____ \$20,000-\$29,999 _____ \$30,000-\$44,999
_____ \$45,000-\$59,999 _____ \$60,000-\$74,999
_____ \$75,000-\$99,999 _____ \$100,000-\$124,999
_____ \$125,000-\$149,999 _____ \$150,000 or Greater

Do you suffer from any of these health conditions?

_____ Kidney failure/Insufficiency _____ High Cholesterol
_____ Gallstones _____ High Triglycerides
_____ Heart Disease _____ Hypoglycemia "low
blood sugar"
_____ High Blood Pressure _____ Type 2 Diabetes
_____ Major Depression, Bipolar Disorder

Have you participated in any diet/groups previously?

Which diets have you tried and have you had success?

Are there any reasons you find that hinder your best efforts at following a diet?

Appendix D: Poster Advertisement

Research for Possible Food Addiction

A doctoral student at Walden University is seeking to understand the possibility that food dependency may be present in individuals making weight loss difficult if not impossible. The goal is to better understand food dependency to help overweight/obese individuals deal with their difficulties with food consumption. Participants are invited to take the Yale Food Addiction Scale and complete a demographic questionnaire that will take only a few minutes. The researcher is looking for overweight women between 40 and 60 years of age who struggle with food and weight loss/maintenance. If you would like to participate in this study, please contact the researcher.

Contact Information:

The researcher is Dr. GiGi Van Ostrand and can be contacted at Walden University.

Curriculum Vitae

GiGi Van Ostrand

Education

June 2007 – Present	Ph.D. Candidate Health Psychology Walden University, Minneapolis, Minnesota, U.S.A
1993	MSc. University of Calgary – behavioral neuroscience
1977	DVM University of Saskatchewan – veterinary medicine
1973	BSc. University of Calgary – zoology

Professional experience:

1998-Present	Regulatory Veterinarian for Horse Racing Alberta (HRA) Regulatory work with all private practitioners as an official for HRA
1990-1998	Student at University of Calgary and part-time veterinarian equine practice
1977-1990	private practice equine veterinary medicine

Accomplishments:

2012	35 yr. Service award with Alberta Veterinary Medical Association
1999-Present	marathon running throughout the world and completed the 7-continent in November, 2012 with Antarctica, the final continent.
1969-1999	won several championships in equine competitions and raised several champions. Have bred and raised horses throughout my life.

Publications

Van Ostrand, G., & Cooper, R. (1994). [14C]2-Deoxyglucose autoradiographic technique provides a metabolic signature of cobalt-induced focal epileptogenesis. *Epilepsia*, 35(5), 939-949. doi:10.1111/j.1528-1994.tb02538.x